North Carolina Building Code Council

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November 18, 2020

Robbie Davis, Chairman
5998 Dortches Boulevard
Rocky Mount, NC 27804

RE: Agenda for the December 8, 2020 NC Building Code Council Meeting

Mr. Davis:

This is officially to notify you and other interested parties of a regularly scheduled meeting of the NC Building Code Council. Persons requiring auxiliary services should notify the Council at least ten business days prior to the meeting.

1. The NC Building Code Council Meeting will begin at 9:00AM on Tuesday, December 8, 2020 (Albemarle Building).
2. Standing Committees will meet in the afternoon on Monday, December 7. Schedule to be set by Chairman.
3. The Agenda is printed as follows:
   A-Items- Administrative items that require Council action but are not subject to Rule-Making.
   B-Items- New amendment petitions introduced at this meeting.
   C-Items- Amendments that have been granted by the Council and advertised in the NC Register for public hearing.
   D-Items- Adoption of amendments by the Council prior to approval by the Rules Review Commission.
   E-Items- Reports from Committees and Staff.
   F-Items- Notice of Appeal Hearings.

Part A – Administrative Items

Item A – 1 Ethics Statement: Inquire upon conflicts of interest or appearance of conflicts that exist within the Council.

Item A – 2 Approval of minutes of the July 14, 2020 and September 1, 2020 NC Building Code Council Meetings.

Item A – 3 Request by Steve Edwards and Fire Chief Chris Anselmo for approval of the Town of Oak Island's adoption of the NC Fire Prevention Code Appendix B, specifically to zoning district R-7 and CR.

Item A – 4 Request by Ryan Knowles, Intertek-PSI for approval as an NC approved modular third-party certifying agency as required by Article III of the North Carolina State Building Code Modular Construction Regulations.

Item A – 5 Emergency rule to delay the current January 1, 2021 effective date of 2018 NC Fire Code, Section 304.4.2.3 requirements for valet trash collections cans because of unavailability of the cans from manufacturers due to the current pandemic.

Item A – 6 Rules Review Commission Meeting Report

Item A – 7 Public Comments

Part B – New Petition for Rulemaking

The following Petitions for Rulemaking have been received since the last Council meeting. The Council will vote either to deny or grant these Petitions. The Council will give no further consideration to Petitions that are denied. Petitions that are granted may proceed through the Rulemaking process. The council may send any Petition to the appropriate committee. The hearing will take place during or after the December 8, 2020 meeting.

There will be no B items received from the floor.

Item B – 1 Request from Wayne Hamilton representing the NC Building Code Council to amend the 2018 NC Fire Code, Section 304.4.4 as follows:

~~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.~~

Item B - 2 Request from Drew Crawford representing DIYtiny, Inc to add to the 2018 NC Building Code, Appendix O as follows:

APPENDIX O
TINY HOUSES
Provisions contained in this appendix are adopted as part of this code.

O101 GENERAL

O101.1 Scope. This appendix shall be applicable to detached tiny houses used as single *dwelling units*. Tiny houses shall comply with this code except as otherwise stated in this appendix.

O102 DEFINITIONS

The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

EGRESS ROOF ACCESS WINDOW. A *skylight* or roof window designed and installed to satisfy the *emergency escape and rescue opening* requirements of Section 1030.

LANDING PLATFORM. A landing provided as the top step of a *stairway* accessing a loft.

LOFT. A floor level located more than 30 inches (762 mm) above the *level of exit discharge*, open to the *level of exit discharge* on one or more sides with a ceiling height of less than 6 feet 8 inches (2032 mm) and used as a living or sleeping space.

TINY HOUSE. A detached single-family *dwelling* that is 400 square feet (37 m^2) or less in floor area excluding lofts.

O103 CEILING HEIGHT

O103.1 Minimum Ceiling Height. *Habitable space* and hallways in tiny houses shall have a minimum ceiling height of 6 feet 8 inches (2032 mm). Bathroom, toilet room and kitchen shall have a minimum ceiling height of 6 feet 4 inches (1930 mm). Obstructions including, but not limited to, beams, girders, ducts and lighting, shall not extend below these minimum ceiling heights.

Exception: Ceiling heights in *lofts* are permitted to be less than 6 feet 8 inches (2032 mm).

O104 LOFTS

O104.1 Minimum Loft Area and Dimensions. *Lofts* used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections O104.1.1 through O104.1.3.

O104.1.1 Minimum floor area. *Lofts* shall have a floor area of not less than 35 square feet (3.25 m^2).

O104.1.2 Minimum Dimensions. *Lofts* shall be not less than 5 feet (1524 mm) in any horizontal dimension.

O104.1.3 Height Effect on Loft Area. Portions of a *loft* with a sloped ceiling measuring less than 3 feet (914 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required floor area for the loft.

Exception: Under gable roofs with a minimum slope of 6 units vertical in 12 units horizontal (50-percent slope), portions of a loft with a sloped ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the *loft*.

O104.2 Loft Access. The access to and primary egress from *lofts* shall be of any type described in Sections O104.2.1 through O104.2.4.

O104.2.1 Stairways. *Stairways* accessing *lofts* shall comply with this code or with Sections O104.2.1.1 through O104.2.1.5.

O104.2.1.1 Width. *Stairways* accessing a *loft* shall not be less than 17 inches (432 mm) in clear width at or above the *handrail*. The width below the *handrail* shall be not less than 20 inches (508 mm).

O104.2.1.2 Headroom. The headroom in *stairways* accessing a loft shall be not less than 6 feet 2 inches (1880 mm), as measured vertically, from a sloped line connecting the tread or landing platform *nosing* in the middle of their width.

O104.2.1.3 Treads and Risers. Risers for *stairs* accessing a *loft* shall be not less than 7 inches (178 mm) and not more than 12 inches (305 mm) in height. Tread depth and riser height shall be calculated in accordance with one of the following formulas:
1. The tread depth shall be 20 inches (508 mm) minus four-thirds of the riser height; or
2. The riser height shall be 15 inches (381 mm) minus three-fourths of the tread depth.

O104.2.1.4 Landing Platforms. The top tread and riser of *stairways* accessing *lofts* shall be constructed as a landing platform where the *loft* ceiling height is less than 6 feet 2 inches (1880 mm) where the *stairway* meets the *loft*. The landing platform shall be 18 inches to 22 inches (457 to 559 mm) in depth measured from the *nosing* of the landing platform to the edge of the *loft*, and 16 to 18 inches (406 to 457 mm) in height measured from the landing platform to the *loft* floor.

O104.2.1.5 Handrails. *Handrails* shall comply with Section 1014.

O104.2.1.6 Stairway Guards. *Guards* at open sides of *stairways* shall comply with Section 1015.

O104.2.2 Ladders. Ladders accessing *lofts* shall comply with Sections O104.2.1 and O104.2.2.

O104.2.2.1 Size and Capacity. Ladders accessing lofts shall have a rung width of not less than 12 inches (305 mm), and 10-inch (254 mm) to 14-inch (356 mm) spacing between rungs. Ladders shall be capable of supporting a 200-pound (75 kg) load on any rung. Rung spacing shall be uniform within $^3/_8$ inch (9.5 mm).

O104.2.2.2 Incline. Ladders shall be installed at 70 to 80 degrees from horizontal.

O104.2.3 Alternating Tread Devices. *Alternate tread devices* accessing *lofts* shall comply with Sections 1011.14.1 and 1011.14.2. The clear width at and below the *handrails* shall be not less than 20 inches (508 mm).

O104.2.4 Ships Ladders. Ship's ladders accessing lofts shall comply with Sections 1011.15.1 and 1011.15.2. The clear width at and below *handrails* shall be not less than 20 inches (508 mm).

O104.2.5 Loft Guards. *Loft guards* shall be located along the open side of *lofts*. *Loft guards* shall be not less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less.

O105 EMERGENCY ESCAPE AND RESCUE OPENINGS

O105.1 General. Tiny houses shall meet the requirements of Section 1030 for *emergency escape and rescue openings*.

