

Decoded: Delayed Egress & Controlled Egress Locking Systems





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- 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
- 26 years with the Allegion brands
- 35 years in the door and hardware industry
- iDigHardware.com

Delayed Egress vs. Controlled Egress

Delayed Egress

- Releases to allow egress 15 seconds after an attempt to exit is made
- Audible alarm and signage
- Used to deter theft and elopement

Controlled Egress

- Releases to allow egress when evacuation is needed
- No audible alarm or signage required
- Used in health care units where patients require containment for their safety or security



How delayed egress works:

- Building occupant attempts to exit
- Actuating the hardware or moving the door starts timer
- 15 seconds (or 30 seconds) later the door will allow egress
- Immediate egress is allowed:
 - Upon actuation of fire alarm or sprinkler system
 - Upon loss of power
 - Upon remote signal



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

How controlled egress works:

- Door stays locked until egress is needed
- Immediate egress is allowed:
 - Upon actuation of fire alarm or sprinkler system
 - Upon loss of power
 - Upon remote signal
- Staff must have the ability to unlock the doors if evacuation is required

ONLY ALLOWED IN
CERTAIN TYPES OF
HEALTH CARE
UNITS



Common Applications

Delayed Egress

- Retail stores – to deter theft
- K-12 Classrooms – to deter elopement
- Courtrooms – to deter access to judge/jury areas



Controlled Egress

- Memory care
- Maternity & nursery
- Pediatrics
- Emergency dept.
- Behavioral health



Hardware used in delayed egress systems

- Delayed egress panic hardware
- Electromagnetic lock with delayed egress circuitry
- Electrified hardware with a delayed egress controller

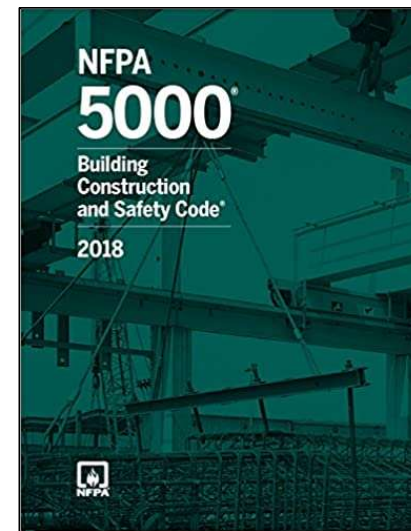
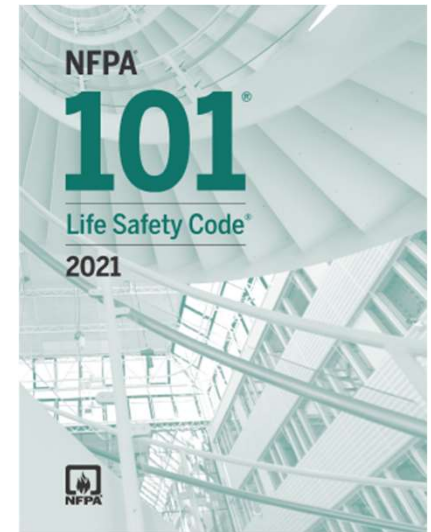
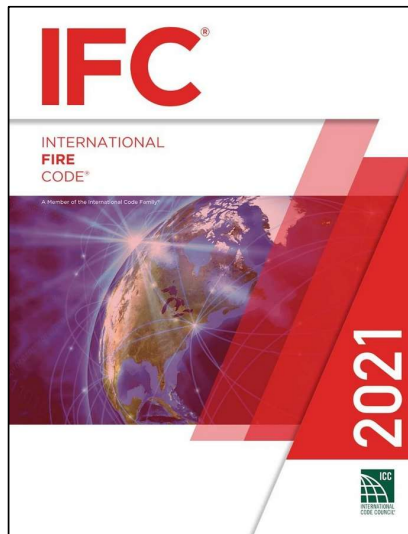
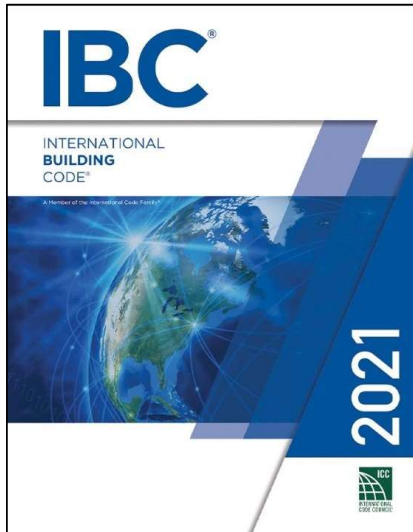


Hardware used in controlled egress systems

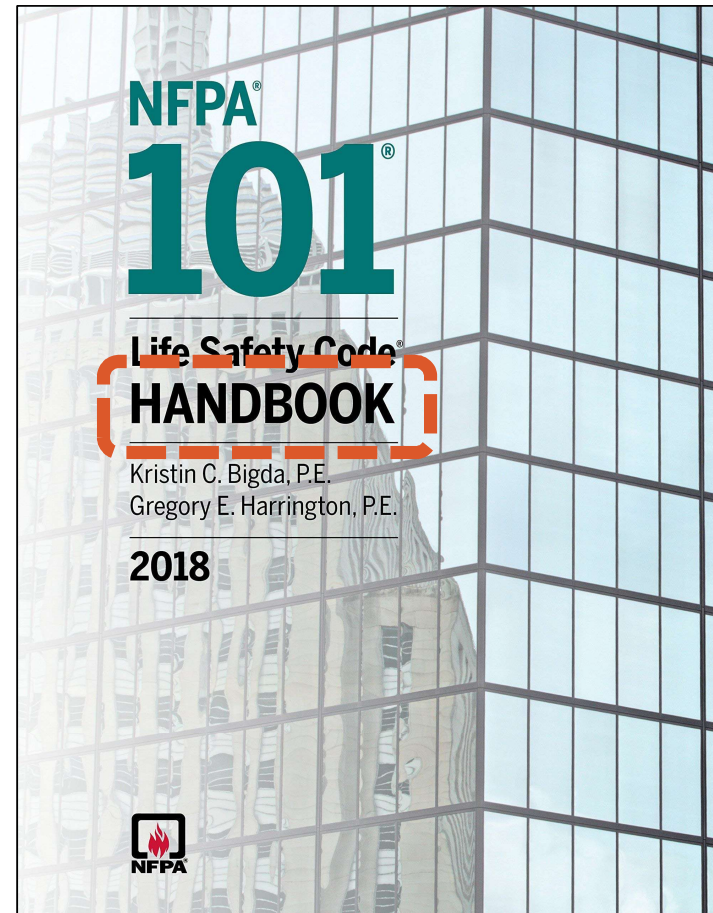
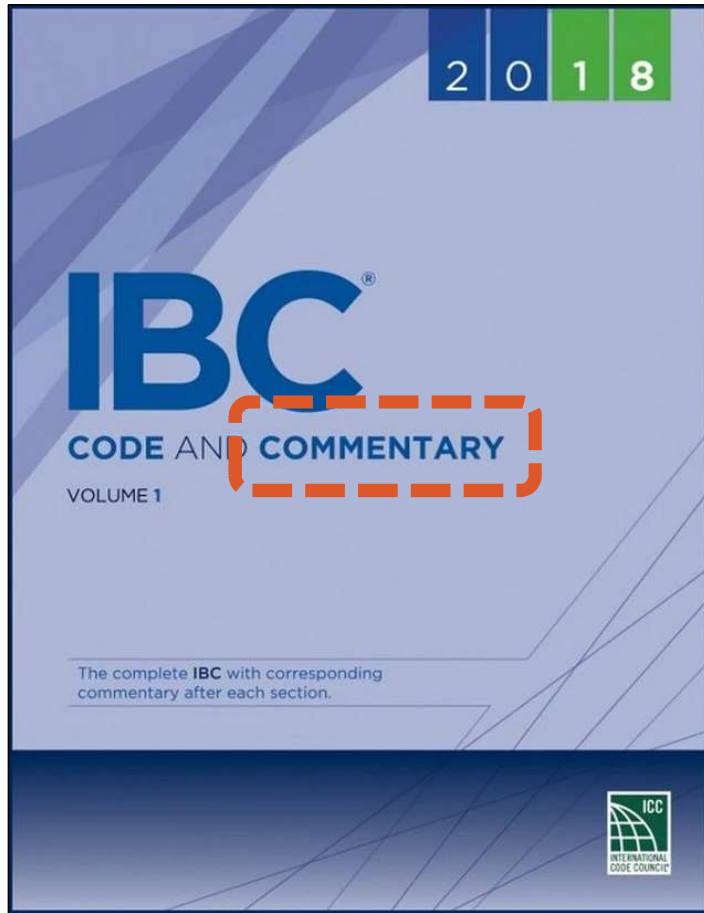
- Controlled egress panic hardware
- Electromagnetic lock
- Electromechanical lock
- FAIL SAFE



