

Report to Adhoc Health

Code change proposal regarding locking arrangements

From John Woestman, BMHA

This report is provided for information only. BMHA is not asking for Adhoc Health Care to sponsor as it is understood that this is outside the committee scope.

Issue / Opportunity 1

1. Add delayed egress locking systems to the exception to locking devices that shall not restrict egress from a care recipient's room. Suggested to be considered by ICC staff for the Adhoc Healthcare Committee.

407.4 Means of egress. Group I-2 occupancies shall be provided with means of egress complying with Chapter 10 and Sections 407.4.1 through 407.4.4. The fire safety and evacuation plans provided in accordance with Section 1001.4 shall identify the building components necessary to support a *defend-in-place* emergency response in accordance with Sections 404 and 408 of the *International Fire Code*.

407.4.1 Direct access to a corridor. Habitable rooms in Group I-2 occupancies shall have an *exit access* door leading directly to a *corridor*.

Exceptions:

1. Rooms with *exit* doors opening directly to the outside at ground level.
2. Rooms arranged as *care suites* complying with Section 407.4.3

407.4.1.1 Locking devices. Locking devices that restrict access to a care recipient's room from the *corridor* and that are operable only by staff from the *corridor* side shall not restrict the *means of egress* from the care recipient's room.

Exceptions:

1. This section shall not apply to rooms in psychiatric treatment and similar care areas.
2. Locking arrangements in accordance with Section 1010.1.9.6 or 1010.1.9.7.

Reason:

Clarifying / explicitly allowing delayed egress locking systems in this application in the unlikely event a delayed egress locking system is desirable for this application. Delayed egress locking systems are currently not precluded from this application by the "shall be permitted" language and requirements of 1010.1.9.7.

Issue / Opportunity 2

In exception to Item 5 for delayed egress locking systems, 2015 IBC Section 1010.1.9.7, expand scope to include all Group I occupancies which allow more than one delayed egress locking system.

1010.1.9.7 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving any occupancy except Group A, E and H in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907. The locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or *automatic fire detection system*, allowing immediate, free egress.

2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the *fire command center* and other *approved* locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.

Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.
5. The egress path from any point shall not pass through more than one delayed egress locking system.

Exception: In **Group I-2 or I-3-I occupancies**, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.
6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:
 - 6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.3. The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.
7. Emergency lighting shall be provided on the egress side of the door.
8. The delayed egress locking system units shall be listed in accordance with UL 294.

Reason:

Group I-1 custodial care occupancies are requesting more than one delayed egress system, especially for uses such as memory care. For example, if the Group I-1 occupancy is on the 2nd floor, or higher, in a building, a delayed egress system may be needed on the door to the exit stairway on that floor. And a second delayed egress locking system may be needed at the door to the exterior on the ground floor.

Also, BHMA members are receiving inquiries desiring more than one delayed egress locking system in Group I-4 occupancies.

Issue / Opportunity 3

1. Add Group E, with no more than X occupants (perhaps no more than 5 to 10 occupants, to allow day cares to use delayed egress systems), to delayed egress section (1010.1.9.7)?
2. **Special needs classrooms – current codes don't allow any restrictions on egress but some of these students are prone to eloping. One such elopement in NYC resulted in the death of the student.**

1010.1.9.7 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving ~~any occupancy except Group A, E and H-Group B, F, I, M, R, S, or U occupancies, or Group E occupancy with a maximum occupant load of 10,~~ in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907. The locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or *automatic fire detection system*, allowing immediate, free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the *fire command center* and other *approved* locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.
Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.
5. The egress path from any point shall not pass through more than one delayed egress locking system.
Exception: In Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.
6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:
 - 6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.3. The sign shall comply with the visual character requirements in ICC A117.1.
Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.
7. Emergency lighting shall be provided on the egress side of the door.
8. The delayed egress locking system units shall be listed in accordance with UL 294.

Reason:

Several requests to address the needs of small educational occupancies to help prevent wandering / elopement, especially for the very young, and for special needs students.

Issue / Opportunity 4

1. Update 2015 IBC 907.3.2 to include the "special locking arrangements" of 1010.1.9.6, 1010.1.9.7, and 1010.1.9.8 in the 2012 IBC, not just delayed egress (1010.1.9.7).

