



MIKE CAUSEY
INSURANCE COMMISSIONER

BRIAN TAYLOR
STATE FIRE MARSHAL

April 11, 2024

Mr. Gary Kennedy
Town of Fuquay-Varina
134 N. Main Street
Fuquay-Varina, NC 27526

RE: 2018 NCBC 407.11 Locks and latches and 407.12 Special locking arrangements for Licensed Group I-2 and large residential care facilities as described in Section 428.5.

Mr. Kennedy:

This letter is in response to your request for a formal interpretation from the Office of State Fire Marshal ("OSFM"). Requests are addressed below in the order in which they are posed.

Your request stated in relevant parts:

"The 2018 NCBC 407.1 states Occupancies in Group I-2 shall comply with the provisions of Sections 407.1 through 407.12 and other applicable provisions of this code.

This leads an inspector to believe that all sections of 407 are applicable to Group I-2 occupancies. When reading 407.11 and 407.12, 407.11 is considered "fail-secure" and 407.12 is considered "fail-safe". After conversations with architects, DHHS, and DOI a conclusion has been reached that these sections are not required to be used together. If 407.11 is being used, then the facility should not also be required to meet the requirements of 407.12. The facility should only be required to comply with one of the locking requirements.

Attached is documentation and emails from DHHS and NCDI concerning a recent project in Fuquay-Varina regarding this matter."

Background and commentary:

Attachment A is comprised of the request for formal interpretation as well as all supporting information submitted with the request.

Code Analysis: Section 308.4 Institutional Group I-2 of the 2018 NC Building Code (NCBC) lists the facilities that are classified as Group I-2 occupancy classification. Section R407 Group I-2 of the 2018 NCBC features additional special use and occupancy provisions in 407.2 through 407.12 that are intended to be used with the other requirements for Group I-2 occupancies provided throughout the code, including the door operations requirements of Section 1010.1.9 of the 2018 NCBC. Of note 407.12 contains special use and occupancy provisions for only licensed Group I-2 occupancies and Group R-4 large residential care facilities covered in 428.5.

....

OFFICE OF STATE FIRE MARSHAL

308.4 Institutional Group I-2. Institutional Group I-2 occupancy shall include buildings and structures used for *medical care* on a 24-hour basis for more than five persons who are *incapable of self-preservation*. This group shall include, but not be limited to, the following:

Foster care facilities

Detoxification facilities

Hospitals

Nursing homes

Psychiatric hospitals

308.4.1 Occupancy Conditions. Buildings of Group I-2 shall be classified as one of the occupancy conditions specified in Section 308.4.1.1 or 308.4.1.2.

308.4.1.1 Condition 1. This occupancy condition shall include facilities that provide nursing and medical care but do not provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to nursing homes and foster care facilities.

308.4.1.2 Condition 2. This occupancy condition shall include facilities that provide nursing and medical care and could provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to hospitals.

....

1010.1.9 Door Operations. Except as specifically permitted by this section, egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

....

1010.1.9.3 Locks and Latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an *occupant load* of 100 or less and Groups B, F, M and S, the main door or doors are permitted to be equipped with a thumb bolt or key-operated locking devices from the egress side provided:

2.1. The locking device is readily distinguishable as locked and provided with a thumb bolt or key that cannot be removed when locked from the egress side.

2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.

2.3. The use of the thumb bolt or key-operated locking device is revocable by the *building official* for violation of Section 1010.1.9.3.

- 3.** Where egress doors are used in pairs, *approved* automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts does not have a doorknob or surface-mounted hardware.
- 4.** Doors from individual *dwelling* or *sleeping units* of Group R occupancies having an *occupant load* of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.
- 5.** *Fire doors* after the minimum elevated temperature has disabled the unlatching mechanism in accordance with *listed fire door* test procedures.

....

1010.1.9.6 Controlled Egress Doors in Groups I-1 and I-2.

....

1010.1.9.6.2 Group I-2. See Sections 407.11 and 407.12.

....

407.1 General. Occupancies in Group I-2 shall comply with the provisions of Sections 407.1 through 407.12 and other applicable provisions of this code.

....

407.11 Locks and Latches. Door-locking arrangements shall be permitted in Group I-2 where the clinical or security needs of the patients require specialized locking measures for their safety or the safety of others, provided keys are carried at all times by staff that are responsible for the evacuation of the occupants within the locked building unit(s). Provisions for remote locking and unlocking of occupied rooms are required where more than ten locks are necessary to be unlocked in order to move occupants from one smoke compartment to

another smoke compartment. These locks may include mechanical locks, electromagnetic locks and other approved locking devices.