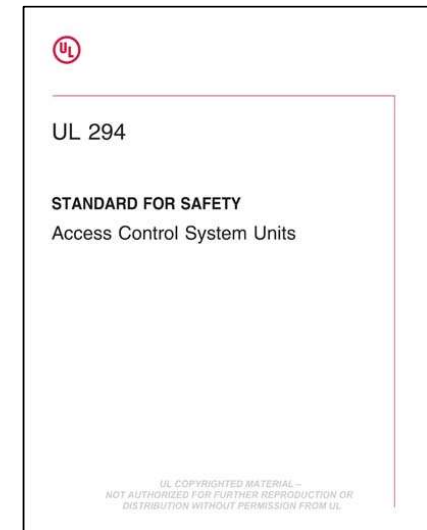
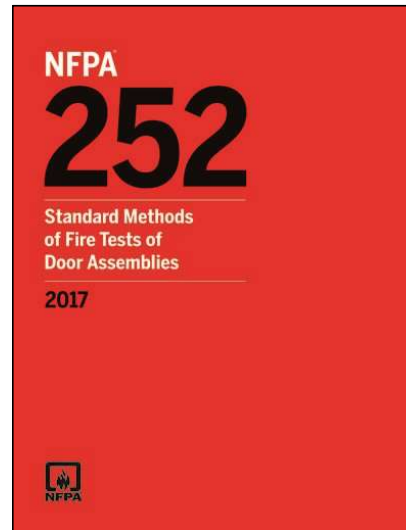
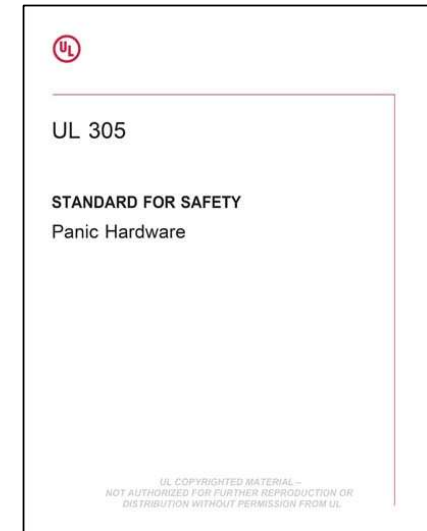
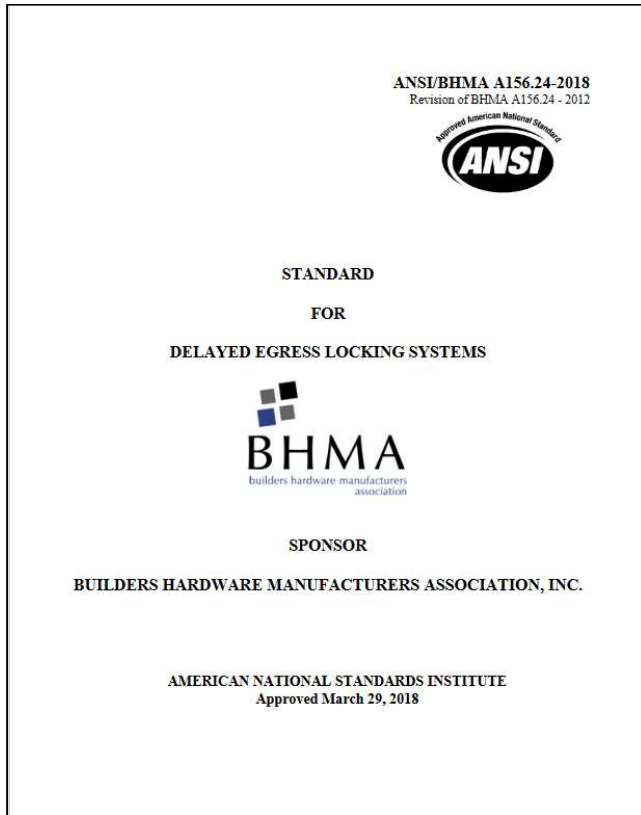
I-Codes vs. NFPA



Commentary and Handbook Editions



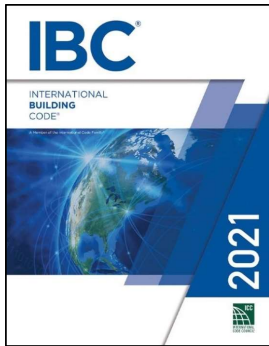
Referenced Standards



State/local code modifications

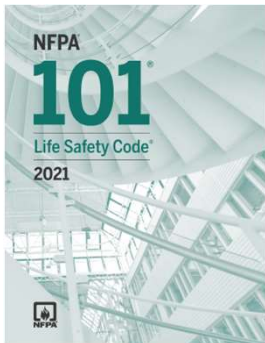


Code Requirements Addressed for Each Application



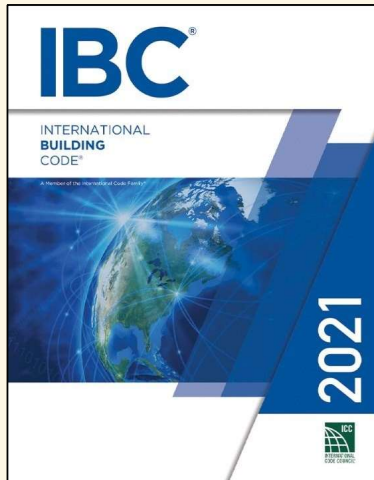
- Applicable code sections
- Use groups / occupancy classifications
- Required fire protection systems
- Actuation time
- Automatic release delay
- Rearming after actuation
- Audible alarm
- Signage requirements

- Action upon activation of fire alarm / sprinkler system
- Action upon power failure
- Remote release
- Staff release
- Emergency lighting
- Quantity per egress path
- Required listings



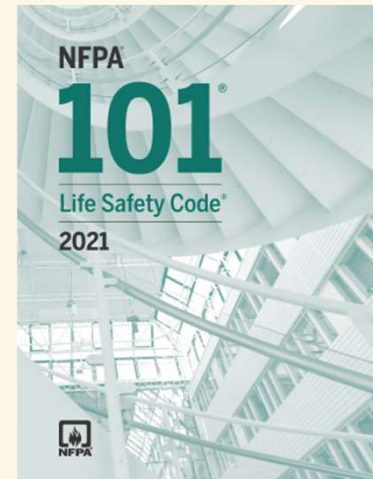
Code requirements for delayed egress systems





Delayed Egress

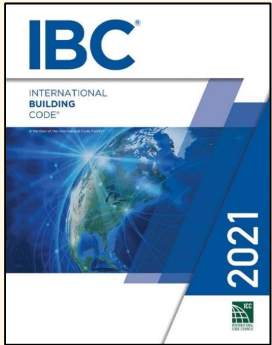
- 2021 – 1010.2.13
- 2018 – 1010.1.9.8
- 2015 – 1010.1.9.7
- 2012 – 1008.1.9.7
- 2009 – 1008.1.9.7



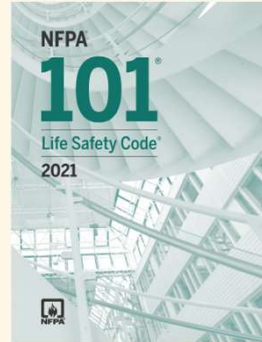
Delayed Egress Electrical Locking systems

- 7.2.1.6.1

DE – Use Groups / Occupancy Classifications



- Any use group except:
 - A (assembly)
 - E (educational)
 - H (high hazard)
- Changes made in 2018 IBC



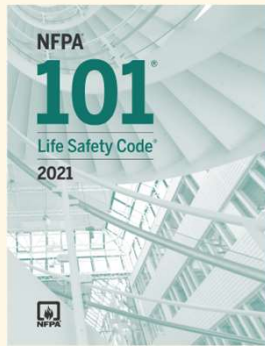
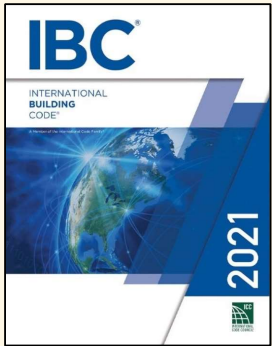
- Low and ordinary hazard contents
- Assembly - permitted except on main entrance/exit doors, not allowed on airport jetways
- Educational, Day-Care, Health Care, Ambulatory Health Care, Hotels and Dormitories, Apartment Buildings, Mercantile, Business, Industrial, Storage - permitted with no restrictions
- Lodging or Rooming Houses - limited to one delayed egress device per escape path
- Residential Board and Care - limited to exterior doors only

DE – 2018 IBC Changes

- 2018 IBC Changes
 - Previous editions of the IBC did not allow delayed egress in assembly or educational use groups
 - Secondary exits from courtrooms - building must have sprinkler system
 - Classroom doors serving less than 50 occupants



DE – Required Fire Protection Systems



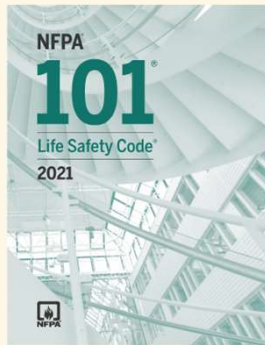
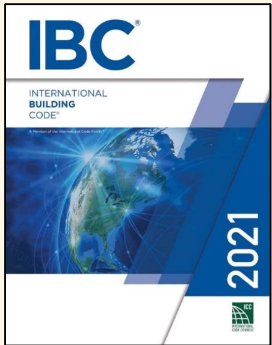
- Equipped throughout with an automatic sprinkler system or approved automatic smoke or heat detection system.