Exception: *Egress roof access windows* in *lofts* used as sleeping rooms shall be deemed to meet the requirements of Section 1030 where installed such that the bottom of the opening is not more than 44 inches (1118 mm) above the loft finish floor, provided the *egress roof access window* complies with the minimum opening area requirements of Section 1030.2.

Item B – 3 Request from Brady Edwards and Ethan Fitzpatrick representing NC Solar Now, Inc. to add to the 2018 NC Residential Code, Section P3103.1 as follows:

P3103. 1 (903.1) Roof extension.
Open vent pipes that extend through a roof that do not meet the conditions of P3103.1.1 shall be terminated not less than 6 inches (152 mm) above the roof or 6 inches (152 mm) above the anticipated snow accumulation, whichever is greater.

P3103.1.1 Roof Extension Covered
Where an open vent pipe terminates above a sloped roof and is covered by either a roof-mounted panel (such as a solar collector or photovoltaic panel mounted over the vent opening) or a roof element (such as an architectural feature or a decorative shroud), the vent pipe shall terminate not less than 2 inches *(51* mm) above the roof surface. Such roof elements shall be designed to prevent the adverse effects of snow accumulation and wind on the function of the vent. The placement of a panel over a vent pipe and the design of a roof element covering the vent pipe shall provide for an open area for the vent pipe to the outdoors that is not less than the area of the pipe, as calculated from the inside diameter of the pipe. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening.

Item B - 4 **Request from Ryan Miller representing NC Building Performance Association (NCBPA) to amend the 2018 NC Energy Code, Appendix C1 as follows:**

NCBPA proposes to replace the existing Appendix C1 Statement of System Commissioning form (provided below) with a new version (provided below). The form is referenced in section C408.4 Documentation Requirements and provided in Appendix C1.

Section C408.4 Documentation Requirements:

Current Form Used in Appendix C1

APPENDIX C1
STATEMENT OF SYSTEM COMMISSIONING

Part 1: Mechanical
Project Name: _____

Project Location: _____

In my professional opinion, the HVAC systems have been installed in substantial compliance with the intent of the approved project plans and specifications based on a site observation performed and upon review of the following:

YES	NO	NOT REQUIRED	ITEMS	COMMENTS
			Testing and Balance Reports	
			Operations and Maintenance Manuals for HVAC	
			HVAC Equipment	
			HVAC Controls and Operational Sequences	

Notes:_____
_____
_____
_____
_____
_____
_____

List of Deferred Tests:
_____
_____
_____
_____
_____
_____

Name: _____
Signature: _____
Date: _____

Seal Above:

Part 2: Service Water Heating
Project Name: _____

Project Location: _____

In my professional opinion, the service water heating systems have been installed and are in substantial compliance with the intent of the approved project plans and specifications based on a site observation performed and upon review of the following:

YES	NO	NOT REQUIRED	ITEMS	COMMENTS
			Manuals for Service Water Heating	
			Service Water Heating Systems	

Notes:_____
_____
_____
_____
_____
_____
_____

List of Deferred Tests:
_____
_____
_____
_____
_____
_____

Name: _____
Signature: _____
Date: _____ Seal Above:

Part 3: Electrical

Project Name: _____

Project Location: _____

In my professional opinion, the lighting systems have been installed and are in substantial compliance with the intent of the approved project plans and specifications based on a site observation performed and upon review of the following:

YES	NO	NOT REQUIRED	ITEMS	COMMENTS
			Manuals for Lighting Systems	
			Lighting Equipment	
			Lighting Controls and Operational Sequences	

Notes:_____
_____
_____
_____
_____
_____
_____

List of Deferred Tests:
_____
_____
_____
_____
_____
_____

Name: _____
Signature: _____
Date: _____ Seal Above:

Proposed Form To Be Adopted and Used in Appendix C1

Statement of System Commissioning

Project Name: _____
Project Address: _____
Commissioning Provider: _____

PART I – Mechanical
Construction Document Notes (Section C408.2)

- ❑ Construction document notes clearly indicated provisions for commissioning and completion requirements in accordance with this section.

Commissioning Plan (Section C408.2.1)
The mechanical systems have been installed.

- ❑ Commissioning Plan was used during construction and includes all items required by Section C408.2.1.
- ❑ Systems Adjusting and Balancing has been completed per Section C408.2.2.
- ❑ HVAC Equipment Function Performance Testing has been executed per Section C408.2.3.1. If applicable, deferred and follow-up testing is scheduled to be provided on _____.
- ❑ HVAC Controls Functional Performance Testing has been executed per Section C408.2.3.2. If applicable, deferred and follow-up testing is scheduled to be provided on _____.
- ❑ Economizer Functional Performance Testing has been executed per Section C408.2.3.3. If applicable, deferred and follow-up testing is scheduled to be provided on _____.
- ❑ Manual, record documents, and training have been completed or scheduled.

In my professional opinion, the mechanical systems have been installed and are in substantial compliance with the intent of the approved project plans and specifications, and the systems have been properly commissioned based on my site observations performed, and review of the items above.

Signature of Engineer: _____ Date: _____
NOTES:
SEAL:

PART II – Lighting
Construction Document Notes (Section C408.2)

- ❑ Construction document notes clearly indicated provisions for commissioning and completion requirements in accordance with this section.

Commissioning Plan (Section C408.3)

- ❑ Construction document notes clearly indicated provisions for commissioning and completion requirements in accordance with this section.

- ❑ Commissioning Plan was used during construction and includes all items required by Section C408.3.

- ❑ Lighting Equipment Functional Performance Testing has been executed per Section C408.3.1.

- ❑ Occupancy Sensor controls have been Functionally Performance Tested per Section C408.3.1.1.
- ❑ Time Switch controls have been Functionally Performance Tested per Section C408.3.1.2.
- ❑ Daylight Responsive controls have been Functionally Performance Tested per Section C408.3.1.3.
- ❑ Manual, record documents, and training have been completed or scheduled.

In my professional opinion, the lighting systems have been installed and are in substantial compliance with the intent of the approved project plans and specifications, and the systems have been properly commissioned based on my site observations performed, and review of the items above.

Signature of Engineer: _____ Date: _____
NOTES:
SEAL:

PART III – Plumbing
Construction Document Notes (Section C408.2)

- ❑ Construction document notes clearly indicated provisions for commissioning and completion requirements in accordance with this section.

Commissioning Plan (Section C408.3)
The plumbing systems have been installed.

- ❑ Construction document notes clearly indicated provisions for commissioning and completion requirements in accordance with this section.
- ❑ Commissioning Plan per Section C408.2.1 was used during construction and includes all items required by Section.
- ❑ Service Water Heating Functional Performance Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on _____.
- ❑ Manual, record documents, and training have been completed or scheduled.

In my professional opinion, the plumbing systems have been installed and are in substantial compliance with the intent of the approved project plans and specifications, and the systems have been properly commissioned based on my site observations performed, and review of the items above.

Signature of Engineer: _____ Date: _____
NOTES:
SEAL:

Item B - 5 Request by Tim Henshaw representing the NC Fire Code Revision Committee to amend the 2018 NC Fire Code, Section 510, Chapter 80 as follows:

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 coverage system.

2. Where it is determined by the *fire code official* that the radio coverage system is not needed.

3. In facilities where emergency responder radio 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 coverage system.

4. New buildings 7,500square 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 105.7.6. 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 radio 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 system 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 batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. 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 waterproof 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 ft2 (11,900 m2), 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 ft2 (11,900 m2), 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

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

Item B - 6 Request from Tim Henshaw representing NC Fire Code Revision Committee to amend the 2018 NC Building Code, Sections 403.4.5, 916, and 916.1 as follows:

403.4.5; Emergency Responder ~~Radio~~ Communication Coverage. Emergency responder ~~radio~~ communication coverage shall be provided in accordance with Section 510 of the *International Fire Code*.

916, Emergency Responder ~~Radio~~ Communication Coverage

916.1; General. Emergency responder ~~radio~~ communication coverage shall be provided in all new buildings in accordance with Section 510 of the *International Fire Code*.

