

## **2018 NC State Fire Code Amendments**

**(adopted December 2017 through December 2021)**

**(Note: includes identified NC Errata)**

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NC Department of Insurance, 325 North Salisbury Street, Raleigh, NC 27603  
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The following pages represent a summary of the Building Code Council adopted amendments that have been approved by the Rules Review Commission.

2018 NC Fire Code (based on the 2015 International Fire Code) effective 1/1/2019

These amendments revise, delete or add to the adopted NC Fire Code.

2018 NC Fire Code

102.13 Exceptions, Chapter 2 Definitions, Farm Building. (161213 Item B-8)

**102.13 Exception to applicability.**

The provisions of this code shall not apply to the following:

1. Occupancy of one- and two-family dwellings.

~~2. Farm buildings located outside the building rules jurisdiction of any municipality.~~

~~**Exception:** All buildings used for sleeping purposes shall conform to the provisions of the technical codes.~~

2. Farm buildings not used for:

a. Sleeping purposes, or

b. Storage of hazardous materials in excess of those listed in Tables 5003.1(1) and 5003.1(2) within the building rules jurisdiction of any municipality.

3. The design, construction, location, installation or operation of equipment for storing, handling, and transporting liquefied petroleum gases for fuel purposes up to the first stage regulator, liquefied natural gases, and anhydrous ammonia or other liquid fertilizers.

4. The design, construction, location, installation or operation of equipment or facilities of a public utility, as defined in *N.C.G.S* 62-3, or an electric or telephone membership corporation, including without limitation poles, towers and other structures supporting electric or communication lines from the distribution network up to the meter location.

**Exception:** All buildings owned and operated by a public utility or an electric or telephone membership corporation shall meet the provisions of the code.

5. The Storage and Handling of Hazardous Chemicals Right to Know Act. North Carolina *N.C.G.S* 95-173 through 95-218.

6. Open burning pursuant to *N.C.G.S.* 106 - 940 through 106 - 950 under the jurisdiction of the North Carolina Department of Agriculture and Consumer Services.

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

## CHAPTER 1 CHANGES

**105.6.45 Temporary membrane structures and tents (mandatory permit).** An operational permit is required to operate an air-supported temporary membrane structure, or a temporary stage canopy having an area in excess of 400 square feet (37 m<sup>2</sup>), or a tent having an area in excess of ~~400~~ 800 square feet (~~37~~ 74 m<sup>2</sup>).

### Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Tents open on all sides, which comply with all of the following:
  - 2.1. Individual tents having a maximum size of ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>).
  - 2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>) total.
  - 2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.
3. Funeral tents and curtains or extensions attached thereto, when used for funeral services.

**ERRATA:** Coordinated 105.7.18 with 105.6.45.

**105.7.18 Temporary membrane structures and tents.** A construction permit is required to erect an air-supported temporary membrane structure, or a temporary stage canopy having an area in excess of 400 square feet (37 m<sup>2</sup>), or a tent having an area in excess of ~~400~~ 800 square feet (~~37~~ 74 m<sup>2</sup>).

### Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Funeral tents and curtains or extensions attached thereto, when used for funeral services.
3. Tents open on all sides, which comply with all of the following:
  - 3.1. Individual tents having a maximum size of ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>).
  - 3.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>) total.
  - 3.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
Chapter 2 Definitions. (200714 Item B-16)

**CARBON MONOXIDE ALARM.** A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

**CARBON MONOXIDE DETECTOR.** A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
102.13 Exceptions, Chapter 2 Definitions, Farm Building. (161213 Item B-8)

## CHAPTER 2 CHANGES

**FARM BUILDING.** Any *building* not used for sleeping purposes that is not accessed by the general public and is used primarily for a **farm** purpose. **Farm** purposes **includes structures** or *buildings* for **equipment**, storage and processing of agricultural products or commodities such as: crops, fruits, vegetables, ornamental or flowering plants, dairy, timber, livestock, poultry and all other such forms of agricultural products by the specific farm on which the structure or *building* is located. **Farm** purposes do not include structures or *buildings* for uses such as education facilities, research facilities, or aircraft hangars.

The delayed effective date of this Rule is January 1, 2019.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
202 Definitions. (200310 Item B-1)

**Valet Trash Collection Service.** A scheduled trash removal service that collects occupant-generated rubbish, trash, or recyclable materials from dwelling units, where the trash is placed outside of the dwelling units for a limited time and in an *approved* container.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
304.4.4 Revocation. (201208 Item B-1)

~~**304.4.4 Revocation.** The use of doorstep refuse and recycling collection containers in apartment occupancies is revocable by the fire code official for violations of this section.~~

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
304.4. (200310 Item B-1)

#### **304.4 Valet Trash Collection Services for R-2 Apartment Occupancies**

**304.4.3 Policies and procedures.** Apartment management shall: have written policies and procedures in place, enforce compliance, and upon request provide a copy of such policies and procedures to the authority having jurisdiction.

**304.4.4 Revocation.** The use of doorstep refuse and recycling collection containers in apartment occupancies is revocable by the *fire code official* for violations of this section.

The delayed effective date of this Rule is July 1, 2021.  
(revised on December 8, 2020 by resolution from an effective date of January 1, 2021 to July 1, 2021).  
(revised on September 14, 2021 by motion and vote of the council from an effective date of July 1, 2021 to June 1, 2022).  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

### **304.4 Valet Trash Collection Services for R-2 Occupancies**

**304.4.1. Combustible trash in a means of egress.** Combustible trash or recyclable materials shall not be placed in exits, exit passageways, enclosures for stairways or ramps, corridors, elevator lobbies, or on egress balconies, except as permitted by Section 304.4.2.

