LIVE with Lori

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Access Control Hardware

UL 294 & UL 1034 Listings

Note: This session will be recorded.

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Introducing The Speakers

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Today's Topics

- Which electrified hardware applications require the UL 294 or UL 1034 listings?
- Which components of a system are required by the model codes to be listed?
- What are the special locking arrangements and which code sections apply?
- What are normal locking arrangements and where are they addressed in the codes?
- Q&A

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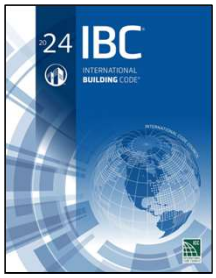
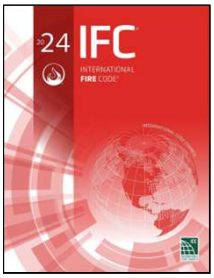
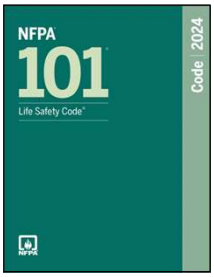
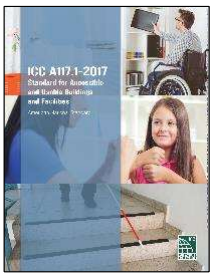
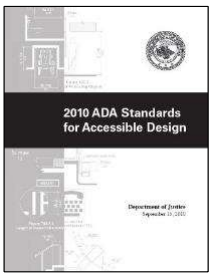
This is a MODEL code update. State codes may vary.

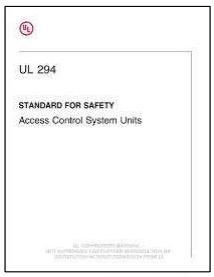












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CLARIFICATION

CHANGE

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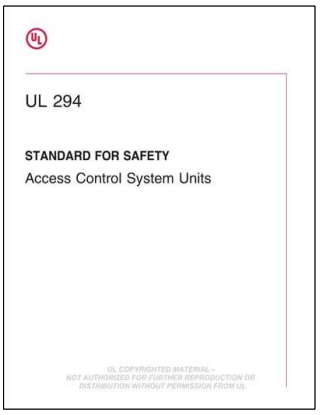
UL 294 – Standard for Access Control System Units

- **IS NOT** required by the model codes for all access control systems
- **IS** required by the model codes for:
  - Delayed Egress Locks
  - Controlled Egress Locks
  - Sensor Release
  - Door-Hardware Release
  - Elevator Lobby Locks
  - Stairwell Reentry (NFPA 101)
  - Interlocks (coming to the I-Codes in 2027)



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2021 IBC (NFPA 101 similar)

1010.2.11 Door hardware release of electrically locked egress doors. Door hardware release of electric locking systems shall be permitted on doors in the *means of egress* in any occupancy except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.
3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.
4. Loss of power to the electric locking system automatically unlocks the door.
5. Where *panic* or *fire exit hardware* is required by Section 1010.2.9, operation of the *panic* or *fire exit hardware* also releases the electric lock.
6. The locking system units shall be *listed* in accordance with UL 294.

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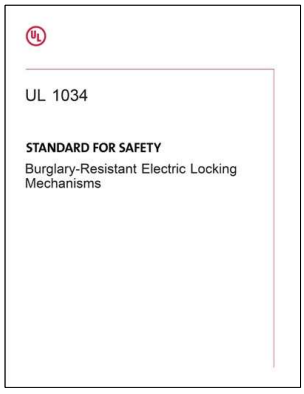
UL 294 – Standard for Access Control System Units
UL 1034 – Standard for Burglary-Resistant Electric Locking Mechanisms

The electro-mechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.

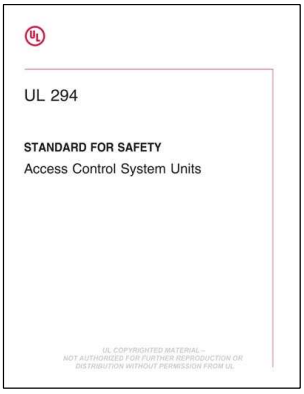
2024 IBC

NEW!


UL 1034

STANDARD FOR SAFETY

Burglary-Resistant Electric Locking Mechanisms


UL 294

STANDARD FOR SAFETY

Access Control System Units

Some product listings require a UL 294 listed power supply.

