

Stairwell Reentry Requirements



From the well-known blog idighardware.com, Lori Greene brings some much-needed clarity to codes.

BY LORI GREENE, AHC/CDC, CCPR

Stairwell doors are often locked on the stair side to prevent unauthorized entry into tenant spaces. The term *stairwell reentry* refers to the code requirements that allow a building occupant to leave a stairwell during a fire emergency and find another exit. If stairwell doors do not allow for reentry and a stairwell becomes impassible, it can jeopardize the lives of those using the stairwell as a means of egress. There are quite a few myths surrounding this requirement, which I will address here.

Myth 1: Only high-rise buildings are required to comply with stairwell reentry requirements.

Fact: There have been many changes to this section of the code in the last 10 years, which is why there is so much confusion surrounding it. The 2000 edition of the International Building Code (IBC) and the model building codes that existed prior contained reentry requirements for high-rise buildings but required passage sets for stair doors that were not in high-rise buildings. The 2003 edition of the IBC added an exception, which allowed mechanical locks on stair doors if the stair was serving four stories or less. In

the 2006 edition of the IBC, that exception was changed to require remote unlocking from the fire command center or a location inside the building's main entrance, effectively removing the exception for mechanical locks. This language remains unchanged in the 2009 edition of the IBC. Although NFPA 101 – *The Life Safety Code*, and NFPA 5000 – *The Building Construction and Safety Code* do allow mechanical locks on stair doors serving four stories or less, this only applies to buildings where one of these codes is being enforced. The IBC is currently the predominant building code for most jurisdictions, and the majority of buildings must be built in accordance with the IBC.

Myth 2: The door to every fifth floor must be unlocked, but the doors to the rest of the floors can be locked.

Fact: The requirement for every fifth floor to be unlocked is part of the “selected reentry” conditions in NFPA 101 – *The Life Safety Code* and NFPA 5000 – *The Building Construction and Safety Code*. This section requires at least two doors in a stair to be unlocked and no more than four locked floors between unlocked floors; either the top or next-to-top level must be unlocked and must

allow access to another exit, the doors allowing reentry must be marked as such, and doors not allowing reentry must have signage that indicates the closest unlocked door in each direction. Again, this only applies to buildings where one of these codes is being enforced; the IBC does not include the selected reentry option. I have only seen selected reentry used on one project that I have specified, and in my opinion, the codes were being creatively applied in that case.

Myth 3: A fail-safe electric strike can be used on a stair door to provide reentry.

Fact: Stair doors providing reentry must have a fail-safe lock or fail-safe exit device trim that unlocks the lever handle upon fire alarm/power failure but does not unlatch the door. A fail-safe electric strike will not maintain the positive latching required for fire-rated doors, and the pressure from a fire could push the door open, allowing smoke and flames to enter the stairwell. The IBC specifically states that stair doors must unlock “without unlatching.”

Myth 4: The stairwell reentry requirements state that stair doors must unlock automatically upon fire alarm.

Fact: There is a slight distinction between codes, but the IBC states that the stair doors must be “capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building,” while NFPA 101 states that “an automatic release that is actuated with the initiation of the building fire alarm system shall be provided to unlock all stair enclosure doors to allow re-entry.” The same type of hardware—fail-safe

locks or fail-safe exit device trim—is used in either case, but the fire alarm interface will be different. Please note that there are additional requirements for two-way communication in the stairwell when stair doors do not allow free access at all times.

Myth 5: Both sides of a stair door can be locked as long as the door unlocks upon fire alarm.

Fact: I can’t count the number of times an architect or end user has asked me to specify hardware for

Code	Section	Mechanical Locks	Selected Reentry	Electric Locks
NFPA 101	7.2.1.5.7	Allowed on stairs serving four stories or less	Yes, refer to code	Automatic release actuated by the fire alarm system
NFPA 5000	11.2.1.5.2	Allowed on stairs serving four stories or less	No	Automatic release actuated by the fire alarm system
IBC 2009	1008.1.9.10 and 403.5.3	Not allowed	No	Unlocked by signal from fire command center or location inside building main entrance
IBC 2006	1008.1.8.7 and 403.12	Not allowed	No	Unlocked by signal from fire command center or location inside building main entrance
IBC 2003	1008.1.8.7 and 403.12	Allowed on stairs serving four stories or less	No	Unlocked by signal from fire command center

Cook County Administration Fire:


On October 17, 2003, a fire started in a supply room on the 12th floor of the 35-story Cook County Administration Building in Chicago’s Downtown Loop. The fire was relatively small, but the supply room was adjacent to one of the two stairwells in the building that employees could use to evacuate during emergencies. Responding to the fire with 135 firefighters and paramedics and 45 pieces of equipment, the Chicago Fire Department successfully contained and extinguished the fire, but six civilians died from smoke inhalation. To attack the fire, firefighters opened a door that connected the supply room to the building’s southwest stairwell, giving them access to the flames, but also letting smoke escape into the enclosed stairway. Simultaneously, workers were attempting to evacuate the building down the same stairwell, where smoke was now rising as if in a chimney. When the evacuees turned back to exit the smoke-filled stairwell, they found that the doors back into their offices were locked. Luckily an employee on the 27th floor had placed a doorstop in the stairwell door, allowing many of the trapped people to escape the smoke. After the fire was contained, however, firefighters found the bodies of 13 workers who did not make it up to the 27th floor. Fire department personnel revived seven of the victims, but the remaining six suffocated in the stairwell.

a door that is locked all the time except during a fire alarm. If a door is a required egress door, there are *very* limited applications that would allow this—NFPA 101 lists exceptions for certain existing occupancies, buildings permitted to have a single exit, and certain healthcare and detention/correctional occupancies. Most stair doors must allow free egress from the non-stair side at all times, and if there is a need to limit egress, the two options would be delayed egress hardware, which delays egress for 15 seconds, or an alarm to discourage use of the door. Note that delayed egress locks are not allowed in every occupancy type, and there are additional code requirements for doors equipped with delayed egress locks.

Myth 6: Stair discharge doors opening to the exterior must unlock automatically upon fire alarm to allow firefighter access to the stair.

Fact: The IBC specifically states that “*stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.*” There is no requirement in the IBC or NFPA 101/5000 for the exterior doors to automatically unlock and provide firefighter access, although it may be required by some local jurisdictions. Unlocking these doors automatically upon fire alarm would impact the building’s security, and there are other ways for firefighters to gain access. If remote release of the stair discharge doors is required by a local jurisdiction, I would highly recommend that these doors be controlled

by a switch at the fire command center, rather than unlocked automatically upon fire alarm.

Stairwell reentry is an important feature of life safety, and the requirements are often misunderstood or stair doors modified after the building is completed. With proper attention and education, tragedies like the death of six people in Chicago’s Cook County Administration Building (2003) may be averted. 

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