

## While you wait for the webinar to begin...

Which of the following applications would typically include fail safe electrified hardware?

Interior stairwell door in  
an office building

Elevator lobby door in  
compliance with NFPA 101

Egress door serving a  
memory care facility



## While you wait for the webinar to begin...

Which of the following applications would typically include fail safe electrified hardware?

Interior stairwell door in  
an office building

Elevator lobby door in  
compliance with NFPA 101

Egress door serving a  
memory care facility



### Welcome to the AIA Continuing Education Webinar on Introduction to the Code Requirements for Electrified Hardware

We will begin in just a few minutes.

Call in: 1-866-430-4132

Conference Code: 3178103300



### Copyright Materials

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.

© Allegion 2020



"Allegion" is a Registered Provider with The American Institute of Architects Continuing Education Systems (AIA/CES). Credit(s) earned on completion of this program will be reported Allegion to AIA/CES for AIA members.

Certificates of Completion for both AIA members and non-AIA members are available upon request.

This course is registered with AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Introduction to the Code Requirements for Electrified Hardware

Course Number:

Class Name: Introduction to the Code Requirements for Electrified Hardware Program:

Provider Number: J247

Learning Units: 1

Provider Name: Allegion

#### Course Description

The model codes that are widely used in the U.S. include sections addressing various applications for electrified hardware and access control systems. The code requirements differ depending on the type of system and the adopted code. This webinar will be the first in a series related to electrified hardware, covering the types of hardware and how the codes may affect them.



2 DHI  
CE Points  
per 1-hour  
webinar



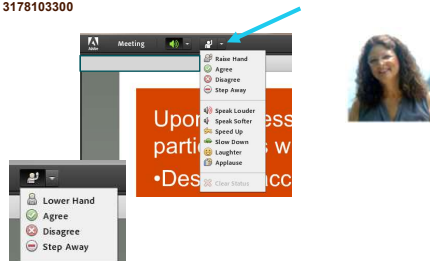
.1 ICC CEU  
per 1-hour  
webinar  
#24967

#### OBJECTIVES

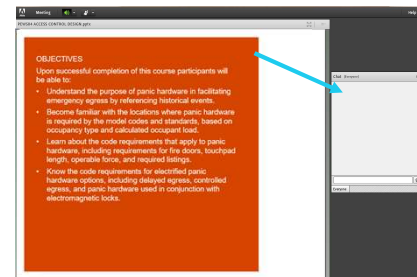
Upon successful completion of this course participants will be able to:

- Identify the types of electromechanical and electromagnetic hardware, and how they are used to create safe and secure openings
- Discuss which code sections apply to the various electrified hardware applications.
- Distinguish between the types of access systems that require fail safe and fail secure hardware.
- Describe the applicable listings and referenced standards that must be applied when using access control and electrified hardware products to ensure all openings are compliant and provide a safe environment for building occupants.

Call in: 1-866-430-4132  
Conference Code: 3178103300



Cheri.Flanagan@allegion.com



Cheri.Flanagan@allegion.com

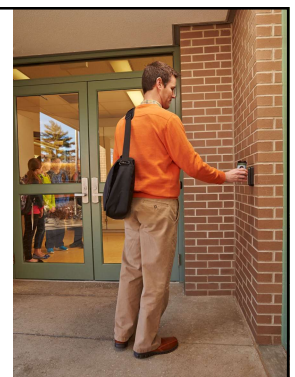
Call in: 1-866-430-4132  
Conference Code: 3178103300



**Lori Greene, DAHC/CDC, CCPR, FDAI**

- Manager, Codes & Resources for Allegion
- Responsible for support and education on building codes, fire codes, accessibility
- Development of NFPA, ICC, and BHMA codes and standards
- 25 years with the Allegion brands
- 33 years in the door and hardware industry
- iDigHardware.com

## Introduction to the Code Requirements for Electrified Hardware





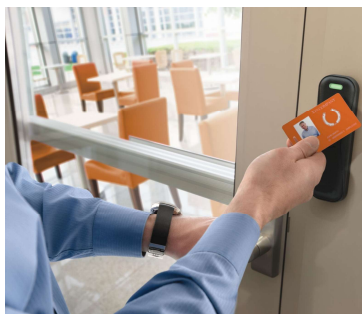
Where is it acceptable by code to have electrified hardware that is locked in the direction of egress and unlocks upon fire alarm activation?