OR



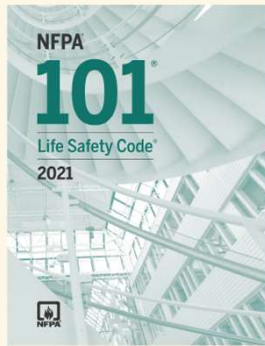
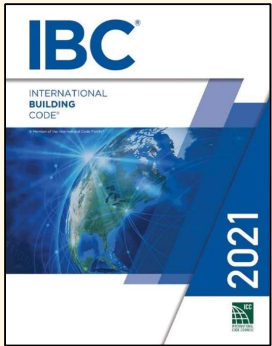
DE – Actuation Time



- Up to 3 seconds when force of 15 pounds is applied.
- Prior to the 2015 IBC, actuation was required after 1 second.



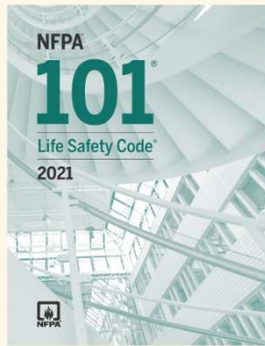
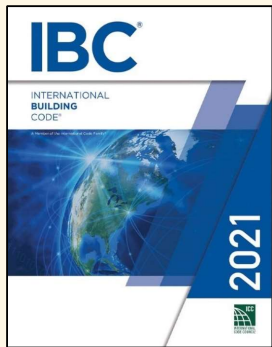
DE – Automatic Release Delay



- 15-second delay before lock releases to allow egress (30 seconds with AHJ approval).



DE – Automatic Release Delay



- 15-second delay before lock releases to allow egress (30 seconds with AHJ approval).

PUSH UNTIL ALARM SOUNDS.
DOOR CAN BE OPENED IN 30 SECONDS.



Corona shooting: Emergency-exit doors were designed to wait 15 seconds before opening

The system has been taken down for now, but not because it's illegal — it awaits outcome of a plan review



When shots rang out the night of Friday, June, shoppers hustled to the emergency exits.

Some struggled with the doors, failing to get them open, and instead hid or quickly made their way to the main exit at the front of the store.

Those emergency doors, it turns out, were designed to not open instantly.

They were equipped with 15-second delays from when the so-called panic bar is pushed until the doors open with alarms sounding off. Signs on the doors explain this — although someone trying to escape a shooting understandably may miss them.

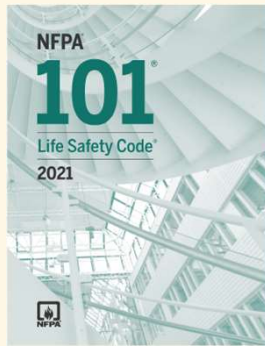
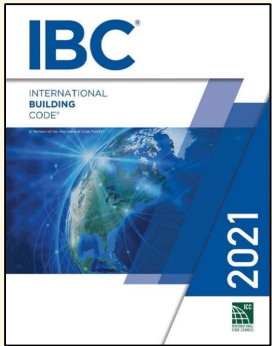
The system meets a state building code on emergency doors that Corona chose to adhere to.



DELAYED
EGRESS
APPLICATION
WAS CODE-
COMPLIANT.



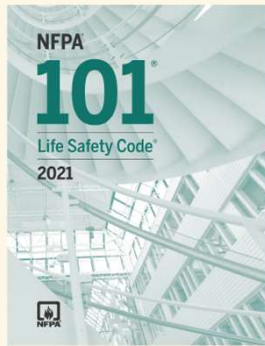
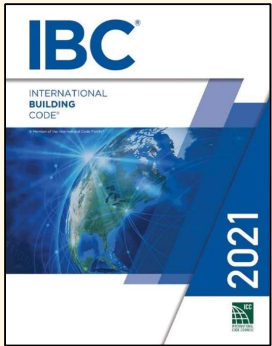
DE – Rearming After Actuation



- Manual rearm required after 15-second timer is actuated.



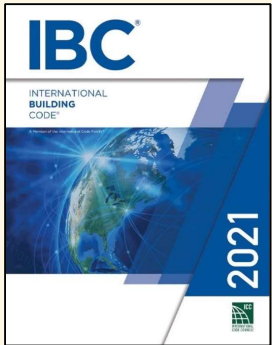
DE – Audible Alarm



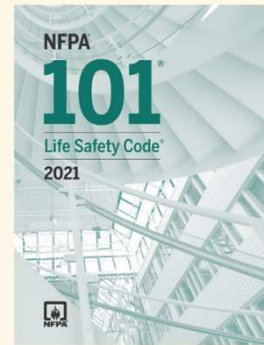
- Audible alarm required.



DE – Signage Requirements



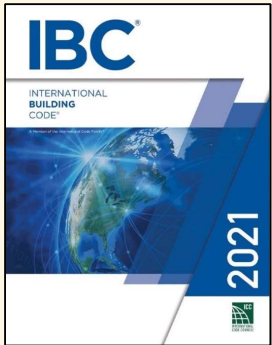
- Required Signage: "Push [pull] until alarm sounds. Door can be opened in 15 [30] seconds."
- Must be on the door above and within 12 inches of the door exit hardware.
- New in 2015: Signage must comply with A117.1 requirements.
- In Group I occupancies, AHJ may allow signage to be omitted for certain types of treatment areas.



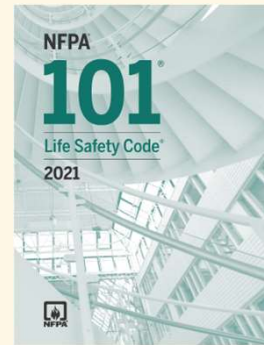
- Required Signage: "Push [pull] until alarm sounds. Door can be opened in 15 [30] seconds."
- Signage must be readily visible, durable, with letters not less than 1-inch high and 1/8-inch stroke with a contrasting background, located on the door adjacent to the release device on the egress side.

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

DE – Signage Requirements



- Required Signage: "Push [pull] until alarm sounds. Door can be opened in 15 [30] seconds."
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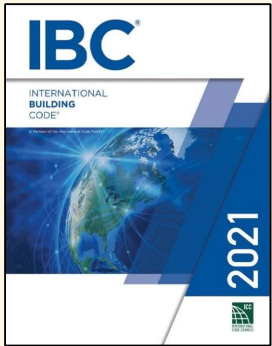
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**PUSH UNTIL ALARM SOUNDS.
DOOR CAN BE OPENED IN 15 SECONDS.**

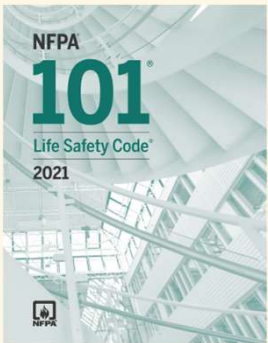
PUSH UNTIL ALARM SOUNDS
DOOR CAN BE OPENED
IN 15 MINUTES

???

DE – Action upon activation of the fire alarm or sprinkler system



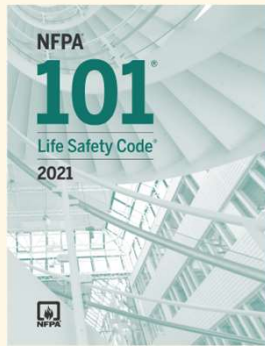
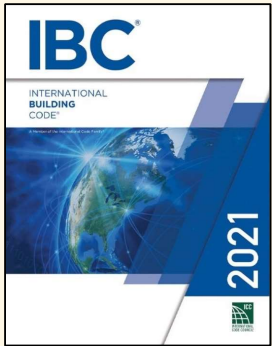
- Unlock for immediate egress – no delay.



