Published in DHI, Door Security + Safety, January 2018

Access Control: Door Hardware and Code Compliance

Brian Clarke, DHT, AHC, CDT, CSI

Keeping occupants safe is a common goal for facility managers and property owners. As the number of break-ins, active shooter incidents and other violent encounters continue to grow, controlling who enters a building has become more vital than ever before.

For healthcare, education and office buildings, standard door and key configurations do not always provide the type of security necessary. This is leading decision-makers to look at more sophisticated access control solutions. The electronic access control market has become more refined in recent years and it is important to know what is available and what may fit the needs of a given facility. Furthermore, the type of hardware chosen must be code-compliant, making proper selection even more important.

In high use buildings, such as a school or office building, access control must allow for a door opening to have free means of egress, during an emergency, along with fire protection and meet accessibility requirements. The International Building Code (IBC) defines an accessible means of egress as a "continued and unobstructed way of egress travel from any point in a building or facility that provides an accessible route to an area of refuge, a horizontal exit or a public way."

The three parts to a means of egress are exit access, exit, and exit discharge. The exit access begins at any location within a building and ends at the exit. An exit is typically a door leading to the outside or an enclosed exit stairway in a multi-storied building. When the phrase "exit discharge" is used, it is referencing the path from the exit to a public way (a space permanently deeded and dedicated to public use).

Understanding these terms is key, as the IBC requires a minimum of two means of egress from all buildings and spaces within a building. Spaces and buildings with 500 or more occupants are required to have three means of egress and 1,000 or more occupants requires four means of egress. The IBC is intended to be adopted in accordance with the laws and procedures of a governmental jurisdiction.

Some jurisdictions may amend a model code, like IBC, to reflect local practices and laws. Establishing the level of security needed for any facility will help define the type of products that will be required. The characteristics of the traffic flow in and out of the building is also a large part of this equation. Which entrances, based on use, should be regarded as the main entry and exit points of the building? Studying the flow can be a helpful guide in this area.

Classrooms

There may be guidelines in place for specific types of facilities. For example, the National Association of State Fire Marshals have set guidelines that address door security devices for classroom openings. Included as a part of the IBC, NFPA 101, NFPA 80 and ANSI/ICC A115.1, these devices are mandated to:

- Provide immediate egress by having locking devices located between 34" and 48" above the finished floor;
- Not require any special knowledge or effort, nor key or took, not require tight grasping, twisting, or pinching to operate, and accomplished with one operation;
- Be easily lockable in case of emergency from within the classroom with an authorized credential (key, card, code, fob, fingerprint, etc.) and without opening the door;
- Lockable and unlockable from outside the door with an authorized credential.

There has been a growing debate about so-called "barricade devices" in educational facilities. While these products secure a door opening in case of unwanted ingress, they do not take into account the fire and building codes that are in place to maintain safety for occupants and first responders. There have been state-passed laws that do in fact allow these barricade devices to be used as options, typically against the advice of state fire marshals and building code officials. *(For more information on the Door Security & Safety Foundation's work to secure classrooms without compromising life safety, visit www.lockdontblock.org).*

Parents and administrators believe that barricade devices are a viable solution when, in fact, better solutions are available. The Builders Hardware Manufacturers Association proposed a change regarding the classroom locking issue in the 2018 edition of the IBC and clarifying codes already in place. Although these codes will only go into effect if a specific state or jurisdiction adopts them, hopefully the new language will help educate those that (wrongly) believe barricade devices are a viable solution to classroom security.

Looking forward, the IBC 2018 edition addresses school security in the following language:

1010.1.4.4 Locking arrangements in educational occupancies. In Group E and Group B education 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 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;*

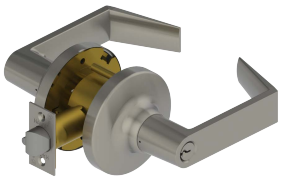
2) *The door shall be openable from within the room in accordance with Section 1010.1.9;*

3) *Modifications shall not be made to listed panic hardware, fire door hardware, or door closers.*

1010.1.4.4.1 Remote operation of locks. Remote operation of locks complying with Section 1010.1.4.4 shall be permitted. This code change will require all Group E classroom doors to be lockable from the inside of the classroom preventing entry to the classroom, without the need to open the door. This proposal does not prescribe specifically how the door is to be lockable from inside the classroom.