....

407.12 Special Locking Arrangements for Licensed Group I-2 and Large Residential Care Facilities as Described in Section 428.5. Buildings protected throughout by an automatic fire detection system or automatic sprinkler system and in compliance with the following may be equipped with approved, listed locking devices:

1. Doors shall unlock upon actuation of the automatic fire detection system or automatic sprinkler system.
2. Doors shall unlock upon loss of power controlling the locking device.

Exception: Independent standby power is acceptable as long as the automatic fire detection system or automatic sprinkler system, when activated, has precedence over the standby power and unlocks the door. If a nonemergency situation occurs such as a power outage, the door shall be allowed to remain locked until detection system(s) operate, provided that the power outage does not disable these detection systems. If any of the detection systems are disabled in any way, standby power controlling the locking devices will be interrupted.

3. A special locking system of electromagnetic locks may be utilized when all of the following requirements are met:

3.1. These types of locks may be used only in wards and wings or other portions of a facility that requires security provisions for the protection of its patients.

An on/off emergency release switch(es) must be capable of interrupting power to all electromagnetically locked doors within the ward, wing, or other portions of the facility. Release switch(es) shall be located and identified at each nurses/staff station serving the locked ward, wing, or other portions of the facility and any other control situation responsible for the evacuation of the occupants of the locked units that are manned 24 hours.

3.2. These systems may be used provided not more than one such system is located in any egress path.

3.3. A wiring diagram and system components location map shall be provided under glass adjacent to the fire alarm panel.

3.4. An additional on/off emergency release switch shall be provided for each locked door and located within 3 feet (914 mm) of the door and shall not depend on relays or other devices to cause the interruption of power.

3.5. Any required emergency release switch shall interrupt the power to the locking device(s). If any required emergency release switch is of the locking type, all staff that are responsible for the evacuation of the occupants of the locked unit must carry emergency release switch keys. Additional convenience release devices may be provided.

4. Each special locking installation shall be approved by the appropriate fire and building inspection authority prior to installation, after installation, and prior to initial use and reviewed periodically thereafter.
5. Emergency lighting shall be provided on the egress side of each door such that it illuminates the locking controls involved in the special locking arrangement.

....

1010.1.9.7 Delayed Egress. Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved* automatic smoke or heat detection system installed in accordance with Section 907:

1. Group B, F, I, M, R, S and U occupancies.
2. Group E classrooms with an occupant load of less than 50.

Exception: Delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, serving a courtroom in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

[BE] 1010.1.9.7.1 Delayed Egress Locking System. The delayed egress locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or automatic fire detection system, allowing immediate free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the fire command center and other *approved* locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the

vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.

Exception: Where *approved*, a delay of not more than 30 seconds is permitted on a delayed egress door.

5. The egress path from any point shall not pass through more than one delayed egress locking system.

Exceptions:

1. In Group I-2 or I-3 occupancies, the egress path from any point in the building shall not pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
 2. In Group I-1 or I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:
 - 6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.2 For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.3 The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where *approved*, in Group I occupancies, the installation of a sign is not required where care recipients who, because of clinical needs, require restraint or containment as part of the function of the treatment area.

7. Emergency lighting shall be provided on the egress side of the door.
8. The delayed egress locking system units shall be *listed* in accordance with UL 294.

1010.1.9.8 Sensor Release of Electrically Locked Egress Doors. The electric locks on sensor released doors located in a *means of egress* in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R- 2 and entrance doors to tenant spaces in occupancies in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 are permitted where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors. The doors shall be arranged to unlock by a signal from or loss of power to the sensor.
2. Loss of power to the lock or locking system shall automatically unlock the doors.
3. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the lock—independent of other electronics—and the doors shall remain unlocked for not less than 30 seconds.
4. Activation of the building *fire alarm system*, where provided, shall automatically unlock the doors, and the doors shall remain unlocked until the fire alarm system has been reset.
5. Activation of the building *automatic sprinkler system or fire detection system*, where provided, shall automatically unlock the doors. The doors shall remain unlocked until the *fire alarm system* has been reset.
6. The door locking system units shall be listed in accordance with UL 294.

1010.1.9.9 Electromagnetically Locked Egress Doors. Doors in the *means of egress* in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and doors to tenant spaces in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and where installed and operated in accordance with all of the following:

1. The hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The hardware is capable of being operated with one hand.
3. Operation of the hardware directly interrupts the power to the electromagnetic lock and unlocks the door immediately.
4. Loss of power to the locking system automatically unlocks the door.
5. Where *panic or fire exit hardware* is required by Section 1010.1.10, operation of the *panic or fire exit hardware* also releases the electromagnetic lock.
6. The locking system units shall be listed in accordance with UL 294.