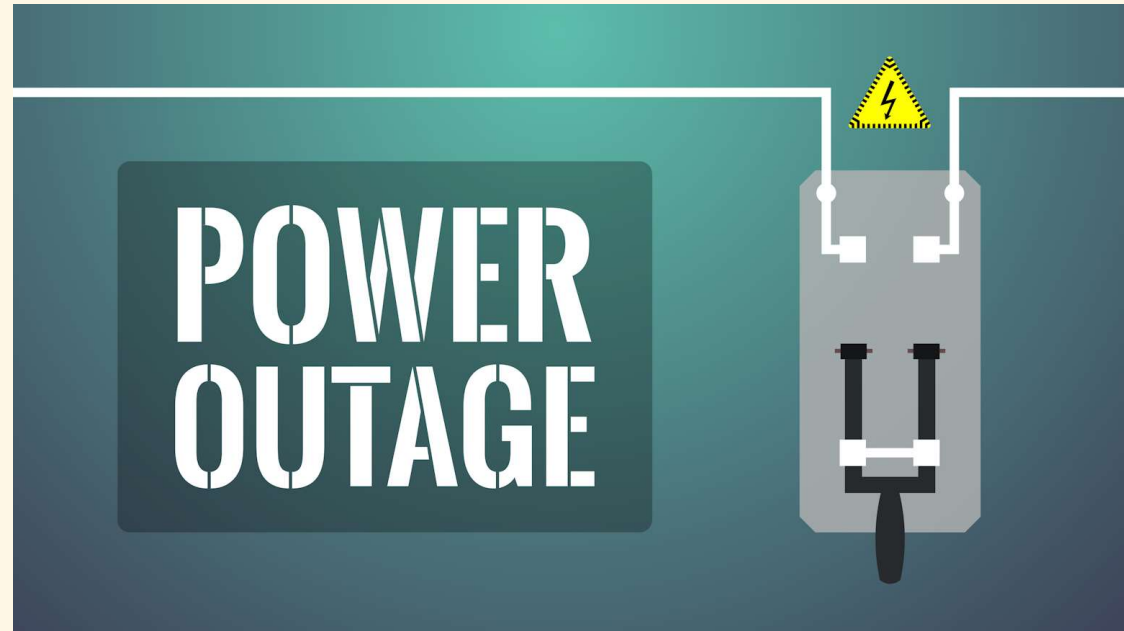
- Unlock (no delay) in the direction of egress upon actuation of sprinkler system, or not more than one heat detector, or not more than two smoke detectors



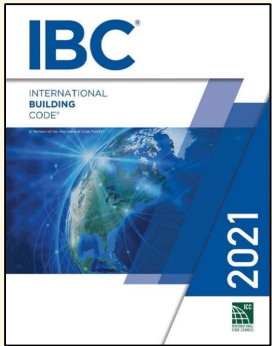
DE – Action upon power failure



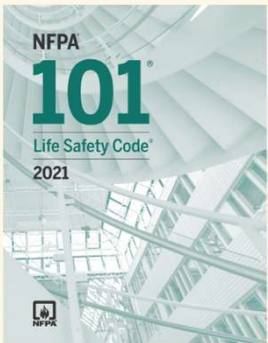
- Unlock for immediate egress - no delay.



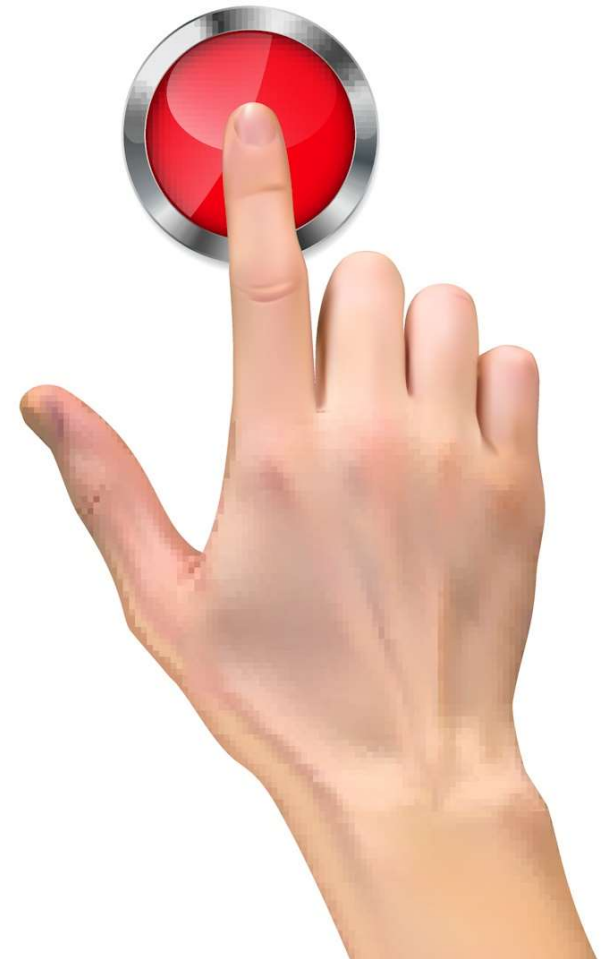
DE – Remote Release



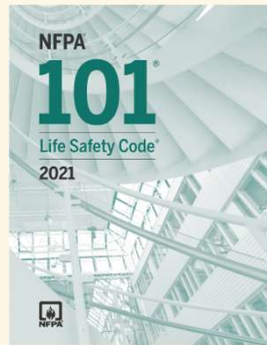
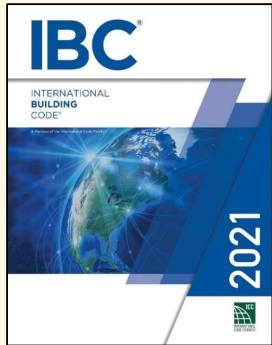
- Capable of being deactivated at the fire command center and other approved locations.



- NFPA 101 does not address remote release of delayed egress locks.



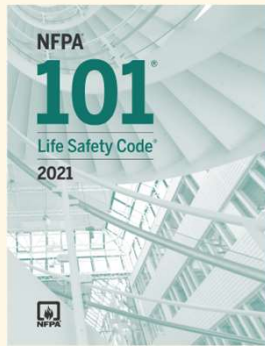
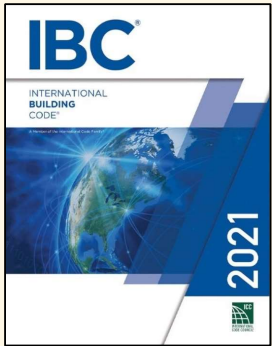
DE – Staff Release



- Not required



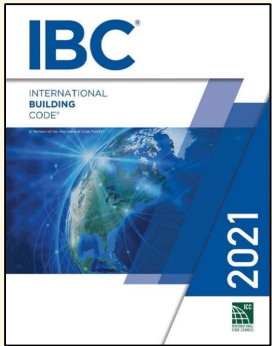
DE – Emergency Lighting



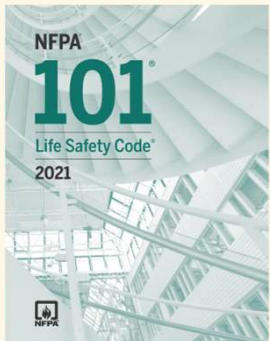
- Required on the egress side of the door



DE – Quantity per egress path



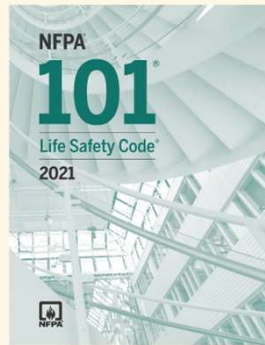
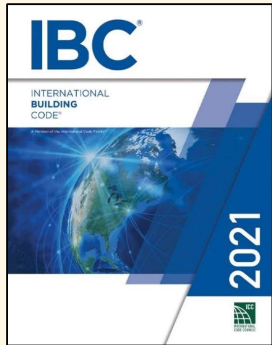
- One delayed egress lock per egress path.
- Institutional occupancies:
 - 2 doors with delayed egress locks per egress path - maximum combined delay of 30 seconds (I-1, Condition 1 or I-4 – must have sprinkler system)



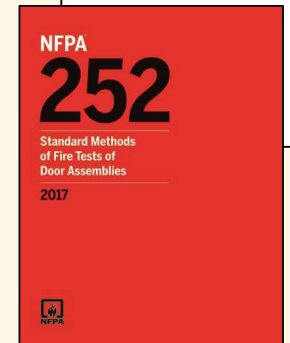
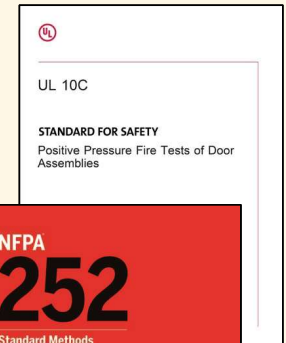
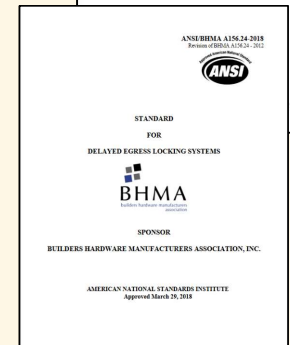
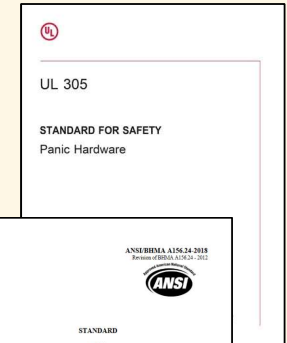
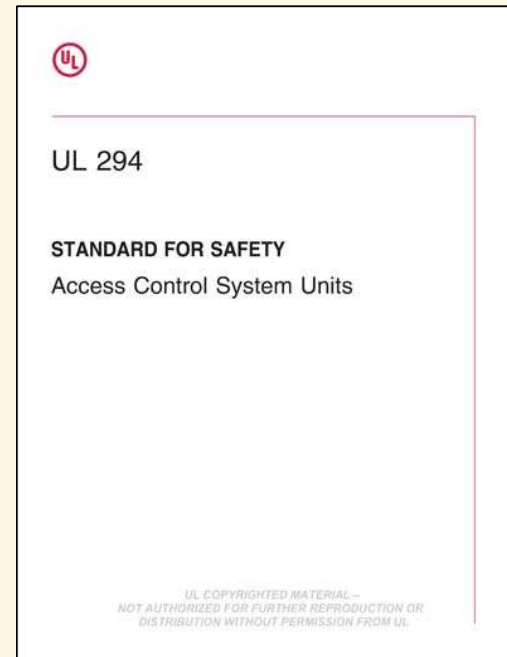
- Lodging or Rooming Houses - limited to one delayed egress device per escape path
- Assembly - permitted except on main entrance/exit doors, not allowed on airport jetways
- Residential Board and Care - limited to exterior doors only
- Other occupancies – no restrictions