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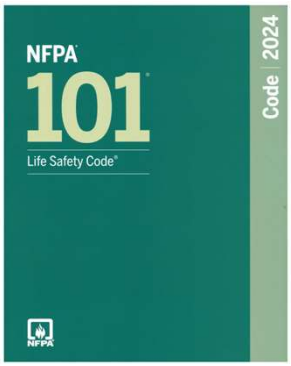
NFPA 101 – 2024 Edition



7.2.1.6.3.1 (6) Door electromechanical or electromagnetic locking hardware for new installations is listed in accordance with UL 294, Access Control System Units, or UL 1034, Burglary-Resistant Electric Locking Mechanisms.*

A.7.2.1.6.3.1 (6) The electrical locking hardware might be a component of an electrical locking system, or it might be a device with an individual listing. Depending on the electrical locking system or component, either UL 294 or UL 1034 is the pertinent standard for the required listing.

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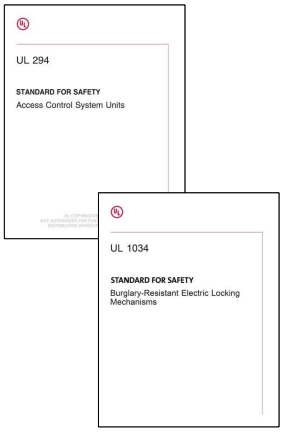
What's the difference between these two standards?

- **UL 294** (Standard for Access Control System Units) evaluates the entire system's reliability, including software and power consumption.
- **UL 1034** (Standard for Burglary-Resistant Electric Locking Mechanisms) focuses specifically on the physical, electromechanical strength of the lock itself.
- *Note: In many installations, a UL 294-certified system (panel/reader) is paired with a UL 1034-certified strike or magnetic lock.*



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2021 IBC (NFPA 101 similar)

1010.2.11 Door hardware release of electrically locked egress doors. Door hardware release of electric locking systems shall be permitted on doors in the *means of egress* in any occupancy except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.
3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.
4. Loss of power to the electric locking system automatically unlocks the door.
5. Where *panic* or *fire exit hardware* is required by Section 1010.2.9, operation of the *panic* or *fire exit hardware* also releases the electric lock.
6. The locking system units shall be *listed* in accordance with UL 294.

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2024 IBC (NFPA 101 similar)

1010.2.10 Door hardware release of electrically locked egress doors. Door hardware release of electrical locking systems shall be permitted on doors in the *means of egress* in any occupancy except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.
3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.
4. Loss of power to the electrical locking system automatically unlocks the electric lock.
5. Where *panic* or *fire exit hardware* is required by Section 1010.2.8, operation of the *panic* or *fire exit hardware* also releases the electric lock.
6. The electromechanical or electromagnetic locking device shall be *listed* in accordance with either UL 294 or UL1034.

Other listings may be required, for example, UL 10C for fire door assemblies or UL 305 for panic hardware.

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IBC Commentary

Item 6 requires the locking devices of the door hardware release electrical locking system to comply with and be listed in accordance with UL 294 or UL 1034. UL 294, Standard for Access Control System Units, and UL 1034, Burglary-Resistant Electric Locking Mechanisms, both apply to construction, performance and operation of systems that control passage through a door and the electromechanical or electromagnetic locking devices of these systems.

It may be appropriate to recognize that this code does not require the units of an access control system (ingress control system) to be listed to UL 294 or UL 1034 (refer to Section 1010.2.9).

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Special Locking Arrangements

- Sensor Release
- Door Hardware Release
- Delayed Egress
- Controlled Egress in Health Care
- Stairwell Reentry (NFPA 101)
- Elevator Lobby Egress
- Interlocks (2027 I-Codes)

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Typically an Electromagnetic Lock

SENSOR RELEASE
Sensor, Push Button,
Fire Alarm, Power Failure Unlock

DOOR HARDWARE RELEASE
Switch in Door-Mounted Hardware and
Power Failure Unlock

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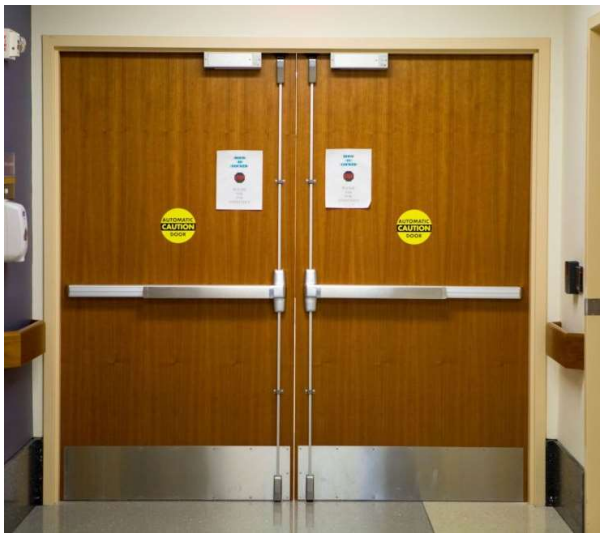