1010.1.9.10 Locking Arrangements in Correctional Facilities. In occupancies in Groups A-2, A-3, A-4, B, E, F, I-2, I-3, M and S within correctional and detention facilities, doors in *means of egress* serving rooms or spaces occupied by persons whose movements are controlled for security reasons shall be permitted to be locked where equipped with egress control devices that shall unlock manually and by not less than one of the following means:

1. Activation of an *automatic sprinkler system* installed in accordance with Section 903.3.1.1.
2. Activation of an *approved manual fire alarm box*.
3. A signal from a *constantly attended location*.

....

Conclusions: Many options are available for door operations of Group I-2 occupancies including manual, controlled, delayed, electrically locked and electromagnetically locked egress options based on the specific facility, use, conditions and staff capabilities of the Group I-2 occupancy. The types of door operations provided for Group I-2 occupancies balance the requirements for security with the life safety egress requirements associated with facility staff assisting building occupants, who are incapable of self-preservation, in exiting the building during emergency situations. Manually operated locks and latches noted in Section 1010.1.9.3 and 407.11 of the 2018 NCBC may be used where facility staff manually controls egress of the building occupants. Controlled, delayed, electrically locked and electromagnetically locked door operations may be used as noted in Sections 1010.1.9.6.2, 407.12, 1010.1.9.7, 1010.1.9.8, 1010.1.9.9 and 1010.1.9.10 of the 2018 NCBC. As a caution to the users of this code, some of the door operations methods listed may not be suitable for all Group I-2 occupancies depending on the specific facility, use, conditions and facility staff capabilities. The choice of a single method or a combination of these methods is provided to meet the intent of the code while providing a balance between security and life safety egress requirements.

Sincerely,



David B. Rittlinger, PE, LEED AP
Division Chief – Codes & Interpretations
North Carolina Office of State Fire Marshal

cc: Bridget Herring, Chair – BCC
Mark Matheny, Vice-Chair – BCC
Michael Ali, Chair, Commercial Super Committee - BCC
Nathan Childs, Esq., NCDNJ, counsel for NC Building Code Council, nchilds@ncdoj.gov

ATTACHMENT A



APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL
325 North Salisbury Street, Room 5_44
Raleigh, North Carolina 27603
(919) 647-0095

APPEAL TO NCDOI/NCBCC Hearing Date ___/___/___
GS 153A-374, GS 160A-434 GS 143-140, GS 143-141
Formal Interpretation by NCDOI Appeal of Local Decision to NCBCC
Appeal of Local Decision to NCDOI Appeal of NCDOI Decision to NCBCC

APPELLANT GARY KENNEDY PHONE (919) 548 - 9189 X
REPRESENTING TOWN OF FURQUAY-VARINA
ADDRESS 134 N MAIN ST
CITY FURQUAY-VARINA STATE NC ZIP 27526
E-MAIL gkennedy@furquay-varina.org FAX () -
North Carolina State Building Code, Volume 2018 - Section 407
REQUEST ONE: [X] Formal Interpretation by NCDOI [] Appeal of Local Decision to NCBCC
[] Appeal of Local Decision to NCDOI [] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

SEE ATTACHED

REASON:

CLARIFICATION ON SECTIONS 407.11 AND 407.12

Signature [Signature] DATE: 3-20-2023 APPEAL TO NCDOI/NCBCC FORM 3/14/17

The 2018 NCBC 407.1 states *Occupancies in Group I-2 shall comply with the provisions of Sections 407.1 through 407.12 and other applicable provisions of this code.*

This leads an inspector to believe that all sections of 407 are applicable to Group I-2 occupancies. When reading 407.11 and 407.12, 407.11 is considered "fail-secure" and 407.12 is considered "fail-safe". After conversations with architects, DHHS, and DOI a conclusion has been reached that these sections are not required to be used together. If 407.11 is being used, then the facility should not also be required to meet the requirements of 407.12. The facility should only be required to comply with one of the locking requirements.

Attached is documentation and emails from DHHS and NCDOT concerning a recent project in Fuquay-Varina regarding this matter.

From: Jeff Mural <jeffmural@ls3p.com>
Sent: Friday, March 17, 2023 1:54 PM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Cc: Christy Zeidler <christyzeidler@ls3p.com>
Subject: [External] Request for Interpretation Regarding NCBC Paragraphs 407.11 and 407.12

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Hi Carl,

I am writing to verify our interpretation for NCBC 407.11 and 407.12. Can you let us know whether our interpretation, below, is correct?