Item B - 7 Request by the NC Building Code Council, Electrical Ad-Hoc Committee, to adopt the 2020 North Carolina Electrical Code. The Base Documents for the 2020 NC Electrical Code is the 2020 National Electrical Code (NEC). The 2020 NC Ad-Hoc Committee amendments will be posted at the following website and are replacements to the Sections printed in the Base Documents.

https://www.ncosfm.gov/codes/building-code-council-bcc/bcc-meeting-dates

The 2020 NEC Base Document can be viewed by going to the following website:
https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70

(Note: NFPA requires a user account be created prior to viewing the Codes.

Part C – Notice of Rulemaking Proceedings and Public Hearing
The following Petitions for Rulemaking have been granted by the Council. Notice of Rulemaking proceedings has been made. The Public Hearing will be held on December 8, 2020 and the Final Adoption meeting may take place on or after March 9, 2021. The written public comment period expires on January 15, 2021.

Item C – 1 Request from Colin Triming representing the NC Fire Code Revisions Committee to amend the 2018 N.C. Fire code, Section 1010.1.9.7 as follows:

[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 GroupI-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.

Item C – 2 Request from Kerry Sutton representing American Concrete Institute (ACI), Dave Tepke representing ACI Carolinas, Mark LeMay representing International Concrete Repair Institute (ICRI), Bill Brickey representing ICRI Carolinas Chapter, Keith Kesner representing CVM, and Tim Cook representing SKA Consulting Engineering to add the 2018 N.C. Existing Building Code, Section 606.1.1 and add a reference to Chapter 16 as follows:

606.1.1 Repairs to structural concrete. Repairs to structural concrete elements shall comply with ACI 562 and this code.

Exception: Where seismic design governs. ACI 562 shall not be used for evaluation and design.

(Add a new referenced standard to Chapter 16 as follows:)

ACI American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48331

562-19 Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures 606.1.1

NOTE: The item that would have been Item C-3 was denied as a B item. Therefore, there is no C-3 item for this meeting.

NOTE: The item that would have been Item C-4 was denied as a B item. Therefore, there is no C-4 item.

Item C – 5 Request from Bridget Herring to amend the 2018 N.C. Residential Code, Section N1101.13 as follows:

N1101.13 (R401.2) Compliance
Projects shall comply with one of the following:
1. Section N1101.14 through N1104.
2. Section N1105 and the provisions of Section N1101.14 labeled "Mandatory."
3. An energy rating index (ERI) approach in Section N1106.
4. ~~North Carolina specific~~ REScheck keyed to the 2018 IECC shall be permitted to demonstrate compliance with this code. Envelope requirements may not be traded off against the use of high efficiency heating or cooling equipment. No tradeoff calculations are needed for required termite inspection and treatment gaps.

Item C – 6 Request from Robert Privott representing the NC Home Builders Association and Jeff Tiller to amend the 2018 N.C. Residential Code, Chapter 44 as follows:

REFERENCED STANDARDS
ASTM
E283-04 Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen .....N1102.4.6, Table N1106.2.1, Table N1106.2.2

Item C – 7 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to add the 2018 N.C. Residential Code, Chapter 2 Definitions as follows:

AIR-IMPERMEABLE INSULATION. An insulation having an air permanence equal to or less than 0.02 L/s-m2 at 75 Pa pressure differential ~~as~~ tested ~~in accordance with~~ according to ASTM E2178 or E283 at the thickness applied.

Item C – 8 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C. to amend the 2018 Residential Code, Chapter 44 as follows:

CHAPTER 44
REFERENCED STANDARDS

~~**ANCE**~~

~~UL/CSA/ANCE 60335-2-40—2012 Standard for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Motor-compressors M1403.1~~

ASHRAE

34—~~2013~~2019 Designation and Safety Classification of Refrigerants M1411.1

CSA

CSA C22.2 No. 60335-2-40-2019

~~UL/CSA/ANCE 60335-2-40—2012~~ Standard for Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for ~~Motor-compressors~~ Electrical Heat Pumps, Air-Conditioners and Dehumidifiers - 3rd Edition M1402.1, M1403.1

UL

1995—~~2011~~2015 Heating and Cooling Equipment M1402.1, M1403.1, M1407.1

~~UL/CSA/ANCE~~ 60335-2-40-~~2012~~2019 Standard for Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for ~~Motor-compressors~~ Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition M1402.1, M1403.1

Item C – 9 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Residential Code, Section M1402.1 as follows:

M1402.1 (918.1) General.
Oil-fired central furnaces shall conform to ANSI/UL 727. Electric furnaces shall conform to UL 1995 or UL/CSA 60335-2-40. Solid fuel furnaces shall be tested in accordance with UL 391.

Item C – 10 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Residential Code, Section M1403.1 as follows:

M1403.1 (918.2) Heat pumps.
Electric heat pumps shall be listed and labeled in accordance with UL 1995 or UL/CSA~~/ANCE~~ 60335-2-40.

Item C – 11 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Mechanical Code, Chapter 15 as follows:

CHAPTER 15
REFERENCED STANDARDS

Standard reference number	Title
ASHRAE	ASHRAE 1791 Tullie Circle, NE Atlanta, GA 30329
15—~~2013~~2019	Safety Standard for Refrigeration Systems 1101.6, 1105.8, 1108.1
34—~~2013~~2019	Designation and Safety Classification of Refrigerants 202, 1102.2.1, 1103.1
CSA	CSA Group 8501 East Pleasant Valley Road Cleveland, OH 44131-5516
CSA-C22.2 No. 60335-2-40-2019	Household And Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition 908.1, 918.1, 918.2, 1101.2
UL	UL LLC 333 Pfingsten Road Northbrook, IL 60062-2096
1995—~~2011~~2015	Heating and Cooling Equipment 908.1, 911.1, 918.1, 918.2, 1101.2
UL 60335-2-40-2019	Household And Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition 908.1, 918.1, 918.2, 1101.2

Item C – 12 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Mechanical Code, Section 908.1 as follows:

908.1 General.
A cooling tower used in conjunction with an air-conditioning appliance shall be installed in accordance with the manufacturer's instructions. Factory-built cooling towers shall be listed in accordance with UL 1995 or UL/CSA 60335-2-40.

Item C – 13 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Mechanical Code, Sections 918.1 and 918.2 as follows:

918.1 Forced-air furnaces.
Oil-fired furnaces shall be tested in accordance with UL 727. Electric furnaces shall be tested in accordance with UL 1995 or UL/CSA 60335-2-40. Solid fuel furnaces shall be tested in accordance with UL 391. Forced-air furnaces shall be installed in accordance with the listings and the manufacturer's instructions.

918.2 Heat pumps.
Electric heat pumps shall be tested in accordance with UL 1995 or UL/CSA 60335-2-40.

Item C – 14 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C./Daikin U.S. to amend the 2018 Mechanical Code, Section 1101 as follows:

1101.2 Factory-built equipment and appliances.
Listed and labeled self-contained, factory-built equipment and appliances shall be tested in accordance with UL 207, 412, 471, ~~or~~ 1995 or UL/CSA 60335-2-40. Such equipment and appliances are deemed to meet the design, manufacture and factory test requirements of this code if installed in accordance with their listing and the manufacturer's instructions.

Item C – 15 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to amend the 2018 Energy Code, Section R406.2 as follows:

R406.2 Mandatory requirements.
Compliance with this section requires that the provisions identified in Sections R401 through R404 labeled as "mandatory" be met. The building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table R406.2.1 or Table R406.2.2. ~~Table 402.1.1 or 402.1.3 of the 2012 North Carolina Energy Conservation Code.~~ Minimum standards associated with compliance shall be the ANSI RESNET ICC Standard 301-2014: "Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index." A North Carolina *registered design professional* or certified *HERS rater* is required to perform the analysis if required by North Carolina Licensure laws.

Exception: Supply and return ducts in unconditioned space and outdoors shall be insulated to a minimum R-8. Supply ducts inside semi-conditioned space shall be insulated to a minimum R-4; return ducts inside conditioned and semi-conditioned space are not required to be insulated. Ducts located inside conditioned space are not required to be insulated other than as may be necessary for preventing the formation of condensation on the exterior of cooling ducts.

