

Locking the Means of Egress in Health Care Facilities

What I will be talking about today:

Why would you lock the means of egress?

When you lock the means of egress what codes apply and who is involved?

What are the special locking arrangements found in NFPA 101, Chapter 7?

What are clinical needs and special needs locking arrangements found in NFPA 101, Chapter 18?

What are some examples of acceptable practice?

Why would you lock the means of egress?

Pediatric Units

One reason to lock a pediatric unit is to help deter infant abduction. All healthcare facilities today have policies, procedures and electronic systems to help mitigate this tragic event. In most cases a perimeter is established with the entrances and exits electronically locked. Electronic equipment monitors these locations and provides an automatic response to an alarm condition.

Emergency Departments

With the increase in violent activity and the potential for air borne pathogens it makes sense that an emergency department needs the ability to lock down their entrances and exits. The ability to maintain a controlled perimeter may mean the difference between life and death for gang activity or control of wide spread contamination in terms of infection control.

Behavioral Health Units

Unit lock down provides the staff the ability to protect their patients from wandering and leaving the safety of their medical environment. Alzheimer and Psychiatric patients many times are not coherent to their surroundings. For this reason it makes sense to be able to lock the unit perimeter and maintain a safe, contained and controlled environment.

Intensive Care Units

Due to the serious nature of ICU patient care it is clear that a protected boundary is necessary. This will allow the staff to stay focused and provide the best care to their patients who deserve that focused care.

Other Considerations

Telecommunication Rooms, Medication Rooms, Pharmacy Areas, Lab Areas, Doctor and Staff Lounge Areas and Administrative Suites are all areas common to Health Care Facilities where locking is desired by the staff, required by code, or required by health care regulations.

When you lock the means of egress what codes apply and who is involved?

Authority Having Jurisdiction

Please keep in mind this discussion is presented relative to the interpretation and enforcement of the codes as they relate to the AHCA review process. Having said that, you may encounter local AHJ's which have a slightly different understanding and enforcement of the code. For example, there was one fire official in south Florida who would not allow card readers in stair ways. His ruling would not allow card carrying staff members to use the stairs to go from one floor to the other. His explanation for this interpretation was that the stairs are for egress and not to be used as a communicating pathway, old school I guess and not part of the Healthy to 100. This is an example of an interpretation and enforcement of the code that is not consistent with an AHCA review. For this reason the requirements of local authorities will have to be addressed on a case by case basis and may not be fully consistent with this presentation.

Who is Involved

I think it is important to point out how many people are involved with the design and implementation of locking the means of egress. We have the owner and users of the facility responsible for the policies and procedures, the architect designing the means of egress, the architect's hardware consultant specifying the door hardware, the electrical engineer designing the circuits to the doors, the fire alarm engineer who in most cases is the electrical engineer designing the lock release on fire alarm, the security engineer designing the access control capabilities and last but not least the AHCA review team. These are the people on the design team developing the locking strategy. Then on the implementation side, in addition to the design team, we have the general contractor installing the doors and door hardware, we have the electrical contractor installing the circuits to the doors, we have the fire alarm contractor who is responsible for the lock release on fire alarm, we have the security contractor installing the access control, and then obviously we have the AHCA review team at the end of this process, to make sure everything is functional and in compliance with the Code. That is quite the cast of characters, which I am sure you would agree takes a great deal of effort and coordination to make the project a success.

It is my understanding that some of the AHCA review teams are requesting means of egress consultation meetings for larger projects to have an opportunity to go through the drawings with the design team to make sure the locking design is correct and meets the intent of the code. These meetings are typically conducted when the drawings have gone through the 60 day review cycle and may be relative to the comments generated by this review process. The

meeting gives the design team and the review team the opportunity to come to a resolution to any locking problems prior to installation. Then during the onsite review, the AHCA review team has a better understanding of the locking strategy and greater success with the entire field review process. I have recently been through this process with AHCA and I have to say it was time well spent. I think it would really help to make any large project more successful.

NFPA 101 - Life Safety Code 2012 edition

Chapter 7 – Means of Egress

This chapter covers the requirements for the special locking arrangements in all building types, including Hospitals, and specifically outlines Delayed Egress and Access Control, which I plan to discuss in more detail later in the presentation.

Chapter 18 - New Health Care Occupancies

Clinical Needs

This is the section of the code which permits door-locking arrangements where the clinical needs of the patients require specialized security measures or the patients pose a security threat.

Special Needs

This section of the code permits door-locking arrangements where patient's special needs require specialized protective measures for their safety.

I will also discuss these two locking arrangements in more detail later on in the presentation.

Florida Building Code – 2014 (fifth edition)

This code identifies Hospitals as Group I-2, and that is the group this presentation is focused on.

