

Life Safety and Building Code Interpretations for TeacherLock®

Single-motion for Egress

In the context of installing door barricade devices on existing classroom doors, pending changes in **Chapter 15 Existing Educational Occupancies** of the 2018 edition of NFPA 101, *Life Safety Code*, recognize that use of such devices needs to be addressed separately (and differently) from new doors. Specifically, item 3 under **Section 15.2.2.2.4, Classroom Door Locking to Prevent Unwanted Entry**, permits two distinctly separate releasing operations from the egress- side (the classroom side) of the door, provided that no keys, tools, or special knowledge or effort is needed to open the door. **The TeacherLock® door-mounted lockdown device requires no additional effort, motion, or knowledge and the unlatch is accomplished by gently bumping a lever which is in-line with the door handle for egress, requiring no special keys, tools, or special knowledge. TeacherLock® has been tested with uninformed elementary school children and they understand how to unlock the door.**

Height of Mounted Lockdown Device

Item 4 under 15.2.2.2.4 requires the releasing mechanism to be located no lower than 34 inches and no higher than 48 inches above the finished floor. While that requirement is clearly stated, it conflicts with the requirements of **Chapter 7 Means of Egress, Section 7.2.1.5.10.1**, which states: “The releasing mechanism for any latch shall be located as follows: (1) Not less than 34 in. (865 mm) above the finished floor *for other than existing installations.*” The phrase “...for other than existing installations” permits the releasing mechanisms on existing doors to be located lower than 34 inches above the finished floor. Locks can be mounted anywhere on the door, which would imply two operations to unlatch and only for security purposes, not for normal door operation.

The TeacherLock® egress lever mounts directly in-line with the door handle, thus eliminating any confusion of how to unlock the door.

A fair interpretation of 15.2.2.2.4 (4) is that it addresses the installation and use of locking and latching devices used for the normal operation of doors, not standalone auxiliary security devices that can be installed on existing doors to reinforce them against forced entry.

At this point, it is worth pointing out that the codes (e.g., IBC and the IFC) permit the installation locks that are used for **security purposes** to be installed at any location. **IBC Section 1010.1.9.2 Hardware Height** states: “...Locks used **only for security purposes and not used for normal operation are permitted at any height.**” In the case of door barricade devices, they are only intended to be deployed/engaged during emergency conditions; they are not used under normal operating conditions. Similarly, the exception under section 404.2.6 Door Hardware, of ICC/ANSI A117.1 *Accessible and Usable Buildings and Facilities* (2009 edition), permit locks used only for security purposes to be installed at any location.

The TeacherLock® door-mounted lockdown device will be mounted on the egress-side of the door (either push or pull-side), just above the door handle, in such a position that the unlocking lever will be unlocked in-line as the user approaches the door handle.

Opening a Door from Outside a Room

Items 1 and 2 under Section 15.2.2.2.4 of NFPA 101 require the locking devices to be lockable and releasable from the classroom side of the doors without any key, tool, or special knowledge and effort. Some auxiliary door barricade devices meet these requirements. The emphasis of these requirements is on the manipulation of the locking devices by people who are in the room.

TeacherLock® meets this requirement.

Item 6 under Section 15.2.2.2.4 requires doors to be "...capable of being unlocked and opened from outside the room by staff with the necessary key or other credential." The phrase "...or other credential" is subjective, leaving interpretation to AHJs and other users of the code. "Other credential" could be interpreted to be proprietary releasing devices used by staff (and first responders) to open doors from outside of the rooms.

TeacherLock® uses a special key and meets this requirement.

Similarly, item 1 under **Section 1010.1.4.4, Locking Arrangements in Educational Occupancies** of the pending 2018 edition of the IBC requires: "The door shall be capable of being unlocked from outside the room with a key or other approved means." In this case, the phrase "...other approved means" permits AHJs to determine what means of releasing devices are acceptable in their jurisdiction. **The TeacherLock® door-mounted lockdown device can be released from the side opposite occupants using a proprietary key to be distributed by the school.**

The following is excerpted from 2015 edition of the International Building Code (IBC):

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.