[F] 907.3 Fire safety functions. Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control unit where a fire alarm system is required by Section 907.2. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or activate a visible and audible supervisory signal at a *constantly attended location*. In buildings not equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

[F] 907.3.1 Duct smoke detectors. . . .

[F] ~~907.3.2 Delayed egress locks~~ **Special locking systems**. Where ~~delayed egress locks special locking systems~~ are installed on *means of egress* doors in accordance with Sections 1010.1.9.6, 1010.1.9.7, or 1010.1.9.8, an automatic ~~smoke or heat~~ detection system shall be installed as required by that section.

Reason:

Revising this section for correlation to “special locking systems” of Sections 1010.1.9.6 (Controlled egress doors in Groups I-1 and I-2), 1010.1.9.7 (Delayed egress), or 1010.1.9.8 (Sensor release of electrically locked egress doors) as each of these three sections for special locking systems require subsequent action by their locking system upon actuation of the automatic sprinkler system or automatic fire detection system.

Also, deleting “smoke or heat” in this sentence as the specifics of the detection system does not need to be specified in this sentence.

Issue / Opportunity 5

1. Revise 2015 IBC 1010.1.9.9 Electromagnetically locked egress doors to be allowed in all occupancies other than H (Hazardous) occupancies.

1010.1.9.9 Electromagnetically locked egress doors.

Doors in the *means of egress* in buildings with any occupancy ~~except in~~ Group ~~A, B, E, I-1, I-2, I-4, M, R-1 or R-2~~ H and doors to tenant spaces in any occupancy except Group ~~A, B, E, I-1, I-2, I-4, M, R-1 or R-2~~ H shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and where installed and operated in accordance with all of the following:

1. The hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The hardware is capable of being operated with one hand.
3. Operation of the hardware directly interrupts the power to the electromagnetic lock and unlocks the door immediately.
4. Loss of power to the locking system automatically unlocks the door.
5. Where *panic* or *fire exit hardware* is required by Section 1010.1.10, operation of the *panic* or *fire exit hardware* also releases the electromagnetic lock.
6. The locking system units shall be listed in accordance with UL 294.

Reason:

This “special locking arrangement” allows for immediate egress with one-handed operation of the door hardware. Code officials and specifiers have asked why this option is allowed in only these occupancies. No reason is known other than the current allowed occupancies in Section 1010.1.9.9 match those in Section 1010.1.9.8.

Issue / Opportunity 6

2. Update 1010.1.9.8 to improve clarity and consistency in the language.

1010.1.9.8 Sensor release of electrically locked egress doors. ~~The electric locks on sensor released~~ Sensor release of electric locking systems shall be permitted on doors located in a *means of egress* in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 ~~and entrance doors to tenant~~

~~spaces in occupancies in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 are permitted~~ where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electric locking system to unlock.

~~2. The doors shall be arranged to electric locking system shall~~ unlock by a signal from or loss of power to the sensor.

~~23. Loss of power to the lock or locking system shall automatically unlock the door~~electric lock.

~~34. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the electric lock—independent of other electronics— and the doors~~electric lock shall remain unlocked for not less than 30 seconds.

~~45. Activation of the building fire alarm system, where provided, shall automatically unlock the door~~electric lock, and the ~~doors~~electric lock shall remain unlocked until the fire alarm system has been reset.

~~56. Activation of the building automatic sprinkler system or fire detection system, where provided, shall automatically unlock the doors~~electric lock. The ~~doors~~electric lock shall remain unlocked until the *fire alarm system* has been reset.

~~67. The door locking system units shall be listed in accordance with UL 294.~~

Reason:

Revisions for clarity and to eliminate redundancy in this section. Deleting the "entrance doors to tenant spaces" as entrance doors to tenant spaces are usually in the means of egress. If tenant doors are not in the means of egress, then the locking system is not required to comply with IBC requirements.

Also, revisions to the numbered requirements for these systems to clarify the required functions of the electric locking system.

Issue / Opportunity 7

1. Rename 2015 IBC 1010.1.9.9 Electromagnetically locked egress doors to something more similar to Sensor Release of Electrically Locked Egress Doors, reflecting that it's a difference in operation/release, not necessarily a difference in the locking hardware. The current title gets interpreted as "all doors with mag-locks have to comply with this section."