DE – Required Listings

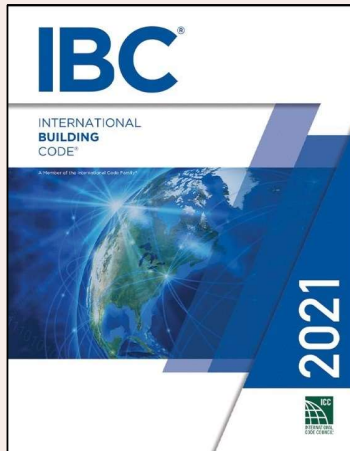


- UL 294 – Standard for Access Control System Units
- UL 10C or NFPA 252 - fire door assemblies
- UL 305 / BHMA A156.3 - panic hardware
- Other BHMA standards not referenced by the model codes (ex. A156.24)



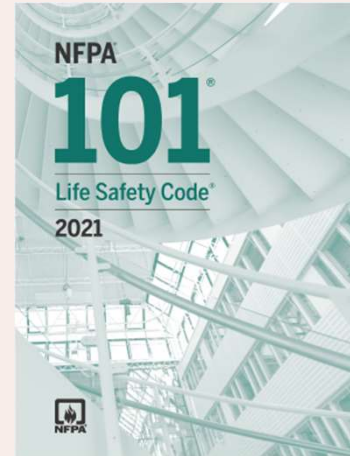
Code requirements for controlled egress systems





Controlled Egress Doors in Groups I-1 and I-2

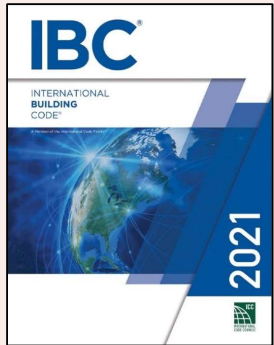
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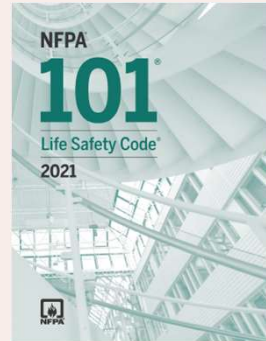
Door Locking Arrangements

- 18.2.2.2.5 (new)
- 19.2.2.2.5 (existing)
- Also refer to
Ambulatory Health
Care Chapters

CE – Use Groups / Occupancy Classifications

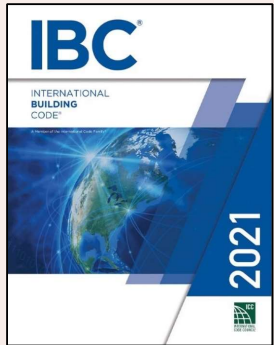


- Use Group I-1 and I-2 - where the clinical needs of persons receiving care require their containment
- Prior to the 2015 edition, this section was limited to Use Group I-2.

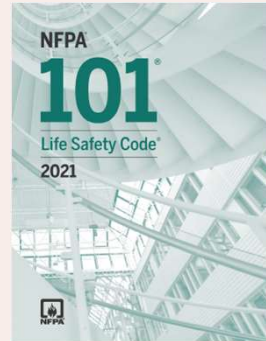


- New and Existing Health Care Occupancies - where patient special needs require specialized protective measures for their safety
- Where specialized security measures are needed – automatic release is not required (staff release only)
- Also refer to 20.1.3.6 (New Ambulatory Health Care) and 21.1.3.6 (Existing Ambulatory Health Care).

CE – Required Fire Protection Systems



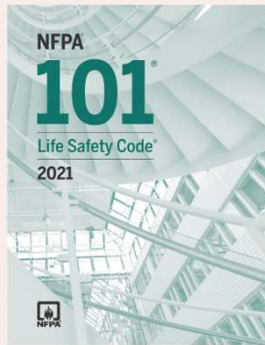
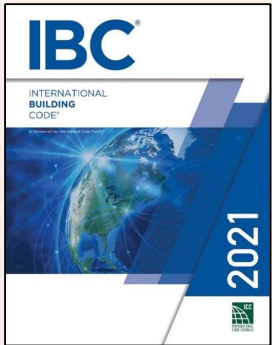
- Equipped throughout with an automatic sprinkler system or approved automatic smoke or heat detection system



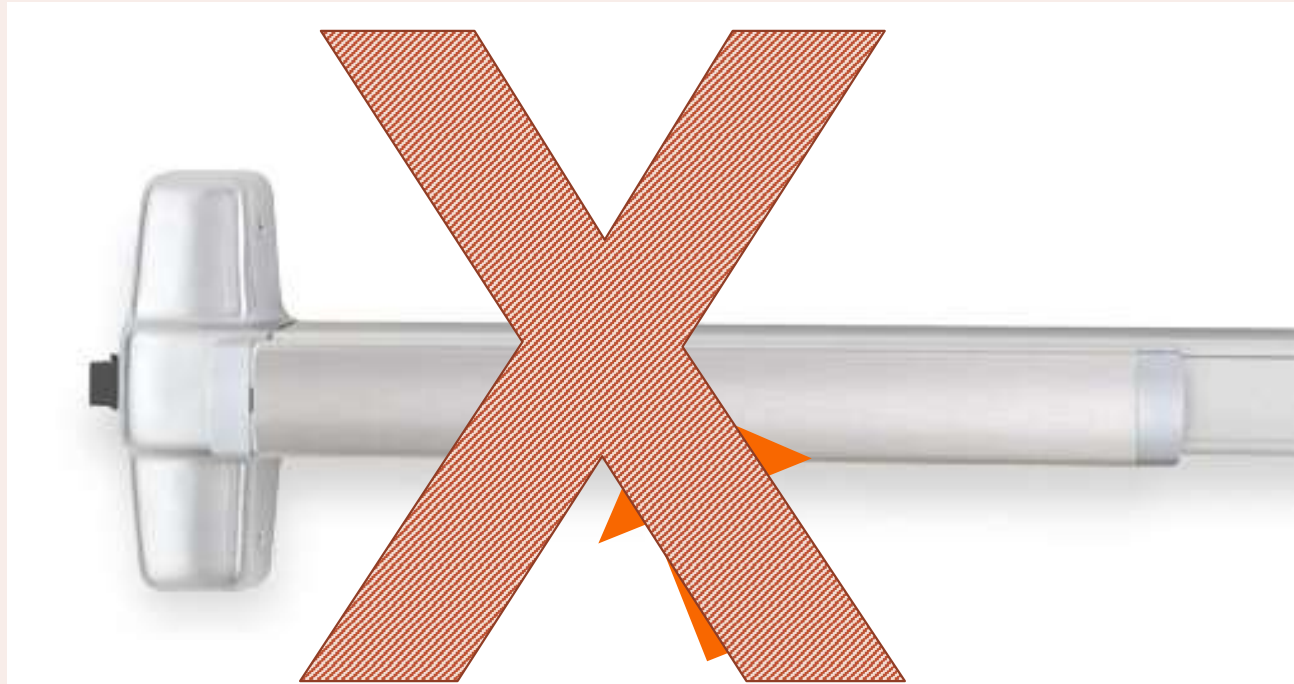
- Protected throughout with a supervised automatic sprinkler system,
- AND 1 of the following:
 - a) complete smoke detection system throughout the locked space, OR
 - b) ability to remotely unlock doors from an approved location within the locked space that is constantly attended.