TABLE R406.2.1
MINIMUM INSULATION AND FENESTRATION REQUIREMENTS FOR ENERGY RATING INDEX COMPLIANCE[a]

	FENESTRATION VALUES			R-VALUES FOR								
CLIMATE ZONE	FENESTRATION U-FACTOR[b,j]	SKYLIGHT[b] U-FACTOR	GLAZED FENSTRATION SHGC[b,k]	CEILING[m]	UNVENTED[p] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-IMPERMEABLE	UNVENTED[p] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-PERMIABLE/ IMPERMEABLE	WOOD FRAME WALL	MASS WALL[l]	FLOOR	BASEMENT[c,o] WALL	SLAB[d]	CRAWL SPACE[c] WALL
3	0.35	0.65	0.3	30	20	15-10[q]	13	5/10	19	10/13[f]	0	5/13
4	0.35	0.6	0.3	38 or 30ci[l]	20	15-10[q]	15, 13+2.5[h]	5/10	19	10/13	10	10/13
5	0.35	0.6	NR	38 or 30ci[l]	25	15-20[q]	19[n], 13+5[h], or 15+3[h]	13/17	30[g]	10/13	10	10/13

For SI: 1 foot = 304.8 mm.
a. *R*-values are minimums. *U*-factors and SHGC are maximums.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall or crawl space wall.
d. For monolithic slabs, insulation shall be applied from the inspection gap downward to the bottom of the footing or a maximum of 18 inches below grade whichever is less. For floating slabs, insulation shall extend to the bottom of the foundation wall or 24 inches, whichever is less. (See Appendix R2) R-5 shall be added to the required slab edge *R*-values for heated slabs.
e. Deleted.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. The first value is cavity insulation, the second value is continuous insulation so "13+5" means R-13 cavity insulation plus R-5 continuous insulation. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.
j. In addition to the exemption in R402.3.3, a maximum of two glazed fenestration product assemblies having a U-factor no greater than 0.55 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty.
k. In addition to the exemption in R402.3.3, a maximum of two glazed fenestration product assemblies having a SHGC no greater than 0.70 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty.
l. R-30 shall be deemed to satisfy the ceiling insulation requirement wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. Otherwise, R-38 insulation is required where adequate clearance exists or insulation must extend either to the insulation baffle or within 1" of the attic roof deck.
m. Table value required except for roof edge where the space is limited by the pitch of the roof; there the insulation must fill the space up to the air baffle.
n. R -19 fiberglass batts compressed and installed in a nominal 2 × 6 framing cavity is deemed to comply. Fiberglass batts rated R-19 or higher compressed and installed in a 2x4 wall is are not deemed to comply.
o. Basement wall meeting the minimum mass wall specific heat content requirement may use the mass wall R-value as the minimum requirement.
p. The air-impermeable insulation shall meet the requirements of the definition in Section R202. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. For one- and two-family dwellings and townhouses, the insulation installation shall meet the requirements of R806.5 of the North Carolina Residential Code. For Residential Buildings other than one- and two-family dwellings and townhouses, the insulation installation shall meet the installation requirements of 1203.3 of the North Carolina Building Code. Exposed rafters shall be covered with R-7 insulation.
q. The value for air-permeable insulation is shown first and that for air-impermeable insulation second. Thus, R-15 + R-10 indicates that the minimum value for air-permeable insulation is R-15, and the minimum value for air-impermeable insulation is R-10. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. The air-permeable insulation shall be installed directly under the air-impermeable insulation. Exposed rafters shall be covered with R-7 insulation.

TABLE R406.2.2
EQUIVALENT U-FACTORS FOR TABLE R406.2.1

CLIMATE ZONE	FENESTRATION [d]	SKYLIGHT	CEILING	UNVENTED [e] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-IMPERMEABLE	UNVENTED [e] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK/, AIR-PERMEABLE/ IMPERMEABLE	FRAME WALL	MASS WALL [b]	FLOOR	BASEMENT [d] WALL	CRAWL SPACE [c] WALL
3	0.35	0.65	0.0350	0.05	0.043[f]	0.082	0.141	0.047	0.059	0.136
4	0.35	0.60	0.0300	0.05	0.043[f]	0.077	0.141	0.047	0.059	0.065
5	0.35	0.60	0.0300	0.037	0.034[f]	0.061	0.082	0.033	0.059	0.065

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.
b. When more than half the insulation is on the interior, the mass wall *U*-factors shall be a maximum of 0.07 in Climate Zone 3, 0.07 in Climate Zone 4 and 0.054 in Climate Zone 5.
c. Basement wall *U*-factor of 0.360 in warm-humid locations as defined by Figure R301.1 and Table R301.1.
d. A maximum of two glazed fenestration product assemblies having a U-factor no greater than 0.55 and a SHGC no greater than 0.70 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty. When applying this note and using the RESCheck "UA Trade-off" compliance method to allow continued use of the software, the applicable fenestration products shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, but the fenestration products' actual U-factor and actual SHGC shall be noted in the comments section of the software for documentation of application of this note to the applicable products. Compliance for these substitute products shall be verified compared to the allowed substituted maximum U-value requirement and maximum SHGC requirement, as applicable.
e. The air-impermeable insulation shall meet the requirements of the definition in section R202. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. For one- and two-family dwellings and townhouses, the insulation installation shall meet the requirements of R806.5 of the North Carolina Residential Code. Exposed rafters shall be covered with R-7 insulation.
f. For air-permeable/ impermeable applications, Table R406.2.1 shall be followed for minimum insulation values.

Note: The item that would be Item C-16 was denied as a B-item. Therefore, there is no C-16 item for this meeting.

Note: The item that would be Item C-17 was denied as a B-item. Therefore, there is no C-17 item for this meeting.

Note: The item that would be Item C-18 was denied as a B-item. Therefore, there is no C-18 item for this meeting.

Note: The item that would be Item C-19 was denied as a B-item. Therefore, there is no C-19 item for this meeting.

Item C – 20 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to add the 2018 N.C. Energy Code, Chapter 2[RE] Definitions as follows:

AIR-IMPERMEABLE INSULATION. An insulation having an air permanence equal to or less than 0.02 L/s-m2 at 75 Pa pressure differential tested according to ASTM E2178 or E283 at the thickness applied.

Item C – 21 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to amend the 2018 N.C. Residential Code, Section N1106.2 Mandatory Requirements as follows:

N1106.2 Mandatory requirements.
Compliance with this section requires that the provisions identified in Sections N1101 through N1104 labeled as "mandatory" be met. The building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table N1106.2.1 or Table N1106.2.2. ~~Table 402.2.3 or 402.1.3 of the 2012 North Carolina Energy Conservation Code.~~ Minimum standards associated with compliance shall be the ANSI RESNET ICC Standard 301-2014: "Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index." A North Carolina *registered design professional* or certified *HERS rater* is required to perform the analysis if required by North Carolina Licensure laws.

Exception: Supply and return ducts in unconditioned space and outdoors shall be insulated to a minimum R-8. Supply ducts inside semi-conditioned space shall be insulated to a minimum R-4; return ducts inside conditioned and semi-conditioned space are not required to be insulated. Ducts located inside conditioned space are not required to be insulated other than as may be necessary for preventing the formation of condensation on the exterior of cooling ducts.