TeacherLock® employs spring-loaded unlatch lever and bolt which is mounted in-line with the door handle and meets this requirement. All it takes is a gentle bump on the TeacherLock unlatch lever while simultaneously moving the door lever and the door is opened.

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.

TeacherLock® passes the limp-wrist, closed-fist test to unlatch.

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.*

TeacherLock® is only used for security purposes, is not used for normal operation, and is allowed under IBC at any location on the door. It is clear that there is a distinction in the code made for the temporary use of security devices and locks used for normal operation. However, TeacherLock is recommended to be mounted directly in-line with the door's latch handle.

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 self-locking

devices operated by means of a key, electronic opener or integral combination lock.

1010.1.9.3 Locks and latches.

This section is intended for locks used in normal door operation, unlike TeacherLock which is used only for temporary security purposes and allowed to be located anywhere on the door: IBC Section 1010.1.9.2 Hardware Height states: "...Locks used only for security purposes and not used for normal operation are permitted at any height."

Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

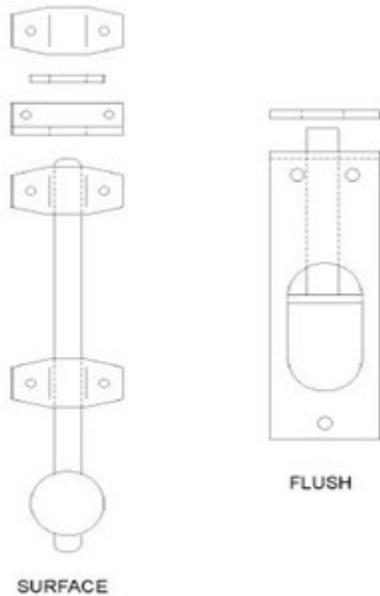
1. Places of detention or restraint.
2. In buildings in occupancy Group A having an *occupant load* of 300 or less, Groups B, F, M and S, and in *places of religious worship*, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
 - 2.1. The locking device is readily distinguishable as locked.
 - 2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
 - 2.3. The use of the key-operated locking device is revocable by the *building official* for due cause.
3. Where egress doors are used in pairs, *approved* automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts does not have a doorknob or surface-mounted hardware.
4. Doors from individual *dwelling* or *sleeping units* of Group R occupancies having an *occupant load* of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.
5. *Fire doors* after the minimum elevated temperature has disabled the unlatching mechanism in accordance with *listed fire door* test procedures.

1010.1.9.4 Bolt locks.

IBC 1010.1.9.4 Bolt Locks

Manually operated flush bolts or surface bolts are not permitted.

TeacherLock is not a manually operated flush bolt or surface bolt. The following image is from the 2015 International Building Code Commentary and describes a manually operated flush bolt and surface bolt typically found on the stationary leaf of double egress doors. Further, TeacherLock is a hybrid deadbolt device which is actuated using a tool only possessed by an authorized and qualified person trained in Lockdown procedures.



**Figure 1010.1.9.4
TYPICAL MANUAL BOLT HARDWARE**

· From Lori Greene, Manager of Codes and Resources of Allegion:

“The use of the term Bolt Lock in the code is very often confused and mixed with the term deadbolt. The IBC is referring to flush bolts and surface bolts that are installed on the inactive leaf section of a pair of doors. It is not referring to deadbolts which are commonly used on egress doors. Further, there are five exceptions listed under this section. Four of them specifically reference edge-mounted or surface-mounted bolts on the inactive leaf of a pair of doors. The exception that does not include this text is ‘on doors not required for egress in individual dwelling units or sleeping units’ which could be interpreted in various ways but doesn’t have relevance since the exception doors are not required for egress.”

· The IBC Commentary 2015, figure 1010.1.9.4 is called “Typical Manual Bolt Hardware” and illustrates a surface bolt and a flush that would be used on the inactive leaf of a pair of doors. The graphic does not show a deadbolt.