**304.4.2. Combustible trash or recyclable materials in corridors or on egress balconies of Group R-2 occupancies that are awaiting scheduled valet trash collection is allowed as described in Sections 304.4.2.1 through 304.4.2.3.**

**304.4.2.1. Trash or recyclable materials awaiting valet trash collection shall only be placed in a corridor or on an egress balcony within 5 hours of scheduled pickup and shall not obstruct the minimum egress width required by Section 1031.**

**304.4.2.2. Trash or recyclable materials awaiting valet trash collection shall be placed completely inside of one or more containers with a closed lid that complies with Section 304.4.2.3. Additional trash or recyclable material placed outside of the containers, as described in 304.4.2.3, are prohibited.**

**304.4.2.3. Containers used for valet trash collection shall not exceed a capacity of 2.0 cubic feet (15 gallons, 0.06 cubic meters) and shall be provided with tight-fitting or self-closing lids. Containers and lids shall comply with either:**

**1. Containers and lids located in an area that is protected by fire sprinklers shall be constructed entirely of noncombustible materials or materials that meet a peak rate of heat release not exceeding 300 kW/m<sup>2</sup> when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m<sup>2</sup> in the horizontal orientation. Containers and lids shall be listed or bear the label of an approved agency that validates compliance with this requirement; or**

**2. Containers and lids located in an area that is not protected by fire sprinklers shall be constructed entirely of noncombustible materials or materials that meet a peak rate of heat release not exceeding 150 kW/m<sup>2</sup> when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m<sup>2</sup> in the horizontal orientation. Containers and lids shall be listed or bear the label of an approved agency that validates compliance with this requirement.**

The delayed effective date of this Rule is July 1, 2021.

(revised on December 8, 2020 by resolution from an effective date of January 1, 2021 to July 1, 2021).

(revised on September 14, 2021 by motion and vote of the council from an effective date of July 1, 2021 to June 1, 2022).

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
314.4 Vehicles. (180313 Item B-9)

**314.4 Vehicles.** Liquid- or gas-fueled vehicles, boats or other motorcraft shall not be located indoors except as follows:

1. Batteries are disconnected.

Exception: Alternative-fueled vehicles in which manufacturer prohibits the disconnection of power supply.

2. Fuel in fuel tanks does not exceed one-quarter tank or 5 gallons (19L) (whichever is least).

Exception: Diesel-fueled vehicles, the maximum fuel amount permitted shall be 20 gallons.

3. Fuel tanks and fill openings are closed and sealed to prevent tampering and the release of vapors.

4. Vehicles, boats or other motorcraft equipment are not fueled or defueled within the building.

The delayed effective date of this Rule is January 1, 2020.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code  
Section 315.3.1 Ceiling clearance. (200714 Item B-13)

**315.3.1 Ceiling clearance.**

Storage shall be maintained 2 feet (610 mm) or more below the ceiling in nonsprinklered areas of buildings or not less than 18 inches (457 mm) below sprinkler head deflectors in sprinklered areas of buildings.

Exceptions:

1. The 2-foot (610 mm) ceiling clearance is not required for storage along walls in nonsprinklered areas of buildings.
2. The 18-inch (457 mm) ceiling clearance is not required for storage along walls in areas of buildings equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021



2018 NC Fire Code

**ERRATA** – correct references as shown

**319.1.11 Accessibility.** For temporary overflow emergency shelters, compliance with the *North Carolina Building Code*, Chapter 11 and Section 1009 is not required provided that the local jurisdiction has other shelter facilities that are accessible by the disabled.

**SECTION 321**  
**TEMPORARY SLEEPING UNITS FOR DISASTER RELIEF WORKERS**

**321.1 General.**

This section shall apply to temporary use of existing buildings for purposes of providing sleeping units for volunteer disaster relief workers supporting a disaster declaration issued by the Governor of North Carolina. Existing buildings shall be permitted to provide temporary sleeping facilities for disaster relief workers provided that all the provisions of this section are met and approved by the local code officials.

Facilities complying with 321 shall not require compliance with other provisions of this code or the Building Code.

**Exception:** Buildings containing the following occupancies or uses shall not be used for temporary sleeping units for disaster relief workers:

1. Group F
2. Group H
3. Group S-1 vehicle repair garage
4. Group S-1 bulk tire storage
5. Woodworking operations

**321.2 Permit required.**

An operational permit as designated in 105.6.49 shall be required.

**321.3 Short-Term Occupancy.**

Short-term occupancies meeting the requirements of this section shall be permitted in existing buildings that have a current certificate of occupancy and connected electrical service. Use of a building or portion thereof for a short-term occupancy shall not exceed two days within 30 consecutive days.

**321.3.1 Fire alarm and detection systems.** Functioning smoke detection as required for the existing building or single station battery operated smoke alarms where no system exists shall be provided throughout the sleeping room, exit access corridors, and stairs serving the sleeping units per 907.2.11. Carbon monoxide detection devices shall be provided as required by 915.1.4 when fuel fired appliances are present.

**321.3.2 Ventilation and temperature control.** Heating, cooling, and ventilation must be provided by equipment installed and approved for such use. Use of portable space heaters shall be prohibited.

**321.3.3 Plumbing fixtures.** Plumbing fixtures shall be provided as required for Group R-2 by the NC Plumbing Code, Section 403 for the number of disaster relief workers occupying the building. Temporary facilities are permitted as approved by the local code official.

**321.3.4 Accessibility.** Sleeping units for temporary disaster relief workers complying with the NC Building Code, Chapter 11 and Section 1009 are not required provided that the building owner or supporting organization has other sleeping facilities that are accessible by the disabled within the same jurisdiction as the temporary sleeping units.