**EMERGENCY EXIT ONLY**  
**PICK UP PHONE FOR EMERGENCY EXIT**



### Code Requirements for Electrified Hardware

- Access Control/Free Egress
  - Electrified Trim
  - Electric Latch Retraction
- Exit Alarms
- Delayed Egress
- Controlled Egress
- Electromagnetic Lock Release
- Stairwell Reentry
- Elevator Lobbies
- Interlocks
- Touchless Openings



### Which codes & standards apply to your project?



### Use Group or Occupancy Classification

- Assembly
- Business
- Educational
- Factory and Industrial
- High Hazard
- Institutional
- Mercantile
- Residential
- Storage
- Utility & Maintenance



**Example:** *Electric locking systems, including electro-mechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the means of egress in Group I-1 or I-2 occupancies...*

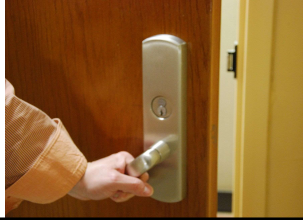
### Means of Egress

- A continuous & unobstructed way of travel from any point in a building or structure to a public way
- Not every door is an egress door
- Not every egress door has an exit sign



### Fail Safe vs. Fail Secure

- Fail Safe (AKA Electrically Locked)
  - When power fails, door is unlocked on access/ingress side
- Fail Secure (AKA Electrically Unlocked)
  - When power fails, door is locked on access/ingress side
- Both types typically allow free egress.



Does the 2016 edition of NFPA 80 allow fire doors be prepped in the field for raceways for electrified hardware?

- NFPA 80 – 2016 & 2019:
  - 4.1.3.2.4 *Drilling raceways for wires when performed at the job site shall be in accordance with the door manufacturer's listing and when permitted by the laboratory with which the door is listed.*
  - 4.1.3.2.5 *Where the door manufacturer's listing does not contain provisions for drilling raceways, the raceways shall be considered field modifications in accordance with 5.1.5.1.*
  - 4.1.3.2.3 *Holes exceeding a diameter of 1 in. (25.4 mm) shall be permitted for surface-applied hardware installed in accordance with the door manufacturer's listing and the hardware manufacturer's listing.*

### Common Types of Electrified Hardware



### Exit Alarm

- Audible alarm when someone exits
- Does not restrict egress
- Often battery-operated
- Not all exit alarms are listed as panic hardware



Sometimes an alarm is the most secure solution you can offer.



Photo: Joy Davis

### Electric Strike

- Replaces standard strike for lockset or panic hardware
- Latchbolt captured in area behind keeper
- Keeper controlled electrically
- Typically used for access control
- Available fail safe or fail secure
- Electric strikes for fire door assemblies must be fail secure
- Strike does not affect egress



### Electromechanical Lock

- Power controls whether lever can be turned to retract the latch
- Integral or separate access control reader
- Typically allows free egress
- Available fail safe or fail secure



### Electrified Trim for Panic Hardware and Fire Exit Hardware

- Power controls whether lever can be turned to retract the latch
- Integral or separate access control reader
- Typically allows free egress
- Available fail safe or fail secure



### Electric Latch Retraction Panic Hardware / Fire Exit Hardware

- Apply power, latch retracts
- Remove power, latch projects
- Access control
- Automatic doors
- Fire doors with push/pull function
- Fail secure (always latched when power is removed)