TABLE N1106.2.1
MINIMUM INSULATION AND FENESTRATION REQUIREMENTS FOR ENERGY RATING INDEX COMPLIANCE[a]

	FENESTRATION VALUES			R-VALUES FOR								
CLIMATE ZONE	FENESTRATION U-FACTOR[b,j]	SKYLIGHT[b] U-FACTOR	GLAZED FENSTRATION SHGC[b,k]	CEILING[m]	UNVENTED[p] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-IMPERMEABLE	UNVENTED[p] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-PERMIABLE/ IMPERMEABLE	WOOD FRAME WALL	MASS WALL[l]	FLOOR	BASEMENT[c,o] WALL	SLAB[d]	CRAWL SPACE[c] WALL
3	0.35	0.65	0.3	30	20	15-10[q]	13	5/10	19	10/13[f]	0	5/13
4	0.35	0.6	0.3	38 or 30ci[l]	20	15-10[q]	15, 13+2.5[h]	5/10	19	10/13	10	10/13
5	0.35	0.6	NR	38 or 30ci[l]	25	15-20[q]	19[n], 13+5[h], or 15+3[h]	13/17	30[g]	10/13	10	10/13

For SI: 1 foot = 304.8 mm.
a. *R*-values are minimums. *U*-factors and SHGC are maximums.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall or crawl space wall.
d. For monolithic slabs, insulation shall be applied from the inspection gap downward to the bottom of the footing or a maximum of 18 inches below grade whichever is less. For floating slabs, insulation shall extend to the bottom of the foundation wall or 24 inches, whichever is less. (See Appendix O) R-5 shall be added to the required slab edge *R*-values for heated slabs.
e. Deleted.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.7 and Table N1101.7.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. The first value is cavity insulation, the second value is continuous insulation so "13+5" means R-13 cavity insulation plus R-5 continuous insulation. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.
j. In addition to the exemption in N1102.3.3, a maximum of two glazed fenestration product assemblies having a U-factor no greater than 0.55 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty.
k. In addition to the exemption in N1102.3.3, a maximum of two glazed fenestration product assemblies having a SHGC no greater than 0.70 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty.
l. R-30 shall be deemed to satisfy the ceiling insulation requirement wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. Otherwise, R-38 insulation is required where adequate clearance exists or insulation must extend either to the insulation baffle or within 1" of the attic roof deck.
m. Table value required except for roof edge where the space is limited by the pitch of the roof; there the insulation must fill the space up to the air baffle.

n. R -19 fiberglass batts compressed and installed in a nominal 2 × 6 framing cavity is deemed to comply. Fiberglass batts rated R-19 or higher compressed and installed in a 2x4 wall ~~is~~ are not deemed to comply.
o. Basement wall meeting the minimum mass wall specific heat content requirement may use the mass wall R-value as the minimum requirement.
p. The air-impermeable insulation shall meet the requirements of the definition in Section R202. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. For one- and two-family dwellings and townhouses, the insulation installation shall meet the requirements of R806.5 of the North Carolina Residential Code. For Residential Buildings other than one- and two-family dwellings and townhouses, the insulation installation shall meet the installation requirements of 1203.3 of the North Carolina Building Code. Exposed rafters shall be covered with R-7 insulation.
q. The value for air-permeable insulation is shown first and that for air-impermeable insulation second. Thus, R-15 + R-10 indicates that the minimum value for air-permeable insulation is R-15, and the minimum value for air-impermeable insulation is R-10. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. The air-permeable insulation shall be installed directly under the air-impermeable insulation. Exposed rafters shall be covered with R-7 insulation.

TABLE N1106.2.2
EQUIVALENT U-FACTORS FOR TABLE N1106.2.1[a]

CLIMATE ZONE	FENESTRATION[d]	SKYLIGHT	CEILING	UNVENTED[e] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-IMPERMEABLE	UNVENTED[e] RAFTER ASSEMBLIES IN ATTICS CONTAINING DUCTWORK, AIR-PERMIABLE/ IMPERMEABLE	FRAME WALL	MASS WALL[b]	FLOOR	BASEMENT[d] WALL	CRAWL SPACE[c] WALL
3	0.35	0.65	0.0350	0.05	0.043[f]	0.082	0.141	0.047	0.059	0.136
4	0.35	0.60	0.0300	0.05	0.043[f]	0.077	0.141	0.047	0.059	0.065
5	0.35	0.60	0.0300	0.037	0.034[f]	0.061	0.082	0.033	0.059	0.065

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.
b. When more than half the insulation is on the interior, the mass wall *U*-factors shall be a maximum of 0.07 in Climate Zone 3, 0.07 in Climate Zone 4 and 0.054 in Climate Zone 5.
c. Basement wall *U*-factor of 0.360 in warm-humid locations as defined by Figure N1101.7 and Table N1101.7.
d. A maximum of two glazed fenestration product assemblies having a U-factor no greater than 0.55 and a SHGC no greater than 0.70 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty. When applying this note and using the RESCheck "UA Trade-off" compliance method to allow continued use of the software, the applicable fenestration products shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, but the fenestration products' actual U-factor and actual SHGC shall be noted in the comments section of the software for documentation of application of this note to the applicable products. Compliance for these substitute products shall be verified compared to the allowed substituted maximum U-value requirement and maximum SHGC requirement, as applicable.
e. The air-impermeable insulation shall meet the requirements of the definition in section R202. Air-impermeable insulation shall be installed in direct contact with the underside of the structural roof sheathing. For one- and two-family dwellings and townhouses, the insulation installation shall meet the requirements of R806.5 of the North Carolina Residential Code. Exposed rafters shall be covered with R-7 insulation.
f. For air-permeable/ impermeable applications, Table N1106.2.1 shall be followed for minimum insulation values.

Note: The item that would be Item C-22 was denied as a B-item. Therefore, there is no C-22 item for this meeting.

Part D – Final Adoption

The following Petitions for Rulemaking have been granted by the Council. Notice of Rulemaking proceedings and Public Hearing has been made. The Public Hearings were held on September 1, 2020. The Final Adoption meeting will take place on December 8, 2020. The Council will give no further consideration to Petitions that are disapproved. Petitions that are approved will proceed through the Rulemaking process. The effective date is January 1, 2022 unless otherwise noted.

Item D – 1 Request from Bob Haynes representing the NCBIA Code Revisions Committee to add the 2018 N.C. Administrative code, Section 106.4 as follows:

106.4 Site address signage. It is the responsibility of the permit applicant or designee to post the 911 site address on an active jobsite at the

commencement of work regulated by the NC Building Codes. The signage shall be temporary or permanent per 106.4.1 or 106.4.3.

106.4.1 Temporary signage. Signage to identify a construction site location can be temporary. Acceptable temporary signage may include such items as a permit placard, an address written on job box, yard signage or other approved temporary method. Temporary street name markers shall be required if permanent street signs are not in place for new developments or subdivisions.

106.4.2 Temporary Signage Location. Address signage shall be placed such that it is clearly legible from the street or road that fronts the property at all times during construction.

106.4.3 Permanent signage. Address signage meeting the requirements of the *International Residential Code* Section R319 for One- and Two-family Dwellings, *International Building Code* Section 501.2 *or International Fire Code* Section 505.1 for commercial buildings shall be deemed as meeting the requirements of this section.

NOTE: The item that would have been Item D-2 was withdrawn as a B item. Therefore, there is no D-2 item for this meeting.

Item D – 3 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 NC Fire Code, Section 3103.3.1 as follows: (item brought forward as a tabled item from September 1, 2021 meeting, Item D-3)

3103.3.1 Special amusement building.
Tents and other *membrane structures* erected as a *special amusement building* shall be equipped with an *automatic sprinkler system* in accordance with Section 411.3 of the *International Building Code*.

Item D – 4 Request from Colin Triming representing the NC Fire Code Revision Committee to amend the 2018 NC Fire Code, Section 3103.6 as follows: (item brought forward as a tabled item from September 1, 2021 meeting, Item D-4)

3103.6 Construction documents.
A detailed site and floor plan for *tents* or *membrane structures* with an *occupant load* of 50 or more shall be provided with each application for approval. The *tent* or *membrane structure* floor plan shall indicate details of the *means of egress* facilities, seating capacity, arrangement of the seating and location and type of heating and electrical equipment. The *construction documents* shall include an analysis of structural stability.

Item D – 5 Request from Keith Rogers representing the Mechanical/Plumbing Standing committee to amend the 2018 N.C. Plumbing Code, Section 405.3.1 as follows:

405.3.1 Water closets, urinals, lavatories and bidets.
A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

Exceptions:
~~**Exception:**~~
1. For detached one- and two-family dwellings and townhouses, see the *North Carolina Residential Code*, ~~Figure~~ Section R307.1 for minimum fixture clearances.
2. *Private* side by side lavatories may be less than 30 inches (762 mm) center to center.

Item D – 6 Request from Clint Latham representing the City of Raleigh to amend the 2018 N.C. Fuel Gas Code, Section 311 and add Section 311.4.2.4 as follows:

311.4.2 Locations. Where required by Section 311.4.1.1, carbon monoxide detection shall be installed in the locations specified in Sections 311.4.2.1 through ~~311.4.2.3~~ 311.4.2.4.