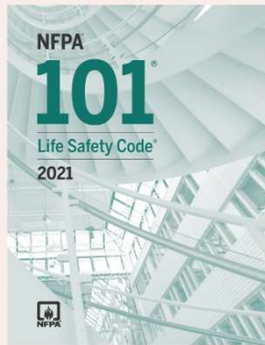
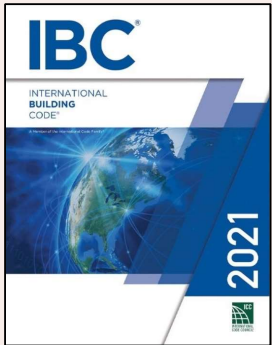
CE – Actuation Time



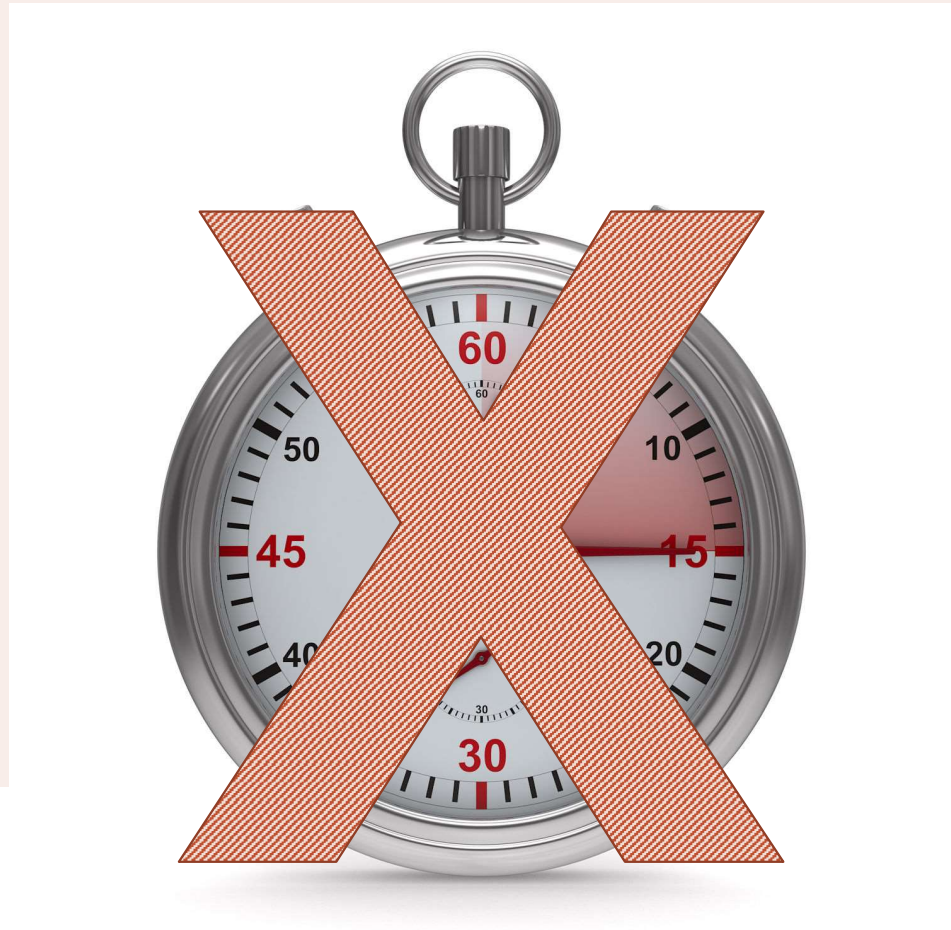
- Release is not required to be actuated by an occupant attempting to operate the door.
- Pushing the touchpad does not initiate a release timer.



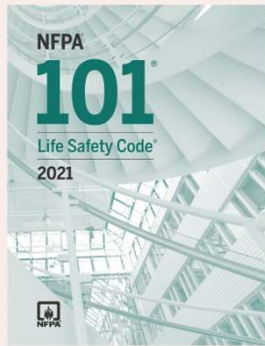
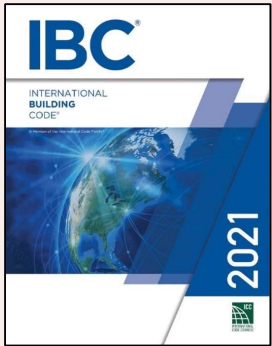
CE – Automatic Release Delay



- Lock is not required to release automatically after actuating the door hardware.



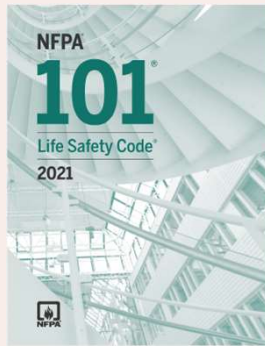
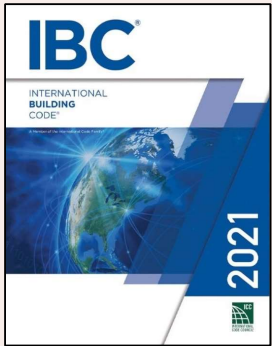
CE – Rearming After Actuation



- Not specifically addressed in the model codes.



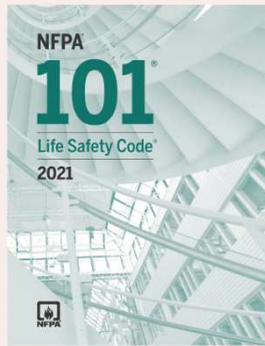
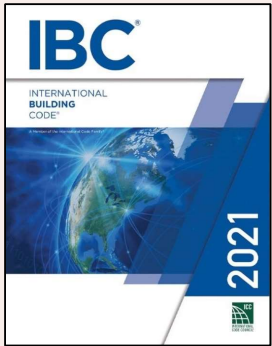
CE – Audible Alarm



- Audible alarm NOT required.



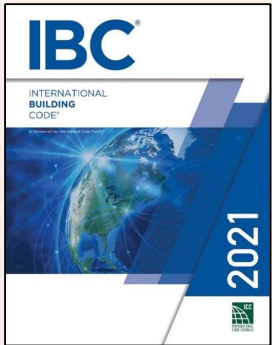
CE – Signage Requirements



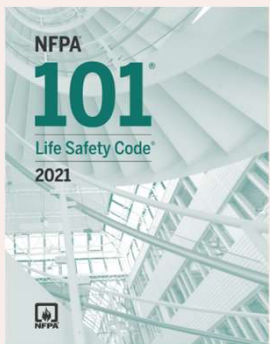
- Signage not required

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

CE – Action upon actuation of the fire alarm / sprinkler system



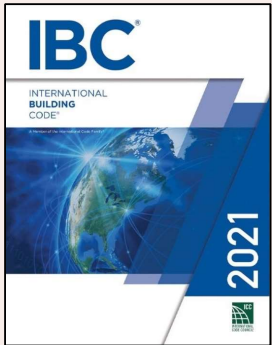
- Unlock for immediate egress
 - not required for psychiatric or cognitive treatment areas
 - not required when a listed child abduction system is used



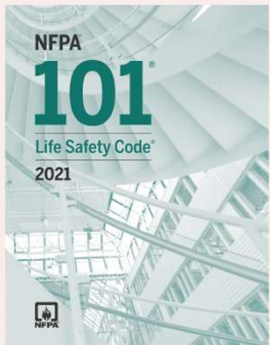
- Unlock for immediate egress upon activation of the smoke detection system, waterflow in the automatic sprinkler system
 - not required where patients require specialized security measures or pose a security threat



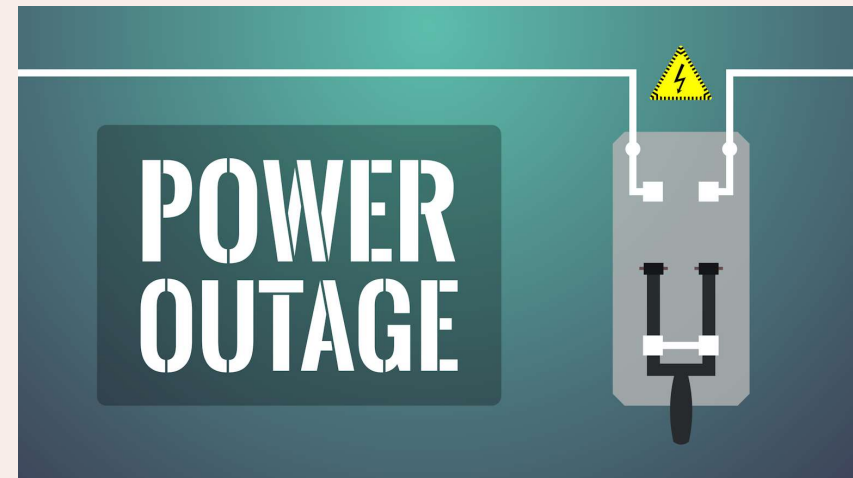
CE – Action upon power failure



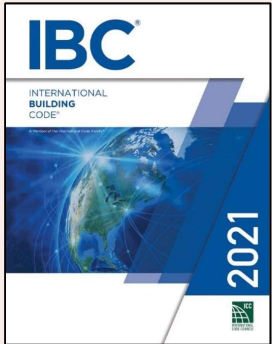
- Unlock for immediate egress
 - not required for psychiatric or cognitive treatment areas
 - not required when a listed child abduction system is used