A classroom intruder function was developed in the aftermath of the Columbine tragedy in 1999. This function allows a lock to be secured from the interior of the classroom, while still allowing free egress from the inside and entry from the outside using a key.

The classroom intruder function is readily available by lock manufacturers today, at a similar cost as the traditional classroom function locksets.



3495 Intruder Classroom Function - Exterior

3495 Intruder Classroom Function - Interior

Additional requirements state that the door is to be unlockable and readily openable from inside the classroom without the use of a key or special knowledge or effort, as required in IBC Section 1010.1.9. Subsections of 1010.1.9 include requirements for hardware height and hardware configuration. An additional requirement of this proposal is that the classroom door is to be unlockable and openable from outside the classroom by a key or other credential.

This proposal balances the challenges of providing protection of students and teachers in the schools and allowing free and immediate means of egress at all times, without the use of keys, tools, or special knowledge.

Both NFPA 101 and the International Fire Code (IFC) have similar working under development. These codes will not take effect immediately and the debate around the use of barricade devices will continue to be controversial long after these codes are implemented.

Healthcare Facilities and Office Buildings

Unlike in schools, safety inspections are required in hospitals for the facilities to receive licensure and state accreditation. One of the biggest challenges healthcare facilities face is the ability to safely prevent the escape or abduction of their most vulnerable and at-risk patients.

Between 2000 and 2012, many important changes specific to the healthcare industry were incorporated into NFPA 101. One of those changes addressed controlled egress applications. In certain types of health care units, where clinical needs of patients require specialized security and/or protective measures, egress doors can be locked.

In healthcare facilities where controlled egress devices are implemented, the most critical element is that staff must be able to easily unlock these doors at all times. To reduce the potential threat to life safety, these types of locks create, stringent safeguards must be kept in place. Using fail-safe electrified locks ensures the doors will unlock in the event of power loss or activation of the smoke detection system. Only one controlled egress lock is permitted on each door and locks must be able to be unlocked remotely from within the designated locked smoke compartment.

Extra attention is being paid to life safety protocols and procedures by office building owners and management with the recent terror attacks, especially in skyscrapers. Every building designed must balance those emergency egress concerns while maintaining everyday accessibility. Helpful resources to understand requirements for accessible and usable buildings, code compliance and the operation of door hardware include the International Code Council's *(ICC) A117.1* and the *2010 ADA Standards for Accessible Design.*

Hardware

Accredited by the American National Standards Institute (ANSI), BHMA developed a minimum performance grading system for all hardware:

- Grade 1 lock is heavy duty
- Grade 2 is a step down
- Grade 3 is intended for residential use

Why is this helpful? Commercial buildings are able to use different graded locks in different areas of their building, depending on their specific needs. Often, a Grade 1 lock is used on exterior doors, and, depending on the flow of walking traffic, Grade 2 locks can be implemented on certain interior doors.

Whether discussing a school, healthcare facility or commercial building, decision-makers strive for a secure environment that contains code compliant egress. Often, these decisions need to be made with a budget in mind. Fortunately, hardware is now available with superior security at affordable costs. With wire-free installation and virtual networks, costs can be kept low while still offering a high level of security. There are several platforms available based on a facility's needs:

- Offline electronic systems use a portable programming device to transfer audit data from the locks to the software and update the locks with the user credentials and calendar information. these types of systems require the administrator or maintenance department to visit the individual locks to make any changes. The lock acts as the gatekeeper which makes the decision to allow or disallow a given credential.

- Data-on-Card systems allow for more flexible security by using a credential to transmit data between offline devices and online management systems. All user-related access information is stored on smart credentials, acting as carriers for the network and eliminating the need to have wired or wireless locks at every secured opening. The card has access rights and tells the offline lock how it should act. This drastically reduces the cost of the access control system.

Wireless and hard-wired systems are best suited for instances when immediate access to the openings is needed. These systems are specifically designed to offer real-time monitoring and control. This includes lock-down capabilities in many cases. They are highly recommended for institutional, educational and commercial applications.

The entrances and exits of a building are critical components to a building's function, and controlling access is one of the most effective ways to ensure security. Codes are in place from various governing bodies that are meant to guide decision-makers in the right direction, but cost can always be a deterrent. Fortunately, as technology continues to grow from an access control hardware perspective, so does the ability to install high level security options.

Brian Clarke, DHT, AHC, CDT, CSI is Director of Architectural Specifications and Technical Support. He can be reached at bclarke@hagerco.com