311.4.2.4 Group A-2 occupancies. Carbon monoxide detection shall be installed in A-2 occupancies in all the following locations:
1. On the ceiling of the room containing the fuel-burning *appliance* or fuel-burning *fireplace*.
2. In an *approved* location where the room or area is served by a forced air furnace.

Item D – 7 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Fuel Gas Code, Chapter 2 Definitions as follows:

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.

Item D – 8 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Mechanical Code, Chapter 2 Definitions as follows:

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.

Item D – 9 Request from Clint Latham representing the City of Raleigh to amend the 2018 N.C. Mechanical Code, Section 313.4.2 and add Section 313.4.2.4 as follows:

313.4.2 Locations. Where required by Section 313.4.1.1, carbon monoxide detection shall be installed in the locations specified in Sections 313.4.2.1 through ~~313.4.2.3~~ 313.4.2.4.

313.4.2.4 Group A-2 occupancies. Carbon monoxide detection shall be installed in A-2 occupancies in all the following locations:

1. On the ceiling of the room containing the fuel-burning *appliance* or fuel-burning *fireplace*.
2. In an *approved* location where the room or area is served by a forced air furnace.

Item D – 10 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Existing Building Code, Chapter 2 Definitions as follows:

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.

Item D – 11 Request from Clint Latham representing the City of Raleigh to amend the 2018 N.C. Existing Building Code, Section 402.6 as follows:

402.6 Carbon monoxide alarms in existing portions of a building. Where an addition is made to a building or structure of a Group A-2, I-1, I-2, I-4 or R occupancies, or classrooms are added in Group E occupancies, the *existing*

building shall be provided with carbon monoxide alarms in accordance with Section 915 of the *North Carolina Building Code*, except that the carbon monoxide alarms shall be allowed to be solely battery operated.

Item D – 12 Request from Clint Latham representing the City of Raleigh to amend the 2018 N.C. Fire Code, Section 915.2 and add Section 915.2.4 as follows:

915.2 Locations. Where required by Section 915.1.1, carbon monoxide detection shall be installed in the locations specified in Sections 915.2.1 through ~~915.2.3~~ 915.2.4

915.2.4 Group A-2 occupancies. Carbon monoxide detection shall be installed in A-2 occupancies in all the following locations:

1. On the ceiling of the room containing the fuel-burning appliance or fuel-burning *fireplace*.
2. In an *approved* location where the room or area is served by a forced air furnace.

Item D – 13 Request from Colin Triming representing the NC Fire Code Revision Committee to amend the 2018 N.C. Fire Code, Section 315.3.1 as follows:

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.

Item D – 14 Request from Colin Triming representing the NC Fire code Revision Committee to amend the 2018 N.C. Fire Code, Section 907.2.1 and the 2018 N.C. Building Code, Section 907.2.1 as follows:

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 Section 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.

Item D - 15 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Fire Code, Section 2303.2.1 as follows:

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 (1372 mm) measured vertically, from the floor level to the activating button.

Item D - 16 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Fire Code, Chapter 2 Definitions as follows:

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.

Item D – 17 Request from Colin Triming representing the NC Fire Code Revision Committee to add the 2018 N.C. Residential Code, Chapter 2 Definitions as follows:

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.

Item D – 18 Request from David Smith representing the Residential Ad Hoc Committee to amend the 2018 N.C Residential Building, Section R404.4 as follows:

R404.4 Retaining walls. Retaining walls ~~that are not laterally supported at the top and that retain in excess of 48 inches (1219 mm) of unbalanced fill,~~

~~shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. In addition, any retaining wall~~ that ~~meets~~ meet the following shall be designed by a *registered design professional*.

1. Any retaining wall systems on a residential site that cross over adjacent property lines regardless of vertical height, ~~and~~
2. Retaining walls that support buildings and their accessory structures~~.~~.
3. Retaining walls exceeding 4 feet (1524 mm) of unbalanced backfill height, or
4. Retaining wall systems providing a cumulative vertical relief greater than 5 feet (1524 mm)
   in height within a horizontal distance of 50 feet (15 m) or less

Retaining walls shall be designed for a safety factor of 1.5 against lateral sliding and overturning.

Item D – 19 Request from Leon Skinner representing the Residential Ad Hoc Committee to amend the 2018 N.C. Residential Code, Sections R101.2.2 Accessory structures, Section R202 Definitions, and Section R327 Docks, Piers, Bulkheads, and Waterway Structures as follows:

R101.2.2 Accessory structures.
Only the following *accessory structures* shall meet the provisions of this code.

1. Decks, see Appendix M,

2. Gazebos,

3. Retaining walls, see Section R404.4,

4. Detached masonry chimneys located less than 10 feet (3048 mm) from other buildings or lot lines,

5. Swimming pools and spas, see Appendix V,

6. Detached carports,

   Exception: Portable lightweight carports not exceeding 400 square feet (37 m^2) or 12 foot (3658 mm) mean roof height.

7. *Docks, piers, bulkheads*, and waterway structures, see Section R327.

Section R202 Definitions.

ACCESSORY BUILDING. ~~In one- and two-family *dwellings* not more than three stories *above grade plane* in height with a separate means of egress, a.~~

A building that does not contain a sleeping room, the use of which is ~~incidental~~ accessory to that of the ~~main building~~ dwelling ~~and~~ that is

detached and located on the same lot as the dwelling. ~~An accessory building~~ and is roofed over ~~and~~ with more than 50 percent of its exterior walls ~~are~~ enclosed. ~~Examples of accessory buildings are garages, storage buildings, workshops, boat houses, treehouses, and similar structures.~~

ACCESSORY STRUCTURE. A structure that is accessory to the dwelling and not defined as an *accessory building*. Examples of accessory structures are fencing, decks, gazebos, arbors, retaining walls, barbecue pits, detached chimneys, playground equipment, yard art, *docks,* piers, etc.

PRIVATE POND. A body of water owned entirely by a single property owner and located on the same parcel of land as a detached single-family dwelling.

SECTION R327 DOCKS, PIERS, BULKHEADS AND WATERWAY STRUCTURES

R327.1 General.

Docks, piers, bulkheads and waterway structures shall be constructed in accordance with Chapter 36 of the *North Carolina Building Code.*

Exceptions: Structures complying with the following are not required to meet the provisions of this code.

a. *Docks* and ~~&~~ *Piers* built over p*rivate ponds.*

b. Fixed in place walkways, *docks*, and *piers* not covered in "Exception a" and not exceeding 144 square feet for single family dwelling.

c. Minor *repairs* to existing *docks*, *piers* and waterway structures.

~~1. Fixed piers associated with a one- or two- family dwelling meeting all of the following:~~

~~1.1 A maximum of four boat slips for a single owner of a one- or two-family dwelling or two adjacent, riparian owners.~~

~~1.2 A maximum height of 15 feet (4572 mm) measured from deck to mud line at any location along the pier.~~

~~1.3 A maximum normal pool depth of 13 feet (3962 mm) on lakes and ponds and a maximum mean low water depth of 7 feet (2134 mm) in other locations.~~

~~1.4 A maximum walkway width of 6 feet (1829 mm).~~

~~1.5 A maximum pile spacing of 8 feet (2438 mm), in both directions.~~

~~1.6 A maximum of 576 sq. ft. (53.5 m^2) for non-walkways areas.~~

~~1.7 A maximum boat slip length of 40 feet (12.2 m).~~

~~1.8 A maximum roofed area of 576 sq. ft. (53.5 m^2) with an additional maximum 2 foot (610 mm) overhang.~~

~~1.9 Constructed with no enclosed or multilevel structures.~~

~~1.10 Supports a boatlift with a maximum design capacity no greater than 16,000 pounds (71.2 kN).~~

~~1. Floating docks associated with a one- or two- family dwelling meeting all of the following:~~

~~a. A maximum of four boat slips for a single owner of a one- or two- family dwelling or two adjacent, riparian owners.~~

~~b. A maximum normal pool depth of 20 feet (6096 mm) for docks with guide piles on lakes and ponds and a maximum mean low water of 10 feet (3048 mm) for docks with guide piles in other locations.~~