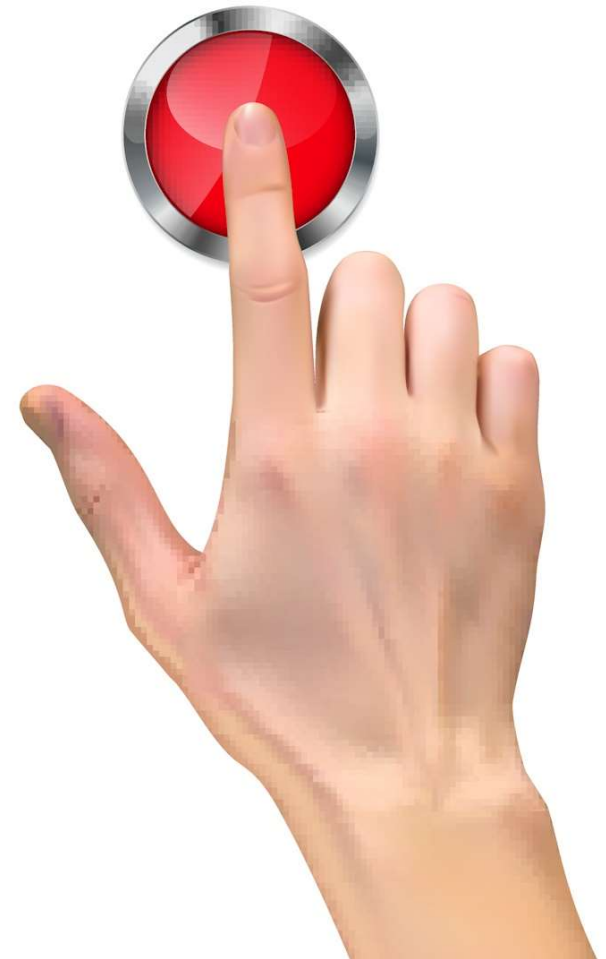
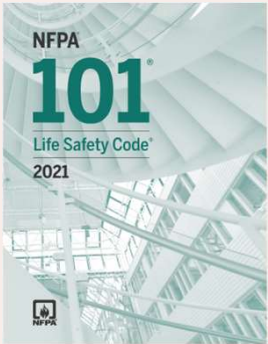
- Unlock for immediate egress
 - not required where patients require specialized security measures or pose a security threat



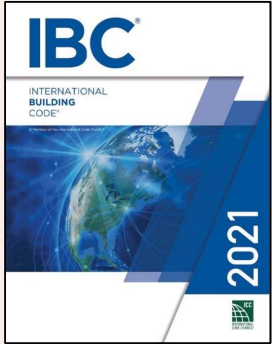
CE – Remote Release



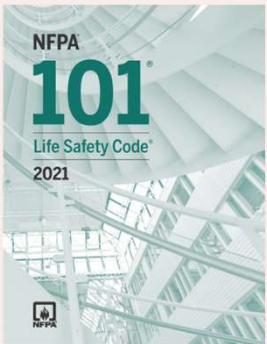
- Switch which directly breaks power to the lock, located at the fire command center, nursing station, or other approved location
 - not required for psychiatric or cognitive treatment areas
 - not required when a listed child abduction system is used
- Remote control of locks is one option for rapid removal of occupants.
- New occupancies - remote control must be from within the locked area



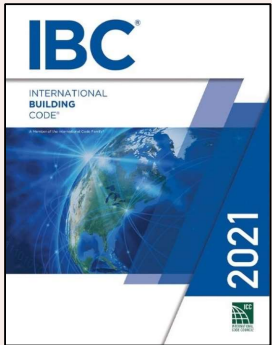
CE – Staff Release



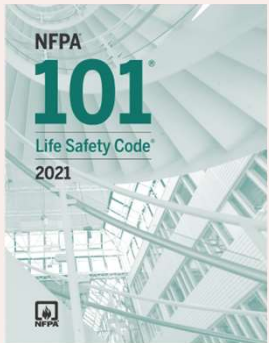
- Procedures for unlocking doors must be part of emergency plan.
- All clinical staff must carry keys, codes, or other credentials to unlock doors.
- Staff can readily unlock doors at all times.
- Rapid removal of occupants facilitated by:
 - a) remote control of locks
 - b) keys carried by staff at all times, or
 - c) other reliable means always available to staff



CE – Emergency Lighting



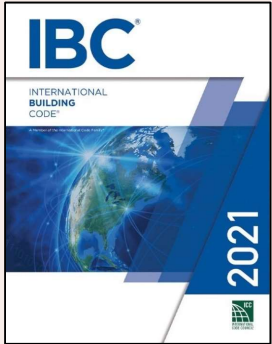
- Required on the egress side of the door



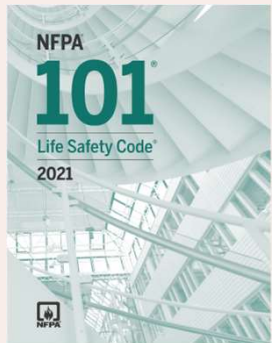
- Emergency lighting is not referenced in this section



CE – Quantity per egress path



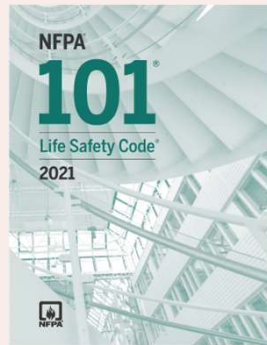
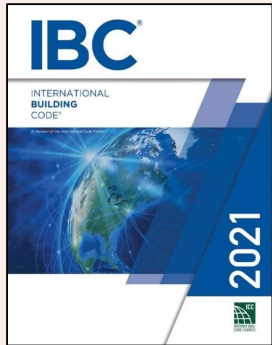
- Occupant must not be required to pass through more than one controlled egress lock before entering an exit
 - not limited for psychiatric or cognitive treatment areas
 - not limited when a listed child abduction system is used



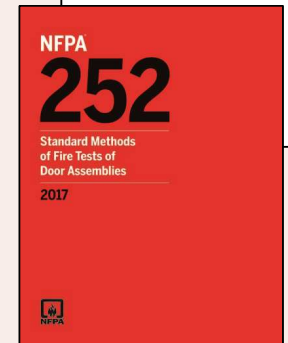
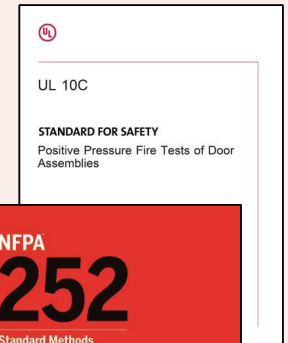
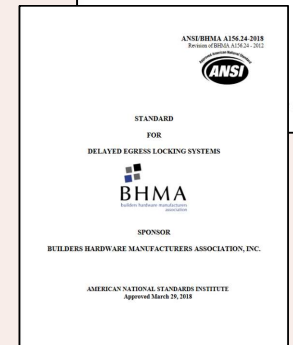
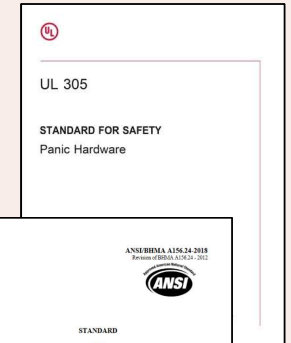
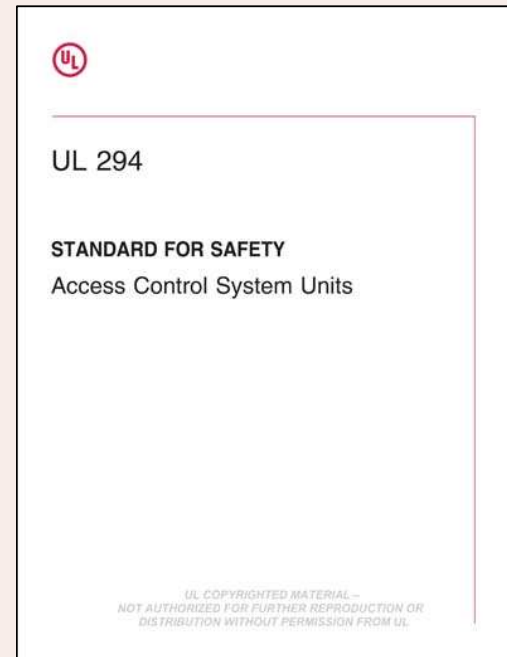
- New Occupancies: 1 locking device per door, maximum
- AHJ may approve more than one lock per door for existing occupancies
- Number of doors with controlled egress locks is not limited by NFPA 101