**321.4 Long-term Occupancy.** Long-term occupancies meeting the requirements of this section and 321.3 shall be permitted in existing buildings that have a current certificate of occupancy and connected electrical service. Long-term occupancies are for periods exceeding Short-term occupancy as designated in Section 321.3 with a maximum of 180 consecutive calendar days. The local fire official may extend the initial time period up to an additional 180-day period as often as needed if the building owner or his or her designee provides documentation satisfactory to the local fire official that an extension of time is necessary to

support local disaster relief efforts and the fire official verifies that the building remains in compliance with this section.

**321.4.1 Occupant load and age.** The maximum number of disaster relief workers permitted in the occupancy is 20 ambulatory individuals. The disaster relief workers must be 18 years of age or older.

**Exception:** Occupants may be less than 18 years of age if the sleeping unit meets all of the following conditions:

1. Is intended to serve disaster relief worker families with children and their parents or other legal guardian; and
2. Is equipped with *smoke alarms* meeting applicable code provisions for such devices in all sleeping areas.

**321.4.2 Staff.** The sleeping units must be staffed by a minimum of two individuals of 21 years of age or older trained in accordance with Chapter 4 of the NC Fire Code and at least one trained individual shall be awake to monitor the sleeping room and restrooms throughout the time the facility is occupied by the disaster relief workers.

**321.4.3 Fire alarm and detection systems.** Functioning smoke detection as required for the existing building or *single station smoke alarms* where no system exists shall be provided throughout the sleeping room, *exit access corridors*, and *stairs* serving the *sleeping units* per 907.2.11.

Carbon monoxide detection devices shall be provided as required by 915.1.4 when fuel fired appliances are present.

Building owner or his or her designee shall submit documentation illustrating that the *smoke alarm* is *approved* and that all emergency batteries have been tested and are operational.

**321.4.4 Fire extinguishers.** There must be an adequate number of fire extinguishers to serve the *sleeping units* as determined by the local fire code official. Travel distance to an approved fire extinguisher shall not exceed 50 feet. Minimum rating of extinguishers shall be 3A-40BC.

**321.4.5 Automatic sprinkler system.** No fire protection sprinkler system is required per 903.2.8. Exception #6. Any *existing* fire sprinkler system shall be operational.

**Exception:** Sprinkler system required by 321.4.7.

**321.4.6 Means of egress.** There shall be a minimum of two separate code compliant *means of egress* serving the *sleeping units*. An evacuation route approved by the local fire code officials shall be posted and be in compliance with Sections 401, 403, 404, and 406 of the NC Fire Code.

**321.4.6.1 Illumination.** The disaster relief workers sleeping rooms and *exit access* corridors and stairs shall have unswitched illumination and emergency powered illumination with a duration of not less than 90-minutes.

**321.4.7 Location of sleeping units.** *Sleeping units* above or below the *level of exit discharge* are required to have a fire sprinkler system complying with 903.3 or an automatic smoke detection system complying with 907.2.8.2.

**321.4.8 Occupant restrictions.**

1. No smoking shall be permitted in the facility.
2. Candles, incense and similar open-flame-producing items shall not be allowed within the *sleeping units* or areas immediately adjacent to the *sleeping units*.
3. No temporary cooking equipment shall be permitted in the facility.

**105.6.49 Temporary sleeping units for disaster relief workers (mandatory permit).** An operational permit is required for operation of long-term temporary *sleeping units* for disaster relief workers.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

404.2.3 Lockdown plans. (180612 Item B-9)

**404.2.3 Lockdown plans.** Where facilities develop a lockdown plan, it shall be in accordance with Sections 404.2.3.1 through 404.2.3.3.

**404.2.3.1 Lockdown plans contents.** Lockdown plans shall be *approved* by the *fire code official* and shall include the following:

1. ~~Initiation. The plan shall include instructions for reporting an emergency that requires a lockdown.~~
2. ~~Accountability. The plan shall include accountability procedures for staff to report the presence or absence of occupants.~~
3. ~~Recall. The plan shall include a prearranged signal for returning to normal activity.~~
4. ~~Communications and coordination. The plan shall include an approved means of two way communication between a central location and each secured area.~~

**404.2.3 Lockdown plans.** Lockdown plans shall only be permitted where such plans are approved by the *fire code official* and are in compliance with Sections 404.2.3.1 and 404.2.3.2.

**404.2.3.1 Lockdown plan contents.** Lockdown plans shall include the following:

1. Identification of individuals authorized to issue a lockdown order.
2. Security measures used during normal operations, when the building is occupied, that could adversely affect egress or fire department operations.
3. A description of identified emergency and security threats addressed by the plan, including specific lockdown procedures to be implemented for each threat condition.
4. Means and methods of initiating a lockdown plan for each threat, including:
  - 4.1. The means of notifying occupants of a lockdown event, which shall be distinct from the fire alarm signal.
  - 4.2. Identification of each door or other access point that will be secured.
  - 4.3. A description of the means or methods used to secure doors and other access points.
  - 4.4. A description of how locking means and methods are in compliance with the requirements of this code for egress and accessibility.
5. Procedures for reporting to the fire department any lockdown condition affecting egress or fire department operations.
6. Procedures for determining and reporting the presence or absence of occupants to emergency response agencies during a lockdown.
7. Means for providing two-way communication between a central location and each area subject to being secured during a lockdown.
8. Identification of the prearranged signal for terminating the lockdown.
9. Identification of individuals authorized to issue a lockdown termination order.
10. Procedures for unlocking doors and verifying that the means of egress has been returned to normal operations upon termination of the lockdown.
11. Training procedures and frequency of lockdown plan drills.

**404.2.3.2 Drills.** Lockdown plan drills shall be conducted in accordance with the approved plan. Such drills shall not be substituted for fire and evacuation drills required by Section 405.2.