~~c. A maximum boat slip length of 40 feet (12.2 m).~~

~~d. Finger piers, crosswalks or other floating surfaces having a minimum width of 3 feet (914 mm) wide to a maximum of 6 feet (1829 mm) wide, except for a single 8 foot x 16 foot (2438 mm x 4877 mm) section.~~

~~e. When constructed with a roof the following conditions exist:~~

~~i. Ultimate design wind speed is 115 mph (51 m/s) or less;~~

~~ii. Roof load is 20 psf (0.96 kPa) or less;~~

~~iii. A maximum eave height of 10 feet (3048 mm);~~

~~iv. A maximum roof slope of 4:12;~~

~~v. A maximum roofed area of 576 sq. ft. (53.5 m^2) with an additional maximum 2 foot (610 mm) overhang;~~

~~vi. A minimum boat slip width of 12 feet (3658 mm);~~

~~vii. A minimum floating dock width of 4 feet (1219 mm) along both sides of the boat slip;~~

~~viii. A maximum dead load of 12 psf (0.57 kPa);~~

~~ix. Floating structures supporting roof structures are balanced or anchored to reduce the possibility of tipping.~~

~~f. Constructed with no enclosed or multilevel structures.~~

~~g. Supports a boat lift with a maximum design capacity no greater than 16,000 pounds (71.2 kN).~~

Item D – 20 Request from David Smith representing the Residential Ad Hoc Committee to add 2018 N.C. Residential Building Code, Sections R328 Demolition and R 328.1 Demolition as follows:

SECTION R328 DEMOLITION

R328.1 Demolition. Where a building or structure regulated by this code has been demolished or removed, the lot shall not create a new hazard to the site or to adjoining properties. All utilities shall be properly terminated.

Item D – 21 Request from Jackie Flemming and Doug Allen P.E. representing Simpson Strong-Tie to amend the 2018 Residential Building Code, Section R4603.6.1 as follows:

R4603.6.1 Tying at corners. At corners, girders shall be connected to the pile with a minimum 3/16 × 4 × 18-inch (5 × 102 × 467 mm) hot dip galvanized strap bolted with two 5/8 inch (15.9 mm) galvanized through bolts on the exterior and a minimum L4 x 3/16 x 1'-6" (102 × 5 × 467 mm) galvanized steel angle bolted with two 5/8 inch (15.9 mm) galvanized through bolts on the interior in accordance with Figure R4603.6(d1), or with a minimum of (2) 3/16" x 4" x 18" (5x102x467 mm) hot dip galvanized straps installed on the outside of the girders with fasteners per table R4603.6.1 and in accordance with Figure R4603.6 (d2).

Table R4603.6.1Minimum Fastening of Corner Beams and Girder to Pilings

Amount Piling is Notched	Associated Figure	Hardware	Fasteners
> 50%[1]	R4603.6(d)	one 3/16"x4"x18"	six 5/8" bolts[2]
		one L4x3/16x18"	
	R4603.6 (e)	one 3/16"x4"x18"	eight 0.27"x4" each[3]

1. Where piling is notched over 50%, use strap as required in Section 4603.6. Install the specified number of bolts or screws in each end of the strap.
2. Bolts shall be 5/8" diameter hot dipped galvanized through bolts with nuts and washers.
3. Screws shall be 0.270" (6.9 mm) minimum in diameter, hot dipped galvanized to a minimum of A153, Class C, and having a minimum length of 4", and also shall be long enough to penetrate at least one inch through the remaining pile and into the girder.

R4603.6.2 Bracing of Pilings. Bracing of pile foundations is required where the clear height from ground to sill, beam or girder exceeds 10 feet (3048 mm) or the dwelling is more than one story above piles. A line of X-bracing is defined as a row of piles with X-bracing provided in at least two bays. A line of X-bracing shall be provided at all exterior pile lines. Where the perimeter lines of X-bracing exceed 40 feet (12 192 mm), an additional line of X-bracing shall be provided near the center of the building. See Figure R4603.6(e)(f). X-bracing shall be with 2 × 10s through bolted with two 3/4-inch (19.1 mm) bolts at each end. The code official is

permitted to accept alternate bracing designs if they bear the seal of a registered design professional.