Chapter 10 of the FBC addresses the requirements for locking the means of egress, specifically 1008.1.9.6 Special locking arrangements in Group I-2. This paragraph identifies the clinical needs of persons receiving care and acknowledges the need for special locking arrangements. The paragraphs in this chapter basically parallel the requirements of NFPA 101 with a few exceptions.

1008.1.9.7 Delayed egress locks

In this paragraph the FBC identifies a requirement that only one delayed egress lock can be encountered before reaching an exit.

1008.1.9.7- 3 This subparagraph identifies the requirement that the locks shall have the capability of being unlocked by a signal from the fire command center. This requirement is basically relative to locking stair doors.

FGI – Guidelines for Design and Construction of Health Care Facilities

In review of this document, specific requirements for locking arrangements in health care facilities were not included. However, it does contain a reference to NFPA 101, thereby establishing the same requirements for special locking arrangements as 101.

What are the Special Locking Arrangements from NFPA 101 Chapter 7?

Delayed Egress

Both the FBC and 101 have similar requirements to allow the use of delayed egress locks.

First of all, where does it make sense to use this type of lock? Delayed egress locks can be used in a location where the Hospital wants to delay a person from exiting a specific area. For instance, in an emergency department where the door may be in a remote location or when the facility wants to make sure a patient pays the bill. Or it might be used on a patient floor at the stair door which may not be in view of the attending nurse station.

Some Considerations

When using the delayed egress lock, there are some considerations to keep in mind. The delayed egress lock only provides a limited amount of security, after all, the door will open in 15 seconds and the person will be able to leave. When the delayed egress function is activated a local alarm is required to sound, but it is also acceptable to have remote annunciation of this alarm at an attending nurse station to give the staff a better opportunity to respond.

In most installations card readers are provided at the locked door to allow the staff to use the door without initiating the delayed egress function and subsequent alarm.

Code Requirements

To use a delayed egress lock in the means of egress, NFPA 101 requires the lock to be approved and listed, and the building must be protected by a fire alarm system or a sprinkler system and the following criteria must be met:

The door will unlock in the direction of egress upon activation of one of the following:

Sprinkler system alarm

Activation of not more than one heat detector

Activation of not more than two smoke detectors

Most designs normally include all three of these unlocking capabilities even though the code only requires one.

The doors shall unlock on loss of power

The door shall open and alarm in 15 or 30 seconds upon application of force

There shall be a sign, here's your sign, PUSH UNTIL ALARM SOUNDS DOOR CAN BE OPENED IN 15 SECONDS

And new to this edition of 101 and FBC, there shall be light, adequate light shall be provided at the lock door.

Also remember, according the FBC a building occupant shall not be required to pass through more than one door equipped with a delayed egress lock before entering an exit. In other words, there can be only one delayed egress lock in the means of egress before a person reaches an exit.

Access Control

Does it restrict egress?

If you think about how this section of FBC and 101 are written, it is clear that the locking arrangement does not really restrict egress. With the requirement of the sensor and the manual 'push to exit' button everyone will be able to pass through the door.

An example of this type of locking may be the entrance to an administrative suite or possibly a pharmacy area. The entrance door to the area would be locked with an electronic lock and would require a card at the card reader to get in the area. To egress the area, the door would unlock from the motion sensor or could also be unlocked by the request to exit button. This type of locking arrangement does not restrict a person from exiting; it just restricts a person from entering the space or area.

There are some considerations to remember when using this type of locking strategy. If the type of lock used allows egress by a manual means, the sensor and request to exit button are not needed. For example, if the door to a Telecommunications Room has an electric mortis lock, the mechanical action of the lock will always let a person out of the room and not restrict egress in any way. Therefore the egress is not locked and the sensor and button are not needed or required.

Also, the corridor leading to this type of locking arrangement cannot be more that twenty feet long. If it is twenty feet or longer a dead end corridor will be created and there will not be two means of egress from this corridor. Even though the staff could open the door with their access control card the public could not and would only have one way out of the corridor. This arrangement would be a code violation.

What are the clinical needs and special needs locking arrangements per NFPA101 Chapter 18?

Chapter 18 – NFPA 101

This chapter defines the use and requirements associated to the application of clinical needs and special needs in a health care facility.

Clinical Needs

This section of the code basically allows the means of egress to be locked, giving the staff the control of unlocking the door. Keep in mind that once a visitor (non-patient) enters the unit; they are then under the supervision of the staff and subject to the same control criteria as the patients.

Let's take a look at the wording that sets the criteria for the clinical needs locking arrangement from Chapter 18 of 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.

Because this paragraph has an asterisk by it there is further explanation of the intent of the paragraph in the appendix section of 101.

A.18.2.2.2.5.1 Psychiatric units, Alzheimer units, and dementia units are examples of areas with patients who might have clinical needs that justify door locking. Forensic units and detention units are examples of areas with patients who might pose a security threat. Where Alzheimer or dementia patients in nursing homes are not housed in specialized units, the provision of 18.2.2.2.5.1 should not apply.