It is our understanding that if a building is to be fail-secure it must comply with Paragraph 407.11. If a building complies with Paragraph 407.11 it is not required to comply with the requirements of Paragraph 407.12, which is for fail-safe facilities.

Thank you for your time and attention.

Jeff Mural AIA,EDAC,NCARB
Associate Principal | Raleigh Healthcare Sector Leader

LS3P
434 Fayetteville Street, Suite 1700, Raleigh, NC 27601 919.829.2712 (DIR) 919.418.6212 (CELL)
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From: Yip, Pak
Sent: Wednesday, March 22, 2023 10:37 AM
To: Martin, Carl <Carl.Martin@ncdoi.gov>; Harms, Jeff <jeff.harms@dhhs.nc.gov>
Cc: Jeff Mural <jeffmural@ls3p.com>; Christy Zeidler <christyzeidler@ls3p.com>; Gary Kennedy <gkennedy@fuquay-varina.org>; Chris Hinnant <chinnant@fuquay-varina.org>; Buddy Walters <bwalters@fuquay-varina.org>
Subject: RE: Request for Interpretation Regarding NCBC Paragraphs 407.11 and 407.12

Jeff and Gary,

Section 407.11 and 407.12 was submitted by DHHS. I have copied Jeff Harms of DHHS on this reply for further review.

Section 407.11 is addressing "special" locking arrangements where occupants are locked in by the staff for security and safety reasons and the occupants have no control over the release of those locks.

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Jeff Mural AIA,EDAC,NCARB
Associate Principal | Raleigh Healthcare Sector Leader

LS3P
434 Fayetteville Street, Suite 1700, Raleigh, NC 27601 919.829.2712 (DIR) 919.418.6212 (CELL)
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To: Martin, Carl <Carl.Martin@ncdoi.gov>; Harms, Jeff <jeff.harms@dhhs.nc.gov>
Cc: Jeff Mural <jeffmural@ls3p.com>; Christy Zeidler <christyzeidler@ls3p.com>; Gary Kennedy <gkennedy@fuquay-varina.org>; Chris Hinnant <chinnant@fuquay-varina.org>; Buddy Walters <bwalters@fuquay-varina.org>
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Jeff and Gary,

Section 407.11 and 407.12 was submitted by DHHS. I have copied Jeff Harms of DHHS on this reply for further review.

Section 407.11 is addressing "special" locking arrangements where occupants are locked in by the staff for security and safety reasons and the occupants have no control over the release of those locks.

manual emergency release on/off switch beside each door can be used by occupants to release power to the door magnet, and they can easily escape.

Our intent is that a 407.11 locking installation does not have to comply with the requirements of 407.12.

I hope the information above is helpful to you. Please let me know if you have any questions.

Pak Keung Yip, P.E.
Chief Building Code Consultant

From: Gary Kennedy <gkennedy@fuquay-varina.org>
Sent: Thursday, March 23, 2023 7:19 AM
To: Yip, Pak <pak.yip@ncdoi.gov>; Martin, Carl <Carl.Martin@ncdoi.gov>
Cc: Jeff Mural <jeffmural@ls3p.com>; Christy Zeidler <christyzeidler@ls3p.com>; Chris Hinnant <chinnant@fuquay-varina.org>; Buddy Walters <bwalters@fuquay-varina.org>
Subject: [External] Re: Request for Interpretation Regarding NCBC Paragraphs 407.11 and 407.12

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Pak, thank you for your help with this. Since we have clarification from DHHS about the use of 407.11 and 407.12, is DOI in agreement that the code sections should be interpreted as DHHS does?

Would it be possible to get a formal interpretation?

Thanks again for your help.

Gary Kennedy
Building Codes Inspector
Supervisor
Town of Fuquay-Varina
Office: 919-548-9189

134 N. Main Street
Fuquay-Varina, NC 27526
www.fuquay-varina.org
[Facebook](#) [Instagram](#) [Twitter](#)

Yip, Pak <pak.yip@ncdoi.gov>

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Good morning, Gary,

NC DOI agree with the interpretation from DHHS.

If you would like a formal interpretation, please follow the procedure and contact David Rittlinger, Chief Code Consultant.

<https://www.ncosfm.gov/appeals-and-formal-interpretations>

I hope the information above is helpful to you. Please let me know if you have any questions.

Pak Keung Yip, P.E.

Chief Building Code Consultant