The effective date of this Rule is **May 1, 2019.**

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

505.1.1 Suite/Room identification. (190312 Item B-5)

**505.1.1 Suite/Room identification.** Where numerical addresses are posted to identify suites or rooms within buildings, the first digit of the suite or room number shall match the floor number signage.

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

**ERRATA** – correct references as shown

## **SECTION 510 EMERGENCY RESPONDER RADIO COMMUNICATION COVERAGE**

**510.1 Emergency responder radio communication coverage in new buildings.** ~~All new buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage level of the public safety communications system of the jurisdiction at the exterior of the building.~~ Approved in-building 2- way emergency responder communication coverage shall be provided in all new buildings. In-building 2- way emergency responder communication coverage shall be based on the existing coverage levels of the public safety communication systems utilized by the jurisdiction, measured at the exterior of the building. This section shall not require improvement of the existing public safety communication systems.

### **Exceptions:**

1. Where *approved* by the building official and the *fire code official*, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an *approved radio communications* coverage system.
2. Where it is determined by the *fire code official* that the *radio communications* coverage system is not needed.
3. In facilities where emergency responder *radio communication* coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the *fire code official* shall have the authority to accept an automatically activated emergency responder *radio communication* coverage system.
4. New buildings 7,500 square feet or less and not more than 1 story above *grade plane*.
  - 4.1. This exception does not apply to windowless buildings, underground buildings or buildings with a *basement*.

### **510.2 Emergency Responder ~~Radio-Communications~~ Coverage in Existing Buildings. Deleted**

**510.3 Permit required.** A construction permit for the installation of or modification to ~~emergency responder radio coverage systems and related equipment is required as specified in Section 105.7.5.~~ in-building 2- way emergency responder communication coverage systems and related equipment is required as specified in Section 105.7.5. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

**510.4 Technical requirements.** Equipment required to provide emergency responder communication coverage shall be listed in accordance with UL 2524. Systems, components and equipment required to provide the ~~emergency responder radio coverage in-building 2- way emergency responder communication coverage~~ system shall comply with Sections 510.4.1 through ~~510.4.2.5~~ 510.4.2.8.

**510.4.1 ~~Radio Signal Strength~~ Emergency communication coverage system signal strength.** The building shall be considered to have acceptable ~~emergency responder radio coverage in-building 2- way emergency responder communication coverage~~ when signal strength measurements in 95 percent of all areas on each floor of the building and critical areas shall be provided with 99 percent floor area radio coverage. Critical areas are fire command centers, fire pump rooms, exit stairs, exit passageways, elevator lobbies, sprinkler rooms, riser rooms, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ. The signal strength shall meet requirements in Sections 510.4.1.1 ~~and 510.4.1.2 through 510.4.1.3.~~

**510.4.1.1 Minimum signal strength into the building.** ~~A minimum signal strength of 95 dBm shall be received within the building. The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the *fire code official*. The inbound signal level shall be a minimum of -95dBm throughout the coverage area and sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 or an equivalent Signal-to-Interference-Plus-Noise Ratio (SINR) applicable to the technology for either analog or digital signals.~~

**510.4.1.2 Minimum signal strength out of the building.** ~~A minimum signal strength of 95 dBm shall be received by the agency's radio when transmitted within the building. The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the *fire code official*. The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals.~~

**510.4.1.3 System performance.** Signal strength shall be sufficient to meet the requirements of the applications being utilized by public safety for emergency operations through the coverage area as specified by the *fire code official* in Section 510.4.2.2.

**510.4.2 System design.** ~~The emergency responder radio coverage in-building 2- way emergency responder communication coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.5 510.4.2.8 and NFPA 1221.~~

**510.4.2.1 Amplification systems ~~allowed and components.~~** Buildings and structures that cannot support the required level of radio coverage shall be equipped with a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC) certified signal boosters, or other system approved by the *fire code official* in order to achieve the required adequate radio coverage. ~~in-building 2- way emergency responder communication coverage shall be equipped with systems and components to enhance the radio signals and achieve the required level of emergency communication coverage specified in Sections 510.4.1 through 510.4.1.3. Emergency communication systems utilizing radio-frequency-emitting devices and cabling shall be approved by the *fire code official*. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.~~

**510.4.2.2 Technical criteria.** The *fire code official* shall maintain a document providing the specific technical information and requirements for the ~~emergency responder radio coverage system. in-building 2- way emergency responder communication coverage system.~~ This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, ~~and other supporting technical information. the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design.~~

**510.4.2.3 Standby power.** ~~Emergency responder radio In-building 2- way emergency responder communication coverage systems shall be provided with standby power in accordance with section 604. dedicated standby power or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 604. The standby power supply shall be capable of operating the emergency responder radio in-building 2- way emergency responder communication coverage system for a duration of not less than 24 hours. at 100-percent system capacity for a duration of not less than 12 hours.~~

**510.4.2.4 Signal booster requirements.** If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.
2. Battery systems used for the emergency power source shall be contained in a NEMA ~~4 type water proof cabinet~~ 3R or higher-rated cabinet.
3. ~~The signal booster system and battery system shall be electrically supervised and monitored by a supervisor service, or when approved by the *fire code official*, shall sound an audible signal at a constantly~~



~~attended location. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.~~

~~4. Equipment shall have FCC certification prior to installation. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions.~~

~~5. Active RF emitting devices used in in-building 2- way emergency responder communication coverage systems shall have built-in oscillation detection and control circuitry.~~

~~6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any in-building 2- way emergency responder communication coverage network shall be coordinated and approved by the *fire code official*.~~

**510.4.2.5 Additional frequencies and change of frequencies. System monitoring.** ~~The emergency responder radio coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or additional frequencies are made available by the FCC. The in-building 2-way emergency responder communication coverage system shall be monitored by a listed *fire alarm control unit*, or where approved by the *fire code official*, shall sound an audible signal at a constantly attended on-site location. Automatic supervisory signal shall include the following:~~