If you look at 18.2.2.2.6, there are basically two criteria which have to be met for clinical needs locking arrangements.

First, you have to provide one of the following unlocking capabilities, remote control of locks from within the smoke compartment, locks which are keyed the same and the staff members have the key at all times, or other such reliable means available to the staff at all times. You only have to meet one of those three requirements.

And the second criteria, there can only be one locking device on each door.

So, how could this look in a real world application? The entry to an Alzheimer's unit from an egress corridor could be locked with electronic locks, mechanically latched if required, card readers on both sides of the door, and a break lock power button located at the nurse station. The first criteria of 18.2.2.2.6 would be met by the staff members having access to the break lock power button. Their access control cards would also unlock the door, but would not meet

the criteria of 1(c) 'Other such reliable means available to the staff at all times'. The reason being, if the access control system was not working the door would not open. The break lock power button is included with this solution because it is difficult to define criteria 1(c), other such reliable means.

Communication on both sides of the door to the nurse station is not required under Clinical Needs. However, in most installations communication is provided outside the unit to the attending nurse station for convenience to the staff. Intercom stations on the inside of the unit can be a problem from the patients. They may have a tendency to play with the intercom. For this reason they are not typically included.

Special Needs

This patient population does not have clinical needs as defined in the previous discussion. However, the code does recognize the fact that there are patient units in the facility which will have special needs and require the ability to lock the means of egress with the unlocking capabilities and procedures given to the attending staff. In terms of special needs let's review what the code has to say.

18.2.2.2.5.2* Door-locking arrangements shall be permitted where patient special needs require specialized protective measures for their safety, provided that all of the following criteria are met: items 1-5a and b.

Again there is an asterisk indicating further explanation in the appendix.

A18.2.2.2.5.2 Pediatric units, maternity units, and emergency departments are examples of areas where patients might have special needs that justify door locking.

This statement is not intended to limit special needs locking to these three areas. They are just cited as examples of areas within the facility that can be locked. It is my understanding that special needs locking can occur in other areas of a hospital where the staff deem it necessary as long as all of the special needs criteria have been met.

Looking at the paragraph 18.2.2.2.5.2, 1-5a, the locking arrangement will be required to meet the following criteria.

The staff can readily unlock doors at all times in accordance with 18.2.2.2.6.

A total (complete) smoke detection system is provided through out the locked space, or locked doors can be remotely unlocked at an approved, constantly attended location with the locked space. Please keep in mind that a total smoke detection system is a smoke detector in every room, which typically is not provided because it is not required in a fully sprinkled building. Also, the intercom equipment you will see in later examples of special needs locking arrangements is used to meet the 'constantly attended location within the locked space' requirement.

The building is protected throughout by an approved, supervised automatic sprinkler system.

The locks are electrical locks that fail safely so as to release on loss of power to the lock.

The locks release by independent activation of the smoke detection system or a flow alarm from the sprinkler system.

Okay, that is a lot of criteria, so let's identify what is needed to apply special needs locking arrangements in our health care facility.

Using the entry into a Pediatric Unit we would expect to find electric magnetic locks on the doors, mechanical latching if required, card readers on both sides of the doors for staff use, and a means of communication to the attending nurse station on both sides of the doors, a remote release button, an emergency break lock power button and a communication device at the attending nurse station. This arrangement and equipment would meet the intent of the special needs locking arrangement.

Examples of acceptable practice

Pediatric Unit Stair Door

Stair exit doors are sometimes in an area of the unit where they are not visible from the attending nurse station. Using the special needs criteria of the code the stair door was set up with the following capabilities:

Magnetic lock was used to lock the door and will release on fire alarm

Mechanical latch, non-locking was used to maintain the required fire safety

Card readers on both sides of the doors, for staff entry and exit, not required by code

Audio/Video intercom door station is required on the egress side of the door for communication to the attending nurse station

Audio/Video intercom master station, remote release and emergency break lock power button were provided at the attending nurse station

Just a few additional considerations relative to this pediatric special needs locking solution:

The access control system can be programmed to only lock down after hours.

Abduction prevention systems can be installed to automatically lock the doors, deactivate the card readers and the remote release buttons under alarm conditions.

Lock release on fire alarm is not required from the activation from a manual pull station, but it is required from an automatic detection device or flow switch.

For staff convenience, an intercom station was included on the stair side of the door.

Please keep in mind that if you are planning to lock the access to the floor from the stair you are required to allow re-entry to the build under a fire alarm condition. This requirement is found in NFPA 101, Chapter 7. One solution is to unlock the stair doors on all levels and allow re-entry from any level.

