Q&A from Webinar 3 – Introduction to Codes for Electrified Hardware
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Please explain how to lock a door that is exiting from a balcony into the building. Can you lock the door in both directions potentially locking someone out on the balcony but have an intercom or emergency push button to gain access?

The current model codes do not address locking these doors (more securely than with a delayed egress lock) where the path of egress leads from an exterior space through the inside of the building and out to the public way, but a change has been approved for the 2021 edition of the International Building Code (IBC). Technically, this new requirement will only apply in jurisdictions where the 2021 IBC has been adopted, but an AHJ could approve a code modification in other jurisdictions. The change allows these doors to be locked on the exterior side if certain criteria are met, including a two-way communication system. The new section also addresses locks for doors to small balconies serving residential dwelling units and private offices. There is more information in the link below, including a link to the code change proposal and reason statement.

More info: https://idighardware.com/2020/06/decoded-egress-from-exterior-spaces/

How do we obtain the UL listings or manufacturer approvals for the field modification of drilling the raceway on a fire door? Is there a program for drilling raceways in the field? Does the installer need to be certified to do this?

Before modifying a fire door in the field, its best to consult the version of NFPA 80 that has been referenced by the adopted code in that location, as well as the door/frame manufacturer's listings. If the job-site preparation is for surface-mounted hardware, function holes for mortise locks, or one of the other preps specifically allowed by NFPA 80, the prep should not require specific approvals if the required holes are 1-inch diameter or less (cylinder holes can be any diameter). For round holes larger than 1-inch diameter, and for raceways, the door/frame manufacturer should be able to tell you whether their listings allow the preparation to be done as a job-site preparation. If not, the manufacturer can request permission from the listing lab for a field modification. These approvals don't usually require the installer to be certified, although there is a program for raceways (Perfect Raceway) that allows installers certified with that program to prep for the raceway.

More info: https://idighardware.com/2017/10/decoded-alterations-to-fire-door-assemblies/
https://idighardware.com/2018/12/new-maximum-hole-size-for-job-site-preps/

How can you use electric strikes for stairwells, if the door has to unlock to allow reentry, but not unlatch? Can you think of an example of where you could specify electric strikes on fire rated stairwell doors for a building over 5 floors, or do these doors always require electrified locks?

Electric strikes are not typically acceptable for use on fire rated stairwell doors that are required to unlock upon fire alarm or a signal from the fire command center. An electric strike used on a fire door must be fail secure to maintain positive latching, and hardware used for stairwell reentry is typically fail safe. The most common types of hardware used for stairwell reentry are fail safe electromechanical locks, fail safe electrified trim for fire exit hardware, and electromagnetic locks (these are only available fail safe). There are limited locations where electric strikes can be installed on stairwell fire doors – basically, doors where stairwell reentry is not required. NFPA 101 has some exceptions, although the IBC does not. Two examples of locations where I have seen AHJs exempt doors from the stairwell reentry requirements are a) mechanical penthouses where only one stair reaches that level, and b) the level of exit discharge where there is a door leading out of the building and another leading into the building. Neither of these examples is specifically addressed by the model codes, but may be approved by the AHJ.

More info: https://idighardware.com/2012/06/electric-strikes-on-fire-doors/
https://idighardware.com/2017/09/qq-more-on-stairwell-reentry/

Please clarify the occupancies where battery back-up for electrified locks is not allowed - you want this feature in a behavioral health facility, for instance.

The model codes are not clear on the specifics of battery back-up. If the lock is an electromagnetic lock which does not allow free egress when powered, the requirements of NFPA 72 – Fire Alarm Code seem to indicate that the fire alarm system and locking system should be on the same back-up power so the fire alarm will continue to release the lock even when normal building power is out. Otherwise, the lock could be powered by the back-up power, and the fire alarm could be non-functional, so that safety measure would be lost. Since the requirements are not completely clear, AHJs may differ in their interpretation of whether battery back-up is allowed for electromagnetic locks and power bolts. Battery back-up should be acceptable for other types of electrified hardware that allow free egress, independent of the access control system, but it's best to check with the AHJ. The code requirements for battery back-up don't vary for different occupancy types. A cautious approach for a behavioral health facility would be to use the same back-up power system to power both the fire alarm system and the locking system.

More info: https://idighardware.com/2020/06/qq-battery-back-up/

Is there a written summary of the codes for electrified hardware that I can use to help AHJs understand the different sections?

Yes! There is an article in the Allegion Code Reference Guide (pages 34-37), called Decoded: Electrified Hardware Refresher. I will be updating the guide next year to include the 2021 model code changes, but it is current through the 2018 edition. The guide is a free download – the link is below. There is also a link on that page to request hard copies of the guide, which includes door-related information from the commonly-used codes and standards for egress, fire protection, and accessibility.

More info: https://idighardware.com/guide/

Does the code section called "Access Controlled Egress Doors" apply to all doors with access control readers?

This was a common misinterpretation in the past. The intent of the model codes is not for this section to apply to all doors with access control readers – the majority of access-control doors allow free egress via the mechanical operation of the hardware. This section is intended to apply to locks released by a sensor detecting an approaching building occupant – for example, electromagnetic locks. The name of this section has been changed in the IBC, IFC, and NFPA 101, to clarify that it applies to sensor-release applications and not to every door with an access control reader. The IBC Commentary also includes information to help explain the requirements for electrified hardware.

More info: https://idighardware.com/2017/07/decoded-access-controlled-egress-doors-august-2017/

I have heard electric latch retraction panic hardware called "fail safe" but you said it was "fail secure." Which is correct?