~~1. Loss of normal AC power supply.~~

~~2. System battery charger(s) failure.~~

~~3. Malfunction of the donor antenna(s).~~

~~4. Failure of active RF-emitting device(s).~~

~~5. Low-battery capacity at 70-percent reduction of operating capacity.~~

~~6. Failure of critical system components.~~

~~7. The communications link between the *fire alarm system* and the in-building 2- way emergency responder communication coverage system.~~

~~8. Oscillation of active RF-emitting device(s)~~

**510.4.2.6 Additional frequencies and change of frequencies.** ~~The in-building 2- way emergency responder communication coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority.~~

**510.4.2.7 Design documents.** ~~The *fire code official* shall have the authority to require “as-built” design documents and specifications for in-building 2- way emergency responder communication coverage systems. The documents shall be in a format acceptable to the *fire code official*.~~

**510.4.2.8 Radio communication antenna density.** ~~Systems shall be engineered to minimize the near-far effect. In-building 2- way emergency responder communication coverage system designs shall include sufficient antenna density to address reduced gain conditions.~~

**Exception:**

~~1. Systems where all portable devices within the same band use active power control features.~~

**510.5 Installation requirements.** ~~The installation of the public safety radio in-building 2- way emergency responder communication coverage system shall be in accordance with NFPA 1221 and Sections 510.5.1 through ~~510.5.4~~ 510.5.5.~~

**510.5.1 Approval prior to installation. Mounting of the donor antenna(s).** Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC shall not be installed without prior coordination and approval of the *fire code official*. To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the building or where approved, mounted on a movable sled with a clearly visible sign stating "Movement or repositioning of this antenna is prohibited without approval from the fire code official". The antenna installation shall be in accordance with the applicable requirements in the *International Building Code* for weather protection of the building envelope.

**510.5.2 Minimum qualifications of personnel. Approval prior to installation.** The minimum qualifications of the system designer and

lead installation personnel shall include both of the following:

1. A valid FCC issued general radio operator's license.
2. Certification of in building system training issued by a national recognized organization, school, or a certificate issued by the manufacturer of the equipment being installed.

These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the *fire code official* is provided.

Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC or other radio licensing authority shall not be installed without prior coordination and approval of the *fire code official* and the frequency license holder(s).

**510.5.3 Acceptance test procedure. Minimum qualifications of personnel.** Where an emergency responder radio coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that two way coverage on each floor of the building is not less than 90 percent. The test procedure shall be conducted as follows: The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas.

1. A valid FCC-issued general radio operator's license.

2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system.

2. Certification of in-building system training issued by an approved organization or approved school, or a certificate issued by the manufacturer of the equipment being installed.

3. Failure of not more than two nonadjacent test areas shall not result in failure of the test.

4. In the event that three of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal areas. Failure of not more than four nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 90-percent coverage requirement.

5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted.

6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests. In the event that the

measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.

7. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections.

These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the *fire code official* is provided.

**510.5.4 FCC compliance. Acceptance test procedure.** ~~The emergency responder radio coverage system installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219. Where an in-building 2- way emergency responder communication coverage system is required, and upon completion of installation, the building *owner* shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 95 percent. The test procedure shall be conducted as follows:~~

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas. Where a floor exceeds 128,000 ft<sup>2</sup> (11,900 m<sup>2</sup>), which is the floor area that can be covered by the maximum grid dimension of 80 ft. (24.4m), the floor shall be subdivided into sectors each having an area less than or equal to 128,000 ft<sup>2</sup> (11,900 m<sup>2</sup>), and each sector be tested individually with 20 grid cells in each sector. Signal strength measurements should be taken at the center of each grid and should be performed using standardized parameters as specified by NFPA 1221.

2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system or equipment approved by the *fire code official*.

3. Failure of more than one test area shall result in failure of the test.

4. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95-percent coverage requirement.

5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted.

6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building *owner* so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.

7. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections.

8. Systems shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2.

**510.5.5 FCC compliance.** The in-building 2- way emergency responder communication coverage system installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

**510.6 Maintenance.** The ~~emergency responder radio~~ in-building 2- way emergency responder communication coverage system shall be maintained operational at all times in accordance with Sections 510.6.1 through ~~510.6.3~~ 510.6.4.

**510.6.1 Testing and proof of compliance.** The ~~emergency responder radio coverage~~ The *owner* of the building or *owner's* authorized agent shall have the in-building 2- way emergency responder communication coverage system ~~shall be~~ inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following:

1. In-building coverage test as described in Section 510.5.3.
2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance; or set to optimize the performance of the system.
3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.
4. ~~Other~~ All active components shall be checked to verify operation within the manufacturer's specifications.
5. At the conclusion of the testing, a report, which shall verify compliance with Section 510.5.3, shall be submitted to the *fire code official*.

**510.6.2 Additional frequencies.** The building *owner* shall modify or expand the ~~emergency responder radio~~ the in-building 2- way emergency responder communication coverage system at his or her expense in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC ~~or other radio licensing authority~~. Prior approval of a ~~public safety radio~~ an in-building 2- way emergency responder communication coverage system on previous frequencies does not exempt this section.

**510.6.3 Field Testing- ~~Nonpublic safety system.~~** Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage. Where other nonpublic safety amplification systems installed in buildings reduce the performance or cause interference with the in-building 2- way emergency responder communication coverage system, the nonpublic safety amplification system shall be corrected or removed.

**510.6.4 Field testing.** Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage.

## Chapter 80 Referenced Standards

### NFPA

NFPA 1221-19 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems.....510.4.2, 510.5, 510.5.4.