If more security is needed, another acceptable solution is to provide a minimum of two re-entry levels. Depending on the height of the building, the code will allow some of the doors to be locked but re-entry shall be available within four intervening floors. For example, if level 2 allows re-entry, you could lock 3, 4, 5, and 6 with 7 available for re-entry. Then lock 8, 9, 10, and 11 with 12 available for re-entry. The code also requires re-entry at the top level or next to the top level served by the stair enclosure. Signs are required at the re-entry levels and at the locked doors with identification of the levels which allow re-entry. Other combinations could be used, but with this solution there can be no more than four intervening levels before re-entry is available. Re-entry levels should be planned for non critical areas of the facility.

So that is an example of a special needs application at a stair door.

Service Elevator Lobbies

In many facilities it is desirable to restrict the access to and from the service elevator lobby. It gives the staff some level of control and a record of who comes and goes. From most service elevator lobbies there are two sets of automatic doors leaving the lobby. Only one means of egress is required from this location, the other doors can be continuously locked.

In one of our approved installations, one pair of double doors opening out from the elevator lobby was set up as follows:

- Magnetic locks were used to lock the doors

- Electric latches, non-locking and in the retracted position, release on general building fire alarm to maintain the required fire safety

- Card readers on both sides of the doors, for staff entry and exit and activation of the auto operators

On the other set of double doors, also both opening out from the elevator lobby

- Delayed magnetic locks for locking the doors and provide the means of egress from the elevator lobby

- Electric latches, non-locking and in the retracted position, release on general building fire alarm to maintain the required fire safety

Card readers on both sides of the doors, for staff entry and exit and activation of the auto operators

Remote annunciation of the activation of the delayed egress function was provided at the attending nurse station to assist in the staff response time

This arrangement met the requirements of the code and provided the facility and staff the level of security needed for this application. The solution would not be considered special needs or clinical needs because of the use of the delayed egress locking. Please keep in mind that there were no other delayed egress locks in the path of egress to the required exit.

Pediatric Patient Unit Entrance and Exit

In most cases and in this particular case the public elevator lobby and exit stairway opened directly into the visitor waiting area. That architectural configuration allowed the stair to be the required means of egress from the public lobby. Therefore, the door leading into the pediatric unit was not considered a means of egress from the visitor lobby. The locking arrangement for the doors leading into the patient unit was set up in the following manner:

Magnetic locks were used to lock the doors, and will release on fire alarm

Mechanical latches were not required because these were not smoke compartment cross corridor doors

Card readers on both sides of the doors, for staff entry and exit

Audio / Video intercom door station on both sides of the doors

Remote release and emergency break lock power buttons at the attending nurse station

Audio / Video intercom master station at the attending nurse station

The intercom station on the lobby side of the doors is not required by code and installed as a convenience to the staff. Keep in mind that the access control system can be programmed to remain unlocked during normal visiting hours and automatically lock after hours. Also, an electronic monitoring system can be used to lock the doors in response to an abduction alarm.

Public Stair Door

This particular stair door is the means of egress from the public waiting area on the fourth floor of a pediatric unit. It was desirable to restrict access from the stair to the lobby. The means of egress into the stair is unrestricted because the door hardware

allows entry by mechanical means. Access to the lobby from the stair is electronically locked and access is provided to the staff by a card reader. The locking arrangement for this door in the means of egress would be considered an access control solution because it does not restrict egress in the path of egress. The door was set up in the following manner:

Electric mortis lock was used to lock and latch the door

A card reader was included on the stair side to allow staff entry and restrict public entry

The locking will release on fire alarm

In this application, the staff did not want unauthorized people to enter the lobby from the stairwell. This is just one example of locking a public stair door.

Access Control and Special Needs

In this particular application it was desired to restrict the public from entering the staff area in the pediatric unit. Leaving the staff area was not restricted and set up using access control. Because the length of the corridor leading to the staff area was more than twenty feet it was necessary to utilize the special needs application to allow the public to egress in the event of an emergency. The door was set up in the following manner:

Magnetic locks were used to lock the doors, and will release on fire alarm

Electric or mechanical latches were not needed because the doors were not smoke compartment cross corridor doors or auto doors

A motion sensor and request to exit button was included on the secure side of the door to provide the access control means of egress from the secure side of the doors

A card reader was installed on the unsecure side of the door for staff convenience

Audio / Video intercom door station was placed on the unsecure side of the door

Remote release and emergency break lock power buttons at the attending nurse station to meet the special needs requirements for public egress

Audio / Video intercom master station at the attending nurse station to communicate with the unsecure side of the doors

This application will provide access controlled egress from the secure side of the door and special needs egress from the unsecure side of the doors.

So, those are examples of how locking the means of egress as been accomplished in some of our recent projects. I hope this information will be helpful to you in your current and future locking arrangement projects. If we can be of any assistance to you and your projects please don't hesitate to contact us.