This depends on whether we're talking about electric latch retraction from a fire protection/latching perspective or a security perspective. If installed on a fire door, NFPA 80 requires electric latch retraction hardware to be "fail safe" meaning that when power fails, the hardware latches automatically. The same description would be used for automatic-closing doors, where power failure to the hold-open mechanism will allow the door to close automatically. From an access-control perspective, electric latch retraction hardware is fail secure, because when power fails, the door is secure on the access side (although it still allows free egress).

More info: https://idighardware.com/2012/06/qa-electric-latch-retraction-on-fire-doors/

Does requiring a building occupant to "swipe out" (present an electronic credential to a reader) negate the one-motion rule for egress?

That depends on what the "swipe" is actually controlling. If presenting the credential to the reader is shunting an alarm or delayed egress lock, or simply monitoring who is exiting, and the door will allow code-compliant egress even if the credential is not presented, this would be code-compliant. If presenting the access control credential is unlocking the door to allow egress, and egress is not possible without presenting the credential, there are very few applications where this would be code-compliant. One of the applications where this would be allowed by code would be a door with a controlled egress lock, in a health care facility where patients require containment for their safety or security.

More info: https://idighardware.com/2015/10/decoded-delayed-egress-vs-controlled-egress/
https://idighardware.com/2019/01/qq-monitored-or-recorded-egress/

Does the code section on stairwell re-entry require two-way communication to a constantly-attended location if the stair is serving more than 4 stories?

One of the future webinars in this series on electrified hardware will address stairwell reentry in depth, but there is a requirement in the IBC for a two-way communication system in high-rise buildings where stairwell doors are electrically locked on the stair side. The requirement for the communication is not tied to the number of stories, but to the building height. A high-rise building is defined by the IBC as: *A building with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.* In these buildings, where stair doors are locked on the stair side and capable of being unlocked by a signal from the fire command center, the two-way communication device is required at not less than every 5th floor.

More info: https://idighardware.com/2016/08/stairwell-reentry-video/

Can you explain what "render assistance" means for locking elevator lobbies? Does it mean the person providing assistance must be able to perform CPR (for example) when someone has a heart attack while locked out of the rest of the floor?

I have not seen this defined in the codes, but in my opinion, it means that the person at the other end of the telephone must be able to release the door and allow the building occupant to leave the elevator lobby to reach an exit. I don't think the intent of the code is to require the ability to perform CPR or other emergency services, as typically the person calling would be looking for a way out of the elevator lobby and not necessarily needing first aid.

More info: https://idighardware.com/2018/06/qq-elevator-lobby-egress/

Are delayed egress locks allowed in educational occupancies (schools)?

Prior to the 2018 edition of the IBC, delayed egress locks were not allowed in educational occupancies (although NFPA 101 does not prohibit them). Many school districts were looking for ways to prevent elopement of young students or students with special needs, so a code change proposal was approved for the 2018 edition of the IBC. Beginning with this edition, delayed egress locks are allowed on doors serving classrooms in educational occupancies that have a calculated occupant load of less than 50 people. This applies where the 2018 IBC is the adopted code or where a local code modification is approved.

More info: https://idighardware.com/2018/05/decoded-delayed-egress-locking-systems/

Is it code-compliant for a door that accesses an unoccupied roof to be locked from the exterior for security?

This was clarified in the 2018 edition of the IBC and IFC - doors serving unoccupied roofs can be locked on the exterior. Previous editions of the codes included requirements for occupied/occupiable roofs, so the common interpretation was that other roofs – such as a roof used for mechanical equipment - did not have to allow free egress from the roof. NFPA 101 also allows roof doors to be secured on the outside, except for roofs that are used for applications such as rooftop restaurants, roof gardens, swimming pools, and other occupied areas. Some states or local jurisdictions may require free egress from a roof that is accessed by technicians working on mechanical equipment, but it is not required by the model codes.

More info: https://idighardware.com/2019/06/decoded-update-on-roof-doors-august-2019/

For a suite door with an auto operator, must the interior activation switch be active all the time? Ingress is via access control, egress is free.

This is not specifically addressed in the model codes or referenced standards, so this response is based on my interpretation and experience (an AHJ may have a different interpretation). If the door meets the accessibility and egress requirements without the automatic operator, then the interior actuator does not have to be active at all times. If the door does not meet the accessibility requirements for a manually-operated door – including maneuvering clearance – then the interior actuator should be active to ensure that the door is compliant with the adopted codes and standards.

More info: https://idighardware.com/2018/12/decoded-potential-automatic-operator-changes-january-2019/

Why would you ever want a fail safe system? Leaving the building unsecured doesn't seem like a good idea.

There are a few locations where fail safe locks are mandated or preferred – like a door in a health care facility with a controlled egress lock, a door securing an elevator lobby, a door with a lock released by a sensor, or a stair door that is required to unlock for stairwell reentry. For exterior doors it is unusual to see a fail safe lock required, because the doors would be unlocked allowing access to the building if there was a power failure.

More info: https://idighardware.com/2016/08/fail-secure-vs-fail-safe-video/

How are cards or fobs or other objects that need to be pinched or grasped to use the card reader for access considered to be accessible for people with disabilities?

The accessibility standards require operable hardware to be operable without tight grasping, pinching, or twisting of the wrist. Operable parts include levers, thumbturns, keypads, touchpads, and other parts of the hardware. This requirement does not apply to items used to operate the hardware, like keys or electronic credentials. With that said, if an employee was unable to use a key or insert a mag-stripe card, the hardware would likely have to be changed to a lock that could be operated by a prox fob, mobile credential, or other means, to ensure accessibility for the employee.

More info: https://idighardware.com/2016/03/keys-and-the-ada/