1010.1.9.9 ~~Electromagnetically~~ Door hardware release of electrically locked egress doors.

Door hardware release of electric locking systems shall be permitted on ~~D~~doors in the *means of egress* in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 ~~and doors to tenant spaces in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and~~ where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.

2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.1.9.5.

3. Operation of the door hardware directly interrupts the power to the ~~electromagnetic~~electric lock and unlocks the door immediately.

4. Loss of power to the electric locking system automatically unlocks the door.

5. Where *panic* or *fire exit hardware* is required by Section 1010.1.10, operation of the *panic* or *fire exit hardware* ~~also~~ releases the ~~electromagnetic~~-~~electric~~ lock.
6. The locking system units shall be listed in accordance with UL 294.

1010.1.10 Panic and fire exit hardware. Doors serving a Group H occupancy and doors serving rooms or spaces with an *occupant load* of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than *panic hardware* or *fire exit hardware*.

Exceptions:

1. A main *exit* of a Group A occupancy shall be permitted to be locking in accordance with Section 1010.1.9.3, Item 2.
2. Doors serving a Group A or E occupancy shall be permitted to be ~~electromagnetically~~-~~electrically~~ locked in accordance with Section 1010.1.9.9.

Reason:

Revisions clarify this section of the code to address required functions of all types of electrical locking systems which are operated (i.e. unlocked) by operation of the door hardware such as panic hardware, fire exit hardware, or door knobs or levers (where panic or fire exit hardware is not required or not utilized). Electromagnetic locks are the most common type of electrical locks, but not the only type of electric locking hardware which may be selected by the designer, specifier, and / or building owner or occupant.

Regardless of the type of electrical locking system, this section permits and requires the door hardware to be device which causes the electrical lock to unlock immediately, allowing egress.

Issue / Opportunity 8

1. Revise 2015 IBC 1010.1.9.9 Electromagnetically locked egress doors to be allowed in all occupancies other than H (Hazardous) occupancies.

1010.1.9.9 Electromagnetically locked egress doors.

Doors in the *means of egress* in buildings with any occupancy ~~except in~~ Group ~~A, B, E, I-1, I-2, I-4, M, R-1 or R-2~~ H and doors to tenant spaces in ~~any occupancy except~~ Group ~~A, B, E, I-1, I-2, I-4, M, R-1 or R-2~~ H shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and where installed and operated in accordance with all of the following:

1. The hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The hardware is capable of being operated with one hand.
3. Operation of the hardware directly interrupts the power to the electromagnetic lock and unlocks the door immediately.
4. Loss of power to the locking system automatically unlocks the door.
5. Where *panic* or *fire exit hardware* is required by Section 1010.1.10, operation of the *panic* or *fire exit hardware* also releases the electromagnetic lock.
6. The locking system units shall be listed in accordance with UL 294.

Reason: This “special locking arrangement” allows for immediate egress with one-handed operation of the door hardware. Code officials and specifiers have asked why this option is allowed in only these

occupancies. No reason is known other than the current allowed occupancies in Section 1010.1.9.9 match those in Section 1010.1.9.8.

Issue / Opportunity 9

1. Add Group I-1 (custodial care) to Exception in Item 5, to allow two delayed egress systems?
2. Address words on required signage for the situation where there's a delay (up to 3 sec) in the initiation of the irreversible delay. This is intended to reduce nuisance tripping of the delayed egress, such as in Alzheimer's units. Hardware may generate an alarm when hardware is first operated (pushed) and then the tone of the alarm changes when the activation delay is over and the irreversible process is started.

1010.1.9.7 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving any occupancy except Group A, E and H in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907. The locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or *automatic fire detection system*, allowing immediate, free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the *fire command center* and other *approved* locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.

Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.

5. The egress path from any point shall not pass through more than one delayed egress locking system.

Exception: In Group I-1, I-2, or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.

6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:

6.1. For doors that swing in the direction of egress, the sign shall read:

PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS ~~or the sign shall read: ALARM WILL SOUND WHEN PUSHED. TO OPEN DOOR, PUSH FOR 3 SECONDS [UNTIL ALARM SOUND CHANGES] AND DOOR CAN BE OPENED AFTER 15 [30] SECONDS DELAY.~~ or the sign shall read: ALARM WILL SOUND. TO OPEN DOOR PUSH FOR 15 [30] SECONDS.