### UL

UL2524 -19 Standard for In-building 2- Way Emergency Radio Communication Enhancement Systems .....510.4.

### FCC

47 CFR Part 90.219-2007 .....510.5.4, 510.5.5

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

**[M] 609.2 Where required.**

A Type 1 hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease or smoke.

**Exceptions:**

1. A Type 1 hood shall not be required for an electric cooking appliance where an *approved* testing agency provides documentation that the appliance effluent contains 5mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236m<sup>3</sup>/s) in accordance with UL 710B.

2. Domestic cooking appliances used for commercial purposes in accordance with Section 507.1.2 of the *International Mechanical Code*.

3. Factory-built commercial exhaust hoods that are *listed* and *labeled* in accordance with UL 710, and installed in accordance with Section 304.1 of the *International Mechanical Code*, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5 of the *International Mechanical Code*.

4. Factory-built commercial cooking recirculating systems that are *listed* and *labeled* in accordance with UL 710B, and installed in accordance with Section 304.1 of the *International Mechanical Code*, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5 of the *International Mechanical Code*. Spaces where such systems are located shall be considered to be kitchens and shall be ventilated in accordance with Table 403.3.1.1 of the *International Mechanical Code*. For the purpose of determining the floor area required to be ventilated, each individual appliance shall be considered as occupying not less than 100 square feet (9.3m<sup>2</sup>).

5. Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them.

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code

901.1 Scope. (161213 Item B-6)

**901.1 Scope.** ~~The provisions of this chapter shall specify where fire protection systems are required and shall apply to the design, installation, inspection, operation, testing and maintenance of all *fire protection systems*.~~

**901.1 Scope.** The provisions of the *International Building Code* shall specify where *fire protection systems* are required. The provisions of the *International Fire Code* shall determine the design, installation, inspection, operation, testing and maintenance of all *fire protection systems*.

The delayed effective date of this Rule for the 2018 NC Fire Prevention Code is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

(Note: Also printed in 2018 Building Code, Section 901.1.)

November 8, 2021

2018 NC Fire Code

**ERRATA** – correct references as shown

**903.2.6 Group I.** An *automatic sprinkler system* shall be provided throughout buildings with a Group I *fire area*.

**Exceptions:**

1. An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 Condition 1 facilities.
2. An *automatic sprinkler system* is not required where Group I-4 day care facilities are at the *level of exit discharge* and where every room where care is provided has not fewer than one exterior *exit door*.
3. In buildings where Group I-4 day care is provided on levels other than the *level of exit discharge*, an *automatic sprinkler system* in accordance with Section 903.3.1.1 shall be installed on the entire floor where care is provided, all floors between the level of care and the *level of exit discharge* and all floors **below the level of exit discharge other than areas classified** as an open parking garage.



2018 NC Fire Code  
903.2.8 Group R. (180911 Item B-13)  
(Also see Errata and 190910 Item B-14 below)

**903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

**Exceptions:**

1. An *automatic sprinkler system* is not required in new adult and child day care facilities located in existing Group R-3 and R-4 occupancies.
2. An *automatic sprinkler system* is not required in *temporary overflow shelters*.
3. An *automatic sprinkler system* is not required in camping units located within a campground where all of the following conditions exist.
  - 3.1. The camping unit is limited to one story in height.
  - 3.2. The camping unit is less than 400 square feet (37 m<sup>2</sup>) in area.
  - 3.3. The camping unit does not have a kitchen.
4. An automatic sprinkler system is not required in an *open air camp cabin* that complies with the following:
  - 4.1. The *open air camp cabin* shall have at least two remote unimpeded exits. Lighted exit signs shall not be required.
  - 4.2. The *open air camp cabin* shall not be required to have plumbing or electrical systems, but if the cabin has these systems, then the provisions of the code otherwise applicable to those systems shall apply.
  - 4.3. Smoke alarms and portable fire extinguishers shall be installed as required by other sections of this code.
5. An *automatic sprinkler system* is not required in the following Group R-3 buildings not more than three stories above grade plane in height with a separate means of egress:
  - 5.1. Detached one- and two-family dwellings.
  - 5.2. Attached one- and two-family dwellings separated with fire walls complying with NC Building Code, Section 706 and containing no other occupancy classification.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

**ERRATA – correct terminology as shown**

(Also see 190910 Item B-14 below)

**903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

**(no change to exceptions 1-3 and 5)**

4. An *automatic sprinkler system* is not required in an *open air camp cabin* that complies with the following:

4.1. The *open air camp cabin* shall have at least two remote unimpeded exits. Lighted exit signs shall not be required.

4.2. The *open air camp cabin* shall not be required to have plumbing or electrical systems, but if the cabin has these systems, then the provisions of the code otherwise applicable to those systems shall apply.

4.3. Smoke **alarms** and portable fire extinguishers shall be installed as required by other sections of this code.

**903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*, except as provided for in Section 903.2.8.5.

**Exceptions:**

1. An *automatic sprinkler system* is not required in new adult and child day care facilities located in existing Group R-3 and R-4 occupancies.
2. An *automatic sprinkler system* is not required in *temporary overflow shelters*.
3. An *automatic sprinkler system* is not required in camping units located within a campground where all of the following conditions exist.
  - 3.1. The camping unit is limited to one story in height.
  - 3.2. The camping unit is less than 400 square feet (37 m<sup>2</sup>) in area.
  - 3.3. The camping unit does not have a kitchen.
4. An automatic sprinkler system is not required in an *open air camp cabin* that complies with the following:
  - 4.1. The *open air camp cabin* shall have at least two remote unimpeded exits. Lighted exit signs shall not be required.
  - 4.2. The *open air camp cabin* shall not be required to have plumbing or electrical systems, but if the cabin has these systems, then the provisions of the code otherwise applicable to those systems shall apply.
  - 4.3. Smoke alarms and portable fire extinguishers may be required as otherwise provided in the code.
5. An *automatic sprinkler system* is not required in the following Group R-3 buildings not more than three *stories above grade plane* in height with a separate *means of egress*:
  - 5.1. Detached one- and two-family *dwelling*s.
  - 5.2. Attached one- and two-family *dwelling*s separated with fire walls complying with Section 706 and containing no other occupancy classification.
6. Temporary *sleeping units* for disaster relief workers as allowed by Section 321.4.5.