DELAYED EGRESS
15/30 Second Delay
Deter Unauthorized Exit

CONTROLLED EGRESS
Infinite Delay
Health Care Only

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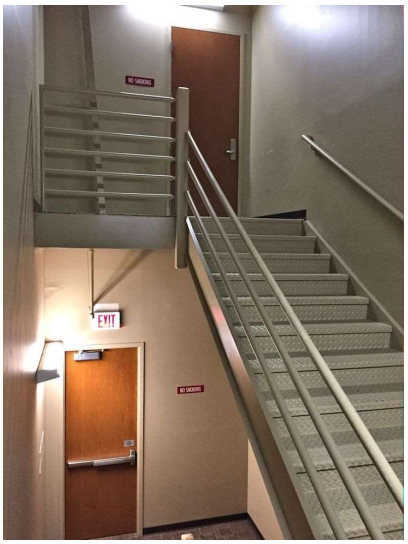

STAIRWELL REENTRY

Changes to 2024 IBC
Listings required by NFPA 101

ELEVATOR LOBBY EGRESS

New Section in 2024 IBC
Similar to NFPA 101

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CONTROL VESTIBULES (INTERLOCKS)

When one door is open, the other door(s) can't be opened
New section coming in the 2027 IBC

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Special
Locking Arrangements

- Sensor Release
- Door Hardware Release
- Delayed Egress
- Controlled Egress in Health Care
- Stairwell Reentry (NFPA 101)
- Elevator Lobby Egress
- Interlocks
(2027 I-Codes)

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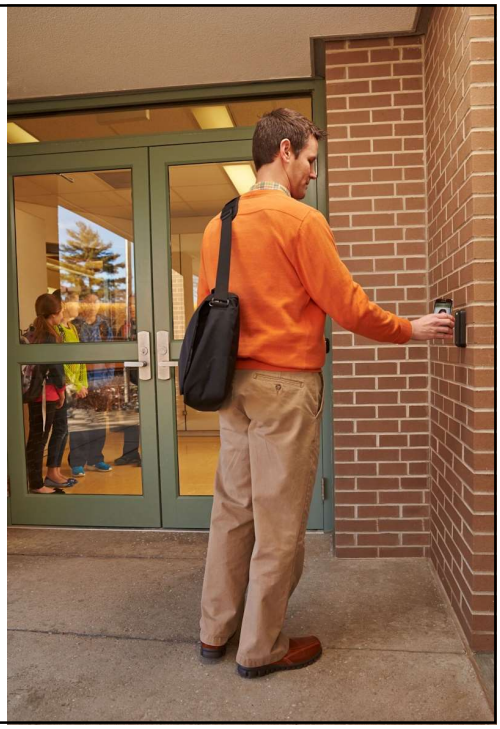
Access/Ingress Control System
Normal Locking Arrangements

- Unlatch with one releasing motion for egress (some exceptions)
- No key, tool, special knowledge or effort for egress
- No tight grasping, pinching, or twisting of the wrist
- Releasing hardware between 34-48 inches AFF (some exceptions)



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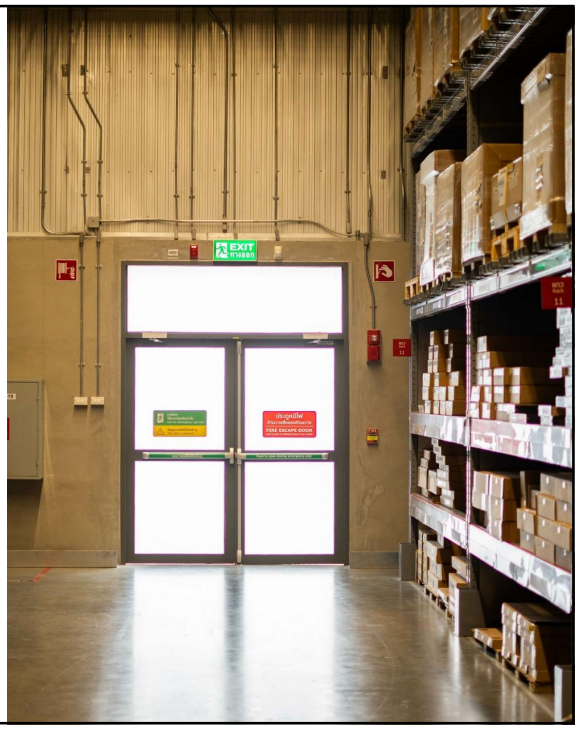
Monitored or Recorded Egress – 2021 I-Codes

1010.2.10 Monitored or recorded egress. Where electrical systems that monitor or record egress activity are incorporated, the locking system shall comply with Section 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 or 1010.2.15 ***or shall be readily openable from the egress side without the use of a key or special knowledge or effort.***



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Clarification in the 2024 IBC:

2024 IBC

NEW!