6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS ~~or the sign shall read: ALARM WILL SOUND WHEN PULLED. TO OPEN DOOR, PULL FOR 3 SECONDS [UNTIL ALARM SOUND CHANGES] AND DOOR CAN BE OPENED AFTER 15 [30] SECONDS DELAY.~~ ALARM WILL SOUND. TO OPEN DOOR PULL FOR 15 [30] SECONDS.

6.3. The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.

7. Emergency lighting shall be provided on the egress side of the door.
8. The delayed egress locking system units shall be listed in accordance with UL 294.

Issue / Opportunity 10

1. Add a section to IBC in the “special locking arrangements” area to address “monitored egress”. Monitored egress is where an active device requiring credentials is used to monitor who is egressing. The active device could be a card reader, keypad, iris scan, finger scan, etc. A monitored egress device could be utilized on any of the four special locking arrangements as long as the functions of that specific locking arrangement is maintained. Examples: a keypad could be installed next to an electromagnetically locked egress door; a card reader could be installed next to a delayed egress door; or a keypad installed in the approach area of a sensor release door. The special locking arrangement would need to fully comply with its requirements.

1010.1.9 Door operations. Except as specifically permitted by this section, egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

1010.1.9.1 Hardware. Door handles, pulls, latches, locks and other operating devices on doors required to be *accessible* by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

1010.1.9.2 Hardware height. Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

Exception: Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1370 mm) maximum above the finished floor or ground, provided the self-latching devices are not also selflocking devices operated by means of a key, electronic opener or integral combination lock.

1010.1.9.3 Monitored or recorded egress. Electrical systems which monitor or record egress activity shall be permitted where incorporated into the locking system as permitted in Sections 1010.1.9.6, 1010.1.9.7, 1010.1.9.8, or 1010.1.9.9 provided the required functions of the locking system are retained.

Reason:

Monitored egress is where an active device requiring credentials is used to monitor who is egressing. The active device could be a card reader, keypad, iris scan, finger scan, etc. A monitored egress device could be utilized on any of the four “special locking arrangements” of Sections 1010.1.9.6, 1010.1.9.7, 1010.1.9.8, or 1010.1.9.9 provided the functions of that specific locking arrangement are retained and maintained. Examples: a keypad could be installed next to an electromagnetically locked egress door; a card reader could be installed next to a delayed egress door; or a keypad installed in the approach area of a sensor release door. The special locking arrangement would need to fully comply with its requirements.

Issue / Opportunity 11

3. Update 1010.1.1 and 1010.1.1.1 to improve clarity and consistency in the language.

1010.1.1 ~~Size of doors.~~ REVISE THE TITLE The required capacity of each door opening shall be sufficient for the *occupant load* thereof, and the door shall provide a minimum clear opening width of 32 inches (813 mm). ~~The C~~clear openings width of a doorways with a swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Doors in the means of egress in Group I-2 occupancy used for the movement of beds shall provide a clear opening width not less than 41 ½ inches (1054 mm). Where this section requires a minimum clear opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide ~~a~~ the required minimum clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. ~~Means of egress doors in a Group I-2 occupancy used for the movement of beds shall provide a clear width not less than 41 ½ inches (1054 mm).~~ The height of door openings shall be not less than 80 inches (2032 mm).

Exceptions:

1. The minimum and maximum width shall not apply to door openings that are not part of the required *means of egress* in Group R-2 and R-3 occupancies.
2. Door openings to resident *sleeping units* in Group I-3 occupancies shall have a clear opening width of not less than 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width.
4. ~~The W~~width of door leaves in revolving doors that comply with Section 1010.1.4.1 and the width of door leaves in power-operated doors that comply with Section 1010.1.4.2 shall not be limited.
5. Door openings within a *dwelling unit* or *sleeping unit* shall be not less than 78 inches (1981 mm) in height.
6. Exterior door openings in *dwelling units* and *sleeping units*, other than the required *exit* door, shall be not less than 76 inches (1930 mm) in height.

1010.1.1.1 Projections into required clear opening width. There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the required clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

Exception: Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the floor.

Reason:

The proposed revisions are intended to improve clarity and consistency of the language of these sections of the code, and appear to be essentially editorial.