CE – Required Listings



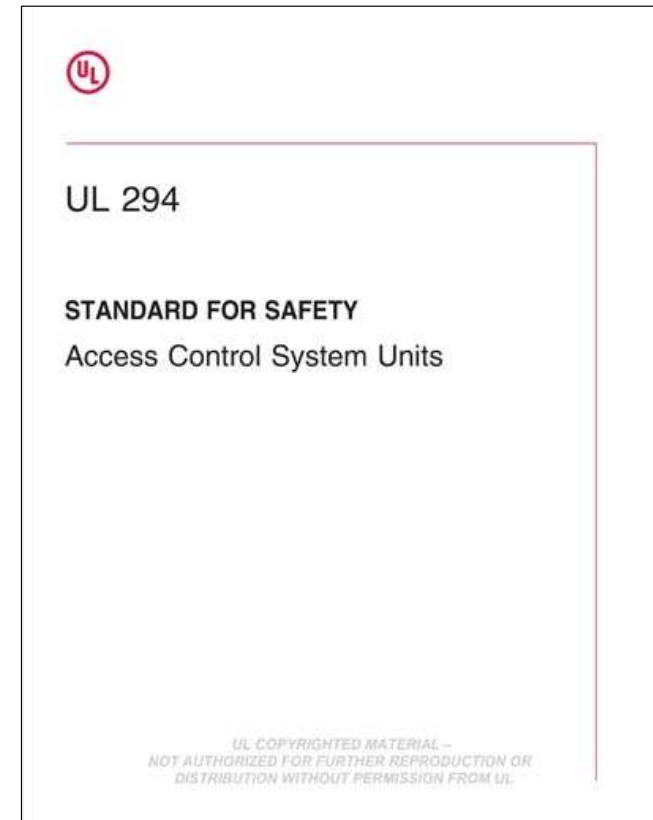
- UL 294 – Standard for Access Control System Units
- UL 10C or NFPA 252 - fire door assemblies
- UL 305 / BHMA A156.3 - panic hardware
- Other BHMA standards not referenced by the model codes (ex. A156.24)



UL 294 – Standard for Safety Access Control System Units

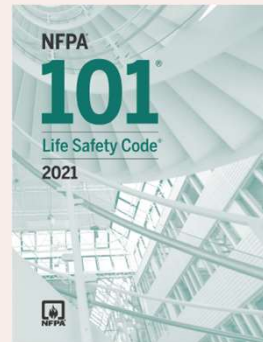
- UL 294 listing is **NOT** required by code for all types of access control systems
- The listing **IS** required by code for:

- | | |
|---------------------------|--|
| • 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 |

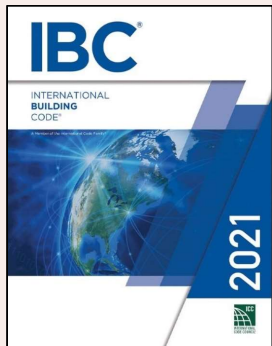


CE – Murals disguising egress doors

- NFPA 101
 - Murals to disguise egress doors are allowed on the same doors that are allowed to have controlled egress locks
 - Doors readily unlockable by staff at all times
 - Door-releasing hardware readily accessible for staff use
 - Door-releasing hardware must not be covered by mural
 - Mural must not impair door operation
 - Location and operation of these doors must be identified in the fire safety plan and included in staff training
- Murals on egress doors are not addressed by the IBC

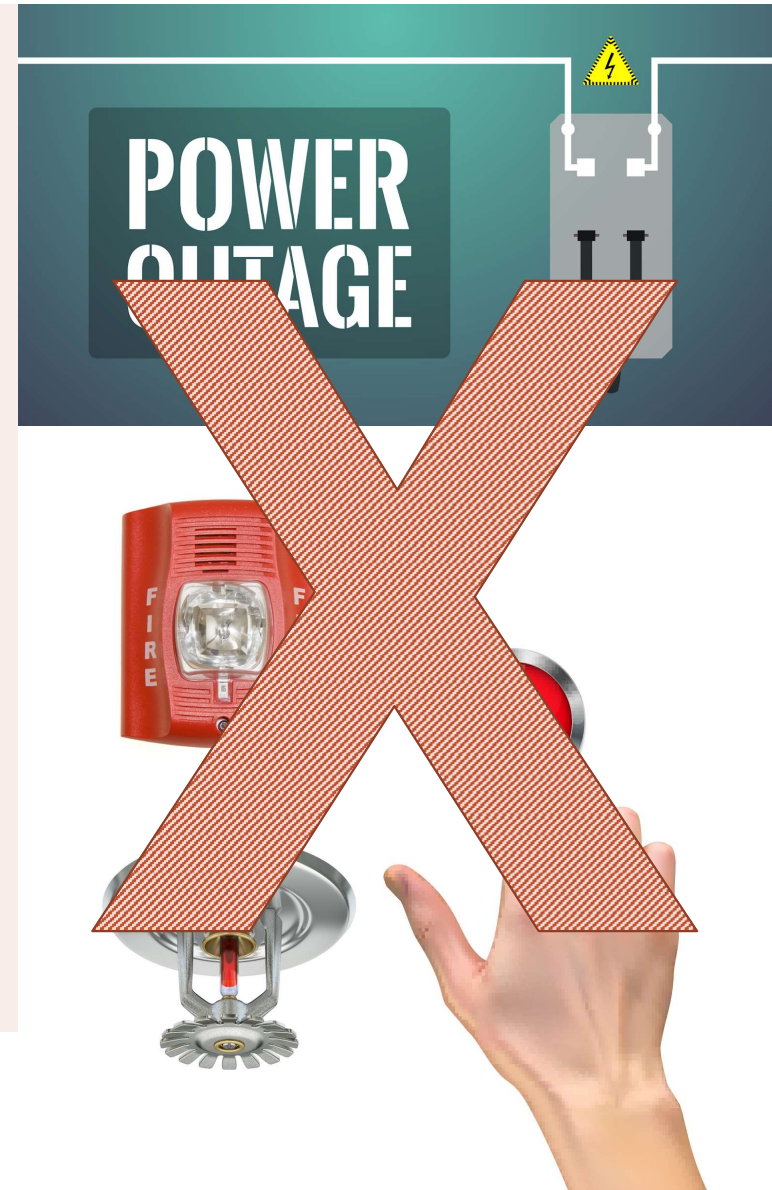


CE – Psychiatric or cognitive treatment areas & units with listed child abduction systems (IBC)

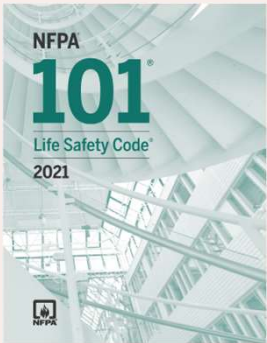


IBC exempts these doors from:

- Automatic release upon fire alarm / sprinkler activation
- Release upon power failure
- Remote release
- Limitation on the number of controlled egress doors before entering exit



CE – Specialized security measures or security risks (NFPA 101)



- NFPA 101
 - *Door-locking arrangements shall be permitted where the clinical needs of patients require **specialized security measures** or where patients pose a **security threat**, provided that **staff can readily unlock doors at all times** in accordance with 18.2.2.2.6.*
 - *18.2.2.2.6 Doors that are located in the means of egress and are permitted to be locked under other provisions of 18.2.2.2.5 shall comply with both of the following:*
 - (1) Provisions shall be made for the **rapid removal of occupants** by means of one of the following:*
 - (a) **Remote control of locks** from within the locked smoke compartment*
 - (b) **Keying of all locks** to keys carried by staff at all times*
 - (c) **Other such reliable means** available to the staff at all times*
 - (2) Only one locking device shall be permitted on each door.*

Mechanical Controlled Egress in Health Care

IBC-2021: Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

2. In Group I-1 Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.

Refer to the code for other items in this section.



Mechanical Controlled Egress in Health Care

NFPA 101:

18.2.2.2.5.1 Door-locking arrangements shall be permitted where the clinical needs of patients require specialized security measures or where patients pose a security threat, provided that staff can readily unlock doors at all times in accordance with 18.2.2.2.6.*

18.2.2.2.6 Doors that are located in the means of egress and are permitted to be locked under other provisions of 18.2.2.2.5 shall comply with both of the following:

- (1) Provisions shall be made for the rapid removal of occupants by means of one of the following:
 - (a) Remote control of locks from within the locked smoke compartment*
 - (b) Keying of all locks to keys carried by staff at all times*
 - (c) Other such reliable means available to the staff at all times**
- (2) Only one locking device shall be permitted on each door.*



Questions

- Which health care units does this apply to? Behavioral health? Memory care? Others?
- Which doors can have mechanical locks? Patient rooms? Stair doors? Exterior exits?
- Can these locks be installed in addition to other latching hardware? Panic hardware?
- How long will it take staff to unlock all of the doors required for egress?
- Under what circumstances would a facility have to use electrified controlled egress locks rather than mechanical locks?



Conclusion

- Where is each type of lock most effective?
- Which occupancy types allow these locks?
- What are the code requirements for each?
- Is mechanical locking a viable option for health care?
- Watch out for state/local code modifications.





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