1010.2.9 Monitored or recorded egress, ***and access control systems****. Where electrical systems that monitor or record egress activity are incorporated,* ***or where the door has an access control system****, the locking system on the egress side of the door shall comply with Section 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 or 1010.2.15* ***or shall be readily openable from the egress side without the use of a key or special knowledge or effort.***

No reference to UL 294 or UL 1034

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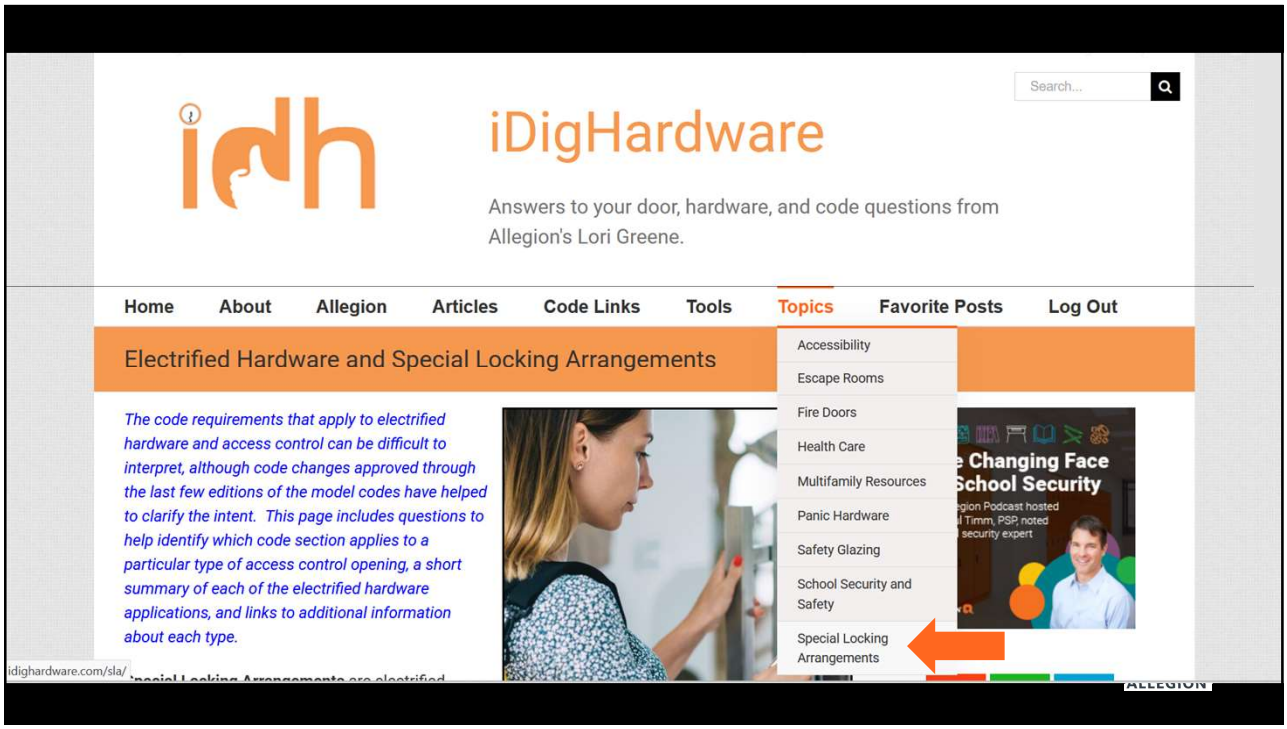
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Escape Rooms
Fire Doors
Health Care
Multifamily Resources
Panic Hardware
Safety Glazing
School Security and Safety
Special Locking Arrangements
Electrified Hardware and Special Locking Arrangements
The code requirements that apply to electrified hardware and access control can be difficult to interpret, although code changes approved through the last few editions of the model codes have helped to clarify the intent. This page includes questions to help identify which code section applies to a particular type of access control opening, a short summary of each of the electrified hardware applications, and links to additional information about each type.
idighardware.com/sla/