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
903.4.1 Monitoring. (161213 Item B-12)

**903.4.1 Monitoring.** Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an *approved* supervising station, where approved by the *fire code official*, shall be an audible signal at a constantly attended location.

**Exceptions:**

1. Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored.
2. Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.
3. ~~A group R-2 building sprinklered in accordance with NFPA 13R where sprinklers are provided for porches, balconies, corridors and stairs that are open and attached and installed supervised in accordance with Section 903.4. At a minimum an approved audible alarm device shall be provided on every sprinklered R-2 building in accordance with Section 903.4.2 of the North Carolina Fire Code. No on site supervision is required at a constantly attended location.~~

The delayed effective date of this Rule is January 1, 2019.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

(Note: Also correlation with 2018 Building Code adoption package, 903.4.1.)

**905.3.1 Height.** Class III standpipe systems shall be installed throughout buildings where ~~the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the heights level of fire department vehicle access,~~ any of the following exist:

1. Four or more stories are above or below grade plane.
2. The floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access.
3. The floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

**Exceptions:**

1. Class I standpipes are allowed in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Class I standpipes are allowed in Group B and E occupancies.
- ~~2~~ 3. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45720 mm) above the lowest level of fire department vehicle access.
- ~~3~~ 4. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.
- ~~4~~ 5. Class I standpipes are allowed in *basements* equipped throughout with an *automatic sprinkler system*.
6. Class I standpipes are allowed in buildings where occupant-use hose lines will not be utilized by trained personnel or the fire department.
- ~~5~~ 7. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:
  - 7.1 Recessed loading docks for four vehicles or less.
  - 7.2 Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

**907.2.1 Group A.**

A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more, or where the Group A occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Sections 707.3.10 and 711.2.4 of the *International Building Code* shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code

**ERRATA** – Chapter 11 does not exist.

**907.9** Where required in existing buildings and structures. Deleted.

2018 NC Fire Code

**ERRATA** – corrected reference as shown

**909.20.7 Manual smoke removal.** Where manually operated panels or windows are required by Section ~~403.4.6~~ **403.4.7** of the *North Carolina Building Code*, they shall be maintained in an operable condition and identified in an *approved* manner.

2018 NC Fire Code

**ERRATA** – correct references as shown

**914.3.1 Automatic sprinkler system.** Buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and a secondary water supply where required by Section **914.3.2**.

2018 NC Fire Code  
915 Carbon Monoxide Alarm and Detection Systems. (180612 Item B-5)

**915.1.1 Where required.** Carbon monoxide detection shall be provided in Group A-2, I-1, I-2, I-4 and R occupancies and in classrooms in Group E occupancies in the locations specified in Section 915.2 where any of the conditions in Sections 915.1.2 through 915.1.6 exist.

**915.1.2 Fuel-burning appliances and fuel-burning fireplaces.** Carbon monoxide detection shall be provided in Group A-2 occupancies, dwelling units, sleeping units and classrooms that contain a fuel-burning appliance or a fuel-burning fireplace.

**915.1.3 Forced air furnaces.** Carbon monoxide detection shall be provided in Group A-2 occupancies, dwelling units, sleeping units and classrooms served by a fuel-burning, forced air furnace.

**915.4.1 Power source.** Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than that required for overcurrent protection.

**Exceptions:**

1. Where installed in buildings without commercial power, battery-powered carbon monoxide alarms shall be an acceptable alternative.
2. In A-2 occupancies the carbon monoxide detector shall be permitted to be battery-powered.

The delayed effective date of this Rule is January 1, 2020.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

[Note: This Rule will also be printed in the 2018 NC Building Code, 915 Carbon Monoxide Alarm and Detection Systems.]



2018 NC Building Code and NC Fire Code  
1004.2 Increased Occupant Load. (210309 Item B-5)

**1004.2 Increased Occupant Load.** Where approved by the *building official*, the *occupant load* permitted in any building, or portion thereof, is permitted to be increased from the number established for the occupancies in Table 1004.1.2, provided that all other requirements of the code are met based on such modified number and the occupant load does not exceed one occupant per 7 square feet (0.65 m<sup>2</sup>) of occupiable floor space. Where required by the *building official*, an *approved aisle*, seating or fixed equipment diagram substantiating any increase in *occupant load* shall be submitted. Where required by the *building official*, such diagram shall be posted.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Fire Code  
1010.1.9.11 Stairway doors. (180313 Item B-10)

**[BE] 1010.1.9.11 Stairway doors.**

Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort.

Exceptions:

1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.
2. This section shall not apply to doors arranged in accordance with Section 403.5.3 of the International Building Code.
3. ~~In stairways serving not more than four stories, doors are permitted to be locked from the side opposite the egress side, provided they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building.~~
3. Stairway exit doors are permitted to be locked from the side opposite the egress side, provided that they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building and upon activation of the fire alarm if present.
4. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group B, F, M and S occupancies where the only interior access to the tenant space is from a single exit stairway where permitted in Section 1006.3.2.
5. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group R-2 occupancies where the only interior access to the dwelling unit is from a single exit stairway where permitted in Section 1006.3.2.
6. ~~In other than high rise, stairways serving floors above a 3 hour horizontal building separation, doors are permitted to be locked from the side opposite the egress side, provided they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon activation of the building fire alarm system.~~

The delayed effective date of this Rule is January 1, 2020.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

**[BE] 1010.1.9.7 Delayed egress.** Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies ~~any occupancy except Group A, E and H~~ 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. ~~The locking system shall be installed and operated in accordance with all of the following:~~

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.