· The IBC Commentary for this section refers to the inactive leaf of a pair of doors multiple times. A deadbolt would not typically be mounted on the inactive leaf of a pair of doors. It is therefore concluded that deadbolts are acceptable on a door in a means of egress.

In addition,

TeacherLock is not a lock which is used in normal door operation and is inert on the door until an active shooter emergency. Building inspectors we have worked with all over the country agree on this.

Manually operated flush bolts or surface bolts are not permitted.

This section is intended for the stationary leaf of dual doors as indicated in the IBC Code Commentary. TeacherLock is not a manually operated bolt or flush bolt for use on the stationary leaf of dual doors as described in the IBC Code Commentary. This section is not intended for locks used for temporary security

purposes only and allowed to be located anywhere on the door: IBC Section 1010.1.9.2 Hardware Height states: "...Locks used only for security purposes and not used for normal operation are permitted at any height."

Exceptions:

1. On doors not required for egress in individual *dwelling units* or *sleeping units*.
2. Where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf.
3. Where a pair of doors serves an *occupant load* of less than 50 persons in a Group B, F or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. The inactive leaf shall not contain doorknobs, panic bars [or fire exit hardware] or similar operating hardware.
4. Where a pair of doors serves a Group B, F or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf provided such inactive leaf is not needed to meet egress capacity requirements and the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1. The inactive leaf shall not contain doorknobs, panic bars [or fire exit hardware] or similar operating hardware.
5. Where a pair of doors serves patient care rooms in Group I-2 occupancies, self-latching edge- or surface mounted bolts are permitted on the inactive leaf provided that the inactive leaf is not needed to meet egress capacity requirements and the inactive leaf shall not contain doorknobs, panic bars [or fire exit hardware] or similar operating hardware.

1010.1.9.5 Unlatching.

This section is intended for locks used in normal operation, unlike TeacherLock which is used only for temporary security purposes and allowed to be located anywhere on the door: IBC Section 1010.1.9.2 Hardware Height states: "...Locks used only for security purposes and not used for normal operation are permitted at any height. However, TeacherLock is recommended to be mounted so that the unlatch lever is in-line with the door handle making it easy and intuitive to unlatch in a single effort."

The unlatching of any door or leaf shall not require more than one operation.

Exceptions:

1. Places of detention or restraint.
2. Where manually operated bolt locks are permitted by Section 1010.1.9.4.
3. Doors with automatic flush bolts as permitted by Section 1010.1.9.3, Item 3.
4. Doors from individual *dwelling units* and *sleeping units* of Group R occupancies as permitted by Section 1010.1.9.3, Item 4.

The following is excerpted from the pending changes that will appear in the pending 2018 edition of the International Building Code (IBC):

1010.1.4.4 Locking arrangements in educational occupancies. In Group E and Group B educational occupancies, egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where all of the following conditions are met:

1. The door shall be capable of being unlocked from outside the room with a key or other approved means.
2. The door shall be openable from within the room in accordance with Section 1010.1.9.
3. Modifications shall not be made to listed panic hardware, fire door hardware or door closers.

TeacherLock® meets this requirement.

1010.1.4.4.1 Remote operation of locks. Remote operation of locks complying with Section 1010.1.4.4 shall be permitted.

The following code requirements are excerpted from Chapter 14 New Educational Occupancies of the 2018 edition of NFPA 101, Life Safety Code, which will be issued and published in September 2017:

14.2.2.2.4 * Classroom Door Locking to Prevent Unwanted Entry.

TeacherLock is recommended to be mounted so that the unlatch lever is in-line with the door handle making it easy and intuitive to unlatch in a single effort. The code does not specify a single mechanical interconnected operation. We have demonstrated that the lock and door lever can be accomplished in a single operation. The TeacherLock egress lever was designed to be mounted in a position which is in-line with the door lever so that an occupant does not need to search around the door to unlock it in an emergency."