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DECODED
LISTINGS FOR ELECTRIFIED HARDWARE
LORI GREENE, DAHC/CDC, FDAI, FDHI, CCPR, is Manager of Codes and Resources at Allegion. She can be reached at lori.greene@allegion.com or idighardware.com.
ASK YOUR MOST PRESSING QUESTIONS!
Decoded now features a new question-and-answer format. We are selecting some of the most pressing questions that readers have about codes and answering them here. Submit your questions at idighardware.com/decoded-qa and we'll answer as many as we can in future Decoded columns.
UNDERWRITERS LABORATORIES (UL) PUBLISHED ITS FIRST SAFETY STANDARD – FOR TIN-CLAD FIRE DOORS – IN 1903. TWELVE DECADES LATER, THE ORGANIZATION HAS DEVELOPED MORE THAN 1,700 STANDARDS FOR A WIDE RANGE OF PRODUCTS. MOST MEMBERS OF THE DOOR AND HARDWARE INDUSTRY ARE FAMILIAR WITH AT LEAST TWO OF THE UL STANDARDS THAT ARE REFERENCED BY THE MODEL CODES:
UL 10C, Standard for Positive Pressure Fire Tests of Door Assemblies: The model codes require side-hinged or pivoted swinging fire door assemblies to be tested in accordance with either UL 10C or NFPA 252, Standard Methods of Fire Tests of Door Assemblies. For tests conducted in accordance with NFPA 252, the fire test must follow the positive pressure method specified in the standard. These standards test the fire endurance of a swinging door, frame, and hardware assembly, to verify the assembly's capability of preventing the passage of fire. Each component of a fire door assembly must be listed for this purpose.
UL 305, Standard for Panic Hardware: The model codes require panic hardware and fire exit hardware to be listed to UL 305, passing the endurance, emergency operation, elevated ambient exposure, and low temperature impact tests described in the standard. The purpose of this test standard is to verify quality components and design, as well as the strength and ability of the latches and actuating hardware under load. A product that has not successfully achieved this listing cannot be installed in locations where the adopted code requires panic hardware listed to UL 305.
Of the more than 50 UL standards referenced by the model codes, there are two UL standards related to electrified hardware that have caused confusion since they first began to appear in the model codes beginning with the 2009 editions:
UL 294, Standard for Access Control System Units: This standard defines the minimum requirements applicable to the construction, performance, and operation of access control systems, including tiered characteristics to meet four levels of security performance.
UL 1034, Standard for Burglary-Resistant Electric Locking Mechanisms: The requirements of this standard apply to the construction, performance, and operation of burglary-resistant electric locking mechanisms and related devices used to secure and release doors.
Below are answers to some frequently asked questions regarding the UL 294 / UL 1034 listings for electrified hardware.
DO THE MODEL CODES REQUIRE OR PERMIT ELECTRIFIED HARDWARE TO HAVE EITHER THE UL 294 OR UL 1034 LISTINGS?
Beginning with the 2009 edition of the NFPA codes and the 2012 edition of the I-Codes, the UL 294 listing was required for certain types of electrified hardware systems, typically the "special locking arrangements."
Electrified hardware that allows free egress via normal operation of the hardware is not considered a special locking arrangement and is not required by the model codes to carry the UL 294 or UL 1034 listings.
For example, in the 2021 edition of the IBC, the section addressing delayed egress locks states: "The delayed egress locking system units shall be listed in accordance with UL 294."
This language, found in several sections of the model codes, was changed in the 2024 editions. In the 2024 IBC, the delayed egress section states: "The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034."
This change means that when a jurisdiction has adopted an edition of the I-Codes or NFPA codes between 2009 and 2021, the code would require the UL 294 listings for certain types of systems. When a jurisdiction adopts the 2024 editions or when allowed by the Authority Having Jurisdiction (AHJ), either the UL 294 or UL 1034 listings would be acceptable for the applicable systems.
DO ALL COMPONENTS OF THE APPLICABLE SYSTEMS REQUIRE THESE LISTINGS?
Referencing the excerpts above, this question was also clarified by the changes made in the 2024 model codes. The 2021 IBC required the listing for "delayed egress locking system units," but it was unclear which components would need to be listed. Would the power supply, power transfer, switches, etc., be considered delayed egress locking system units? The 2024 IBC clearly states that the electromechanical or electromagnetic locking devices must be listed; the other components of the system would not require the listing.
The 2024 IBC clearly states that the electromechanical or electromagnetic locking devices must be listed; the other components of the system would not require the listing.
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