### Electromagnetic Lock

- Electromagnet in housing bonds to steel armature on door to lock the door
- Separate sensor/switch needed to release for egress
- Always fail safe





### Is battery backup allowed for electromagnetic locks?

- Codes require mag-locks to unlock upon loss of power, but "loss of power" is not defined.
  - Is this loss of normal building power?
  - Can the lock be powered by the emergency generator along with the rest of the building?
- NFPA 72 Interpretation - if the fire alarm system and mag-locks are on the same back-up power, this would meet the intent of the code.
- Do not specify or supply separate battery back-up in the power supply for mag-locks.



### Delayed Egress Lock

- Delays egress – typically for 15 seconds
- May be combined with access control
- Panic hardware or electromagnetic lock
- Immediate egress when power is removed



**PUSH UNTIL ALARM SOUNDS  
DOOR CAN BE OPENED IN 15 SECONDS**

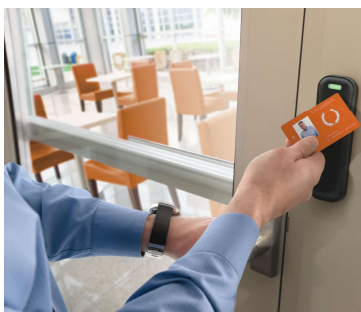


### Common Types of Electrified Hardware



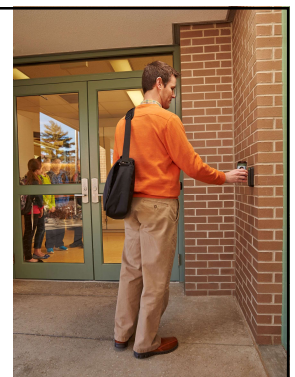
### Code Sections Applicable to Electrified Hardware

- Access Control/Free Egress
- Monitored Egress
- Delayed Egress
- Controlled Egress
- Electromagnetic Lock Release
- Stairwell Reentry
- Elevator Lobbies
- Interlocks
- Touchless Openings



### Access Control / Free Egress

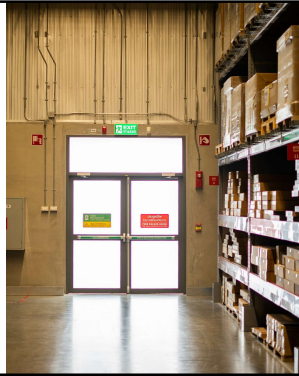
- Reader controls access
- Hardware allows free egress
- Not considered a "special locking arrangement"
  - Electric strike
  - Electromechanical lock
  - Electrified trim for panic hardware
  - Electric latch retraction





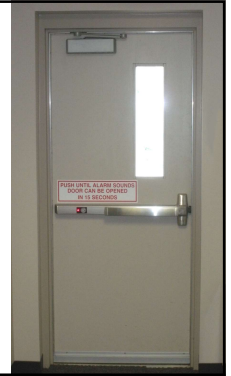
### Monitored Egress

- May have reader on egress side to shunt alarm
- Does not prevent egress
- Exit alarm
- Signal to security system and/or access control system



### Delayed Egress

- Delays egress for 15 seconds to prevent theft or elopement (30 seconds when approved by AHJ)
- Must allow immediate egress upon power failure and activation of fire alarm/sprinkler system
- Not allowed in all occupancy types
- Delayed egress panic hardware or fire exit hardware
- Delayed egress electromagnetic lock
- Electromagnetic lock with delayed egress controller



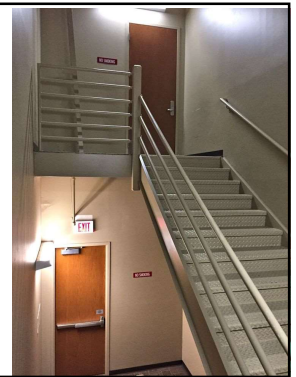
### Controlled Egress in Health Care

- Allowed where patients require containment (ex: memory care, nursery)
- Egress is prevented until evacuation is needed
- Staff must be able to evacuate patients
- Controlled egress panic hardware or fire exit hardware
- Fail safe electromechanical lockset
- Electromagnetic lock
- Rarely: fail safe electric strike or electrified trim for panic hardware