Classroom doors shall be permitted to be locked to prevent unwanted entry provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged without opening the door.
- (2) The unlocking and unlatching from the classroom side of the door can be accomplished without the use of a key, tool, or special knowledge or effort.
- (3) The releasing mechanism shall open the door leaf with not more than one releasing operations.
- (4) The unlocking and unlatching means are mounted at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, can be unlocked from the classroom side.
- (6) The door is capable of being unlocked and opened from outside the room by staff with the necessary key or other credential.
- (7) The locking means does not modify the door closer, panic hardware, or fire exit hardware.
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) The emergency action plan, required by 14.7.1, addresses the use of the locking and unlocking means from within and outside the room.
- (10) Staff is drilled in the engagement and release of the locking means, from within and outside the room, as part of the emergency egress drills required by 14.7.2.

The following code requirements are excerpted from Chapter 15 Existing Educational Occupancies of the 2018 edition of NFPA 101, Life Safety Code, which will be issued and published in September 2017:

15.2.2.2.4 * Classroom Door Locking to Prevent Unwanted Entry.

Classroom doors shall be permitted to be locked to prevent unwanted entry provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged without opening the door.
- (2) The unlocking and unlatching from the classroom side of the door can be accomplished without the use of a key, tool, or special knowledge or effort.
- (3) The releasing mechanism shall open the door leaf with not more than two releasing operations.
- (4) The releasing mechanism for unlocking and unlatching shall be located not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, can be unlocked from the classroom side.
- (6) The door is capable of being unlocked and opened from outside the room by staff with the necessary key or other credential.

- (7) The locking means does not modify the door closer, panic hardware, or fire exit hardware.
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) *The emergency action plan, required by 14.7.1, addresses the use of the locking and unlocking means from within and outside the room.*
- (10) *Staff is drilled in the engagement and release of the locking means, from within and outside the room, as part of the emergency egress drills required by 14.7.2.*

[Note: Underlining, italics, and coloring added for emphasis.]

TeacherLock® meets this requirement.

TeacherLock® leaves no open holes in fire door assemblies and uses steel through bolts in accordance with NFPA-80 guidance. In addition, door manufacturers recommend this as well. Below is a letter from Allegion regarding field repairs of holes in fire doors.



Steelcraft Manufacturing
9017 Blue Ash Road
Cincinnati, OH 45242

6-10-16

Subject: Field repair of un-used holes and/or dents in Steelcraft fire rated doors & frames

To whom it may concern,

For repair/filling of holes in fire rated hollow metal doors, NFPA 80 contains direction for accomplishing that. This is from NFPA 80.5.5.7 (2013):

5.5.7 When holes are left in a door or frame due to changes or removal of hardware or plant-ons, the holes shall be repaired by the following methods:

- (1) Install steel fasteners that completely fill the holes
- (2) Fill the screw or bolt holes with the same material as the door or frame

Based on that, using a screw - or weld - to fill the hole, then grinding smooth are acceptable means of repair for those holes. In addition, the use of Bondo-type filler is approved for the repair of dents and creases in fire rated hollow metal doors and frames. This is from HMMA-840 TN02-10, **Maintenance of Installed Hollow Metal Products**, Paragraph 8 Dents:

...For fire rated openings, pending acceptance of the local authority having Jurisdiction, dents in the door faces measuring no greater than 1/8 in. in depth and less than 14 inches in length can be filled with industrial automotive body filler provided that no fracturing of the door face or corrosion is present. If corrosion or fracturing of the door faces is visible on a fire rated door, replacement of the door leaf is recommended.

Supported by this information, Steelcraft fire rated doors and frames may be repaired by one of, or a combination of, the methods referenced above, as always subject to the acceptance of the authority having jurisdiction. If you have any questions or concerns about this, please contact me.

A handwritten signature in black ink that reads "Greg Hansen".

Greg Hansen
Steelcraft Product Engineering – Label Specs
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