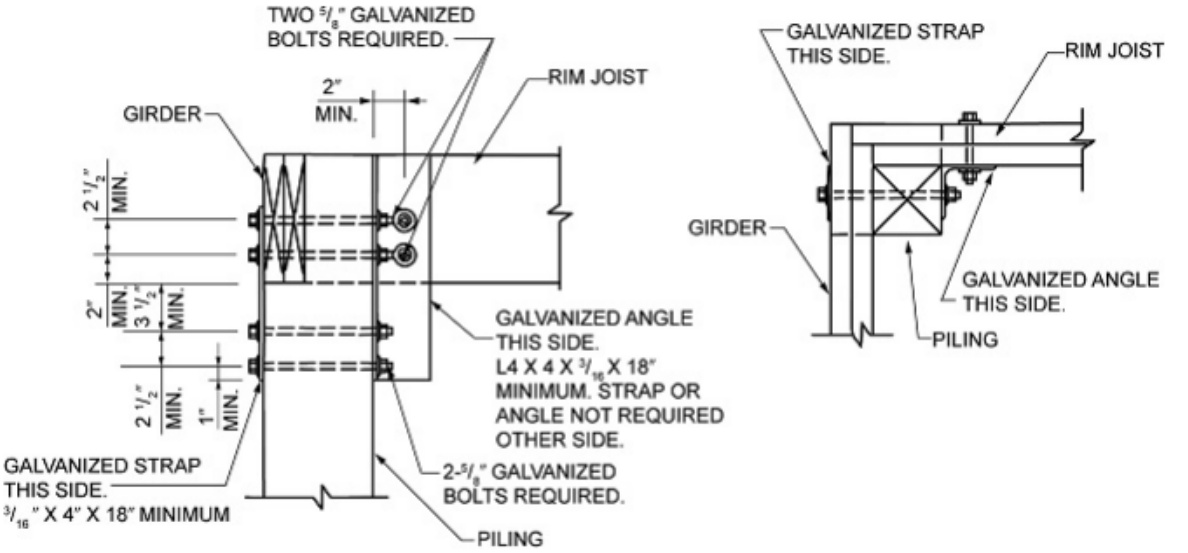

FIGURE R4603.6(d)
CORNER PILE CONNECTION

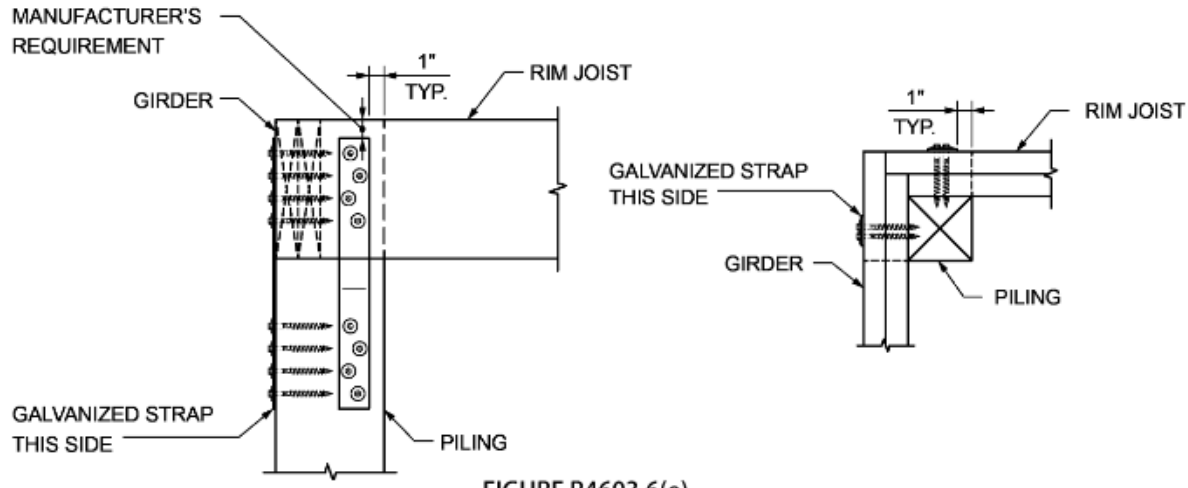

FIGURE R4603.6(e)
CORNER PILE CONNECTION

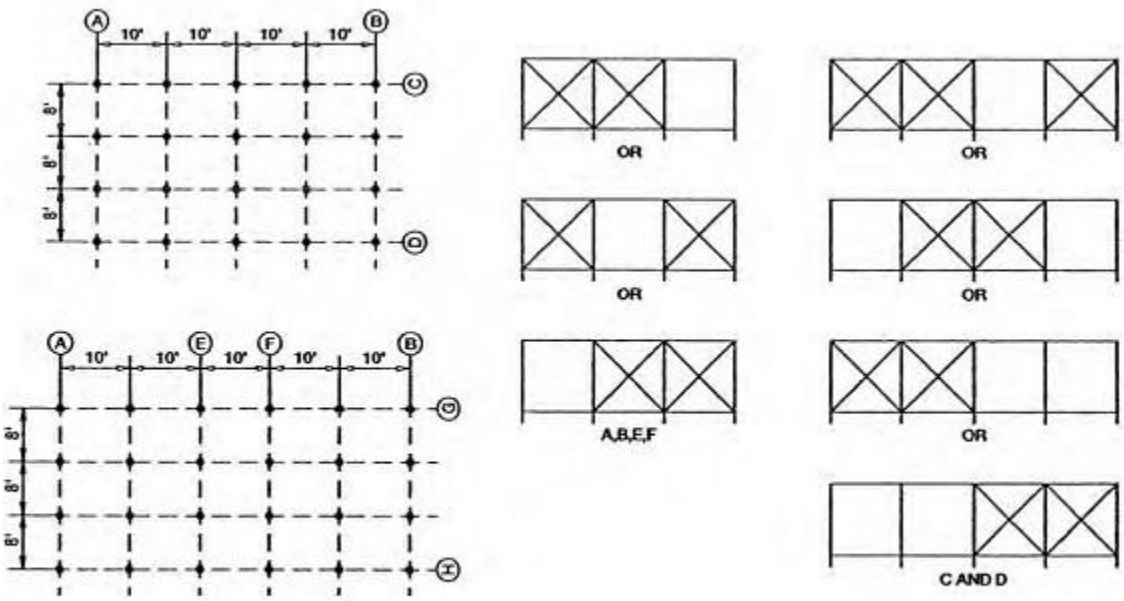

FIGURE R4603.6(e)
ELEVATIONS (SHOWING POSSIBLE ARRANGEMENT OF X-BRACING IN LINE) (G AND H SIMILAR)

NOTE: The item that would have been Item D-22 was withdrawn as a B item. Therefore, there is no D-22 item for this meeting.

Item D – 23 Request from Robert Privott representing the N.C. Home Builders Association to amend the 2018 N.C. Residential Code, Section N1101.13 (R401.2) as follows:

IRC Chapter 11

N1101.13 (R401.2) Compliance

Projects shall comply with one of the following:

1. Sections N1101.14 through N1104.

2. Section N1105 and the provisions of Sections N1101.14 through N1104 labeled “Mandatory.”

3. An energy rating index (ERI) approach in Section N1106.

4. North Carolina specific REScheck™ shall be permitted to demonstrate compliance with this code. Envelope requirements may not be traded off against the use of high efficiency heating or cooling equipment. No trade-off calculations are needed for required termite inspection and treatment gaps.

5. Rated in accordance with ANSI/RESNET/ICC 301-2019 Standard for the Calculation and Labeling of Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index with a maximum energy rating index (ERI) less than or equal to the appropriate value indicated in one of the following tables as applicable, when compared to the ERI reference design:

MAXIMUM ENERGY RATING INDEX
(without calculation of on-site renewable energy)

CLIMATE ZONE	JAN. 1, 2019 – Dec. 31, 2022	JAN. 1,2023 AND FORWARD
3	65	61
4	67	63
5	67	63

MAXIMUM ENERGY RATING INDEX
(including calculation of on-site renewable energy)

CLIMATE ZONE	JAN. 1, 2019 – Dec. 31, 2022	JAN. 1,2023 AND FORWARD
3	51	42
4	54	50
5	55	51

Item D – 24 Request from Leon Skinner representing the N.C. Residential Ad-Hoc Committee to amend the 2018 N.C. Residential Code, Sections R905.2.8.5 and R908.3 as follows:

R905.2.8.5 Drip Edge. ~~Deleted.~~ Not required unless required by the roof covering manufacturer installation instructions. The drip edge placed around the edge of a roof prior to installing the roofing material is designed so that water runs off over the drip edge and falls from a slight projection at the bottom edge of the roof rather than running back under, or along the eaves. Metal, wood or exterior composite materials can be used for the drip edge.

R908.3 Roof replacement. Roof replacement shall include the removal of existing layers of roof coverings down to the roof deck and replacement of up to 15% of the total existing roof deck. Replacement of up to 15% of the total roof deck shall not be considered structural work.

Item D – 25 Request from Colin Triming representing the NC Fire Code Revision Committee to amend the 2018 N.C. Building Code, Section 1010.1.9.7 and the 2018 N.C. Fire Code, Section 1010.1.9.7 as follows:

1010.1.9.7 Delayed egress. Delayed egress locking systems, shall be permitted to be installed on doors serving 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:
Exception: Group E classrooms with an occupant load of less than 50.

Item D – 26 Request from Colin Triming representing the NC Fire Code Revision Committee to amend the 2018 N.C. Building Code, Chapter 2 Definitions as follows:

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.

Item D - 27 Request from Clint Latham representing the City of Raleigh to amend the 2018 N.C. Building Code, Section 915.2.1 and add Section 915.2.4 as follows:

[F] 915.2 Locations. Where required by Section 915.1.1, carbon monoxide detection shall be installed in the locations specified in Sections 915.2.1 through ~~915.2.3~~ 915.2.4.

[F] 915.2.4 Group A-2 occupancies. Carbon monoxide detection shall be installed in A-2 occupancies in all the following locations:

1. On the ceiling of the room containing the fuel-burning appliance or fuel-burning *fireplace.*
2. In an *approved* location where the room or area is served by a forced air furnace.

Item D – 28 Request from Bryan Dale Robinson representing the City of Raleigh to amend the 2018 N.C. Building Code, Section 428.2 as follows:

428.2 Residential care homes. Homes keeping no more than six adults or six unrestrained children who are able to respond and evacuate the facility

without assistance, determined by the state agency having jurisdiction to be licensable, shall be classified as single-family residential (North Carolina Residential Code) and comply with the requirements of this section and the North Carolina Residential Code for detached one- and two-family dwellings and townhouses.

Item D – 29 Request from Bryan Dale Robinson representing the City of Raleigh to amend the 2018 N.C. Building Code, Section 428.3 as follows:

428.3 Licensed Small Residential Care Facilities. The following facilities when determined by the State Agency having jurisdiction to be licensable, shall be classified as Single-Family Residential and comply with the requirements of this section and the North Carolina Residential Code for detached on- and two-family dwellings and townhouses.

1. Residential Care Facilities keeping no more than six adults or six unrestrained children with no more than three who are unable to respond and evacuate without assistance.

2. Residential Care Facilities keeping no more than five adults or five children who are unable to respond and evacuate without assistance, when certifiable for Medicaid reimbursement, and when staffed 24-hours per day with at least two staff awake at all times.

3. Residential Care Facilities keeping no more than nine adults or nine children who are able to respond and evacuate without assistance.

Part E – Reports

- **Ad-Hoc Committee Reports**
- **Standing Committee Reports**
- **Staff Reports**
- **Chairman's Report**
- **Public Comments**

Part F – Appeals:

The Cory Albright and 24/7/365, Inc. Appeal was continued and has been re-scheduled for **Wednesday, April 28, 2021**. The appeal will take place in the Albemarle Building, 325 North Salisbury Street, Raleigh, NC 27603, 2nd Floor Training Room 240.

Sincerely,

Carl Martin, Rules Coordinator
NC Building Code Council