### Stairwell Reentry

- Allows building occupants to leave stairwell and reenter building through locked doors
- Stair side lever unlocks:
  - upon fire alarm (NFPA 101), or
  - upon signal from fire command center or other location (IBC/IFC)
- Fire exit hardware with fail safe electrified trim
- Fail safe lockset
- Electromagnetic lock



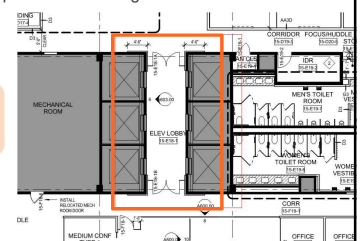
### Electromagnetic Lock Release

- 2 ways to release – sensor above door or switch in door-mounted hardware
- RX switch in panic hardware:
  - Lock must unlock upon loss of power
  - Fire alarm release and auxiliary push button not required by the model codes
- Electromagnetic lock



### Elevator Lobbies

- NFPA 101 allows door from elevator lobby to tenant space to be locked if certain criteria are met
- IBC requires at least one code-compliant means of egress out of the elevator lobby
- Some city/state codes have modifications similar to NFPA 101
- Fail safe electromechanical locks
- Electromagnetic locks



### Interlocks

- Set of 2 or more doors
- When one door is open, the other door(s) can not be opened
- Model codes do not currently address interlocks – need AHJ approval
- Electromagnetic locks
- Electromechanical locksets



### Touchless Openings

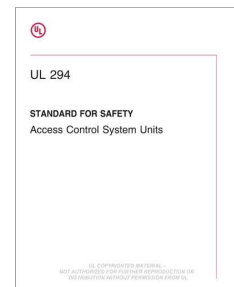
- Automatic operators allow hands-free operation
- Codes and standards impact these openings
- Next webinar!
- Electric strikes
- Electric latch retraction panic hardware
- Electromagnetic locks



### UL 294 – Standard for Safety Access Control System Units

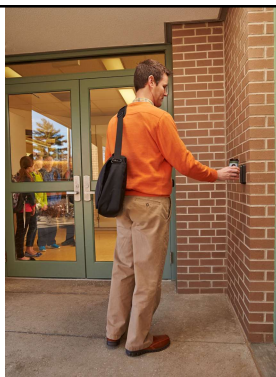
- UL 294 listing is **NOT** required by code for all types of access control systems
- The listing **IS** required by code for:
 

Delayed Egress Locks	15 Second Delay
Controlled Egress Locks	Health Care Only
Sensor Release	Typically Electromagnetic Locks
Door-Hardware Release	
Elevator Lobby Locks	NFPA 101 Only




### Conclusion


- Fail safe vs. fail secure
- Types of electrified hardware
- Applicable code sections
- Field preps on fire doors
- Battery backup for mag-locks
- Listings including UL 294





**Thank You!**  
This concludes the American Institute of Architects  
Continuing Education Systems Program  
© Allegion






# iDigHardware.com/webinars

Answers to your door, hardware, and code questions from  
Allegion's Lori Greene.

Search




HomeAboutAllegionArticlesCode LinksToolsTopicsFavorite PostsLog Out

Webinars

## Webinar 3: Introduction to the Code Requirements for Electrified Hardware

Thursday June 18th, 2020

The model codes that are widely used in the U.S. include sections addressing various applications for electrified hardware and access control systems. The code requirements differ depending on the type of system and the adopted code. This webinar



### Subscribe to updates

Sign up to receive the latest daily or weekly posts from iDigHardware.

Sign Up Here