~~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. If a fire command center is not required by the *International Building Code*, the door locks shall have the capability of being unlocked by a signal from a location approved by the local fire code official.~~

~~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.~~

~~**Exception:** In Group I 2 or I 3 occupancies, the egress path from any point in the building shall not pass through more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.~~

~~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.~~

**[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 UL294

The delayed effective date of this Rule is January 1, 2022.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code  
1009.7.2 Separation. (180911 Item B-2)

**1009.7.2 Separation.**

**(no change to subsection)**

**Exceptions:**

1. Areas for assisted rescue that are located 10 feet (3048 mm) or more from the exterior face of a building are not required to be separated from the building by fire-resistance rated walls or protected openings.

2. The fire-resistance rating and opening protectives are not required in the exterior wall where the building is equipped throughout with an automatic sprinkler system installed in accordance with section 903.3.1.1 or 903.3.1.2.

The delayed effective date of this Rule is January 1, 2020.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

[Note: This Rule will also be printed in the 2018 NC Building Code, 1009.7.2 Separation.]

2018 NC Fire Code  
1031.10 Fire Escape Stairs and Ladders. (190910 Item B-4)

**Section 1031.10 Fire Escape Stairways.**

All fire escape *stairways* and *ladders* shall be kept clear and unobstructed at all times and shall be maintained in good working order. All fire escape *stairways* that need to be replaced or repaired shall comply with the requirements of the *International Existing Building Code*.

**Section 1031.10.1 Examination.**

Fire escape *stairways*, balconies, and *ladders* shall be examined for structural adequacy and safety in accordance with Section 1031.10 by a *registered design professional* every 5 years, or as required by the fire code official.

**Section 1031.10.2 Examination Report.**

Records of inspections, testing, and maintenance shall be maintained in accordance with Section 107.3.

**Section 1031.10.3 Marking.**

The open space under fire escape *stairways* or *ladders* shall not be used for any purpose. *Approved* signs or other *approved* markings that include the words FIRE ESCAPE – KEEP CLEAR shall be provided to prohibit the obstruction thereof.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code  
Section 2303.2.1 Height. (200714 Item B-15)

**2303.2.1 Height.**

The height of the emergency disconnect switch shall be not less than 42 inches (1067 mm) and not more than 48 inches (1219 mm) measured vertically, from the floor level to the activating button.

The delayed effective date of this Rule is January 1, 2022.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

105.6.45, 105.7.18, 3103 Tents and Membrane Structures. (161213 Item B-9)

**3103.2 Approval required.** Tents and membrane structures ~~having an area in excess of 400 square feet (37 m<sup>2</sup>)~~ shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the *fire code official*.

**ERRATA:** Exceptions are listed under 3103.2.2.

**3103.2.1 Membrane Structures.** Membrane structures having an area in excess of 400 square feet (37 m<sup>2</sup>)

**3103.2.2 Tents.** Tents having an area in excess of 800 square feet (74 m<sup>2</sup>).

**Exceptions:**

1. Tents used exclusively for recreational camping purposes.
2. Tents open ~~on all sides~~ without sidewalls, drops or other physical obstructions on 75 percent or more of the perimeter that comply with all of the following:
  - 2.1. Individual tents having a maximum size of ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>).
  - 2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of 12 feet (3658 mm), not exceeding ~~700~~ 1800 square feet (~~65~~ 167 m<sup>2</sup>) total.
  - 2.3. A minimum clearance of 12 feet (3658 mm) to all structures and other tents.
3. Funeral tents and curtains or extensions attached thereto, when used for funeral services.

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021



2018 NC Fire Code  
3103.4 Permits. (210309 Item B-3)

**3103.4 Permits.** Permits shall be required as set forth in Sections 105.6 and 105.7. The fire code official shall refer the permit applicant to the appropriate agency for other applicable occupational licensing and construction permitting requirements.

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

105.6.45, 105.7.18, 3103 Tents and Membrane Structures. (161213 Item B-9)

**3103.5 Use period.** ~~Temporary tents~~ A temporary tent, air-supported, air-inflated or tensioned membrane ~~structures~~ structure shall not be erected for a period of more than 180 consecutive days within a 12-month period on a single premises.

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code  
3406.1 Tire Storage. (161213 Item B-10)

**3406.1 Required access.**

New tire storage yards shall be provided with fire apparatus access roads in accordance with Section 503 and Section 3406.2. Existing tire storage yards shall be provided with fire apparatus access roads where required in ~~Chapter 11~~ Section 3406.1.1.

**3406.1.1 Existing tire storage yards.** Existing tire storage yards in excess of 150,000 cubic feet shall be provided with fire apparatus access roads in accordance with Section 3406.1.1.1 and 3406.1.1.2.

**3406.1.1.1 Access to piles.** Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located not less than 20 feet (6096 mm) from any **other** storage pile.

**3406.1.1.2 Location within piles.** Fire apparatus access roads shall be located within all pile clearances identified in Section 3405.4 and within all fire breaks required in Section 3405.5.

The delayed effective date of this Rule is January 1, 2019.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code  
609.2. Commercial Kitchen Hoods. (200310 Item B-3)

**Chapter 80 – Referenced Standards**

UL 710-2012

Exhaust Hoods for Commercial Cooking Equipment

The delayed effective date of this Rule is January 1, 2021.  
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Fire Code

**ERRATA** – The “Sprinkler” references were incorrectly noted under “Atrium” instead of the correct location of “ATTIC”.

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