North Carolina Building Code Council

Staffed by the NC Department of Insurance

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Raleigh, NC 27603

February 12, 2021

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

RE: Agenda for the March 9, 2021 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, March 9, 2021 (Albemarle Building).
2. Standing Committees will meet in the afternoon on Monday, March 8. 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 December 8, 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 2018 NC Fire Prevention Code Appendix B, specifically to zoning district R-7 and CR.

Item A – 4 Request for approval of an amendment to the City of Lincoln Fire Protection Ordinance to adopt Appendix D of the NC Fire Code.

Item A – 5 Rules Review Commission Meeting Report

Item A – 6 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 March 9, 2021 meeting.

There will be no B items received from the floor.

Item B – 1 Request from Carl Martin representing the Department of Insurance to amend the 2018 NC Administration Code, Chapters 1, 2, and 3 as follows:

106.1 Permit required. A current permit is required for all work described in the technical codes unless specifically exempted by the North Carolina General Statutes or the technical codes.

Commentary: Reference North Carolina General ~~Statutes~~ ~~153A-357 and 160A-417~~ Statute 160D-1110 for exceptions.

106.2.3 Review and approval. When the inspection department issues a permit, it shall approve, in writing or by stamp, all sets of drawings and specifications "Reviewed for Code Compliance".
Exception: Nothing in this section shall require the review and approval of one- and two-family dwelling plans.

Commentary: Drawings and specifications shall be kept in a manner prescribed by North Carolina General ~~Statutes 153A-373 and 160A-433~~ Statute 160D-1126.

202.9.1 Engineering division. A written technical interpretation shall be provided as specified in Section ~~203.1.2.1.2~~ 203.2.1.2. Any person may appeal in writing an order, decision or determination pertaining to the code or any state building law by filing written notice with the Commissioner of Insurance or his designee within 10 days after the order, decision or determination. A copy of the appeal shall be furnished to each party.
(General Statutes 143-140, ~~153A-374 and 160A-434~~ and 160D-1127)

202.9.2.2 The Notice or Appeal shall be received no later than 30 days from the date of the decision of the State enforcement agency. (General Statute 143-141).

203.1.1.3 Buildings within primary fire limits. The Commissioner of Insurance or his or her designee shall review all permits to erect, alter, repair or move any wood-frame building or structure within the primary fire district of a municipality. Such permits shall be received and approved by the Inspection Department and approved by the Municipal Council prior to the Commissioner or his or her designee's approval.
(General ~~Statutes 153A-375 and 160A-436~~ Statute 160D-1128)

203.2.2 Appeals. Any person may appeal in writing an order, decision or determination of a code enforcement official pertaining to the code or any state building law. The appeal shall be addressed to the Chief Engineer for the Department of Insurance by filing written notice within 10 days after the order, decision or determination. The appeal shall contain the type and size of the building in question, the location of the building and shall reference the code sections in question. The decision shall be in writing and shall set forth the facts found. The decision rendered shall be based on the technical provisions of the code, public health and safety and shall be construed liberally to those ends. A decision shall be binding on all parties unless an appeal is submitted to the Building Code Council as specified in Section ~~201.9.2~~ 202.9.2. A copy of the appeal and written decision shall be furnished to each party.
(General ~~Statutes 153A-374 and 160A-434~~ Statute 160D-1127)

204.1 General. The powers, duties and responsibilities of the code enforcement official are generally described in ~~the following~~ General ~~Statutes: 1. GS153A-352 for counties, and 2. GS160A-412 for cities~~ Statute 160D, Article 11.

204.2.2 Jurisdiction. A municipal inspection department shall have jurisdiction over all areas within the city limits, all extraterritorial areas that the city has jurisdiction pursuant to state laws, and over any areas in which the municipal limits have contracted with another unit of government to perform code enforcement. A county inspection department shall have jurisdiction over all unincorporated areas outside any municipal jurisdiction located within the county, all areas in which a municipality has requested the county to enforce the code, and within the jurisdiction of another unit of government in which the county has contracted to perform code enforcement. A joint inspection department created by two or more units of government shall have the authority to enforce the code in all areas of legal jurisdiction of all units of government supporting the joint department.
(General Statutes ~~153A-352 and 153A-353 for counties, and 160A-411 and 160A-413 for cities~~ 160D-1104 and 160D-1107)

204.2.3 Duties. Inspection departments shall:
1. Receive applications and supporting data for permits;
2. Issue or deny permits;
3. Make all necessary inspections to ensure code compliance;
4. Identify technical provisions found to be inconsistent with the inspection;
5. Issue or deny certificates of compliance and certificates of occupancy;
6. Issue stop work orders or orders to correct violations;
7. Maintain adequate records of permits issued or denied, inspections made, corrections ordered and certifications issued; and
8. Take other actions that may be required to adequately enforce the code.
(General ~~Statutes 153A-352 and 160A-412~~ Statute 160D-1104)

204.2.4 Code enforcement official's qualifications. No state or local government employee shall enforce any provision of the North Carolina State Building Codes who does not possess an appropriate valid certificate issued by the North Carolina Code Official's Qualification Board as specified in General Statutes 143-151.13~~, 153A-351.1 and 160A-411.1~~ and 160D-1103.

204.2.5 Conflict of interest. Information about conflict of interest for code enforcement officials can be found in General ~~Statutes 153A-355 for counties and 160A-415 for cities~~ Statute 160D-1108.

204.2.6 Right of entry. The code enforcement official shall have the right to enter buildings or premises as described in General Statutes ~~153A-360 and 153A-364 for counties, and 160A-420 and 160A-421 for cities~~ 160D-1113 and 160D-1117.

204.2.7 Stop work orders. General Statute ~~153A-361~~ 160D-404 authorizes a ~~county~~ code enforcement official to issue stop work orders. ~~General Statute 160A-421 authorizes a city code enforcement official to issue stop work orders. These statutes describe~~ The statute describes when a stop work order can be issued, and how the stop work order is to be issued~~, and how the stop work order may be appealed.~~ See Section 204.10 for appeal of stop work orders.

204.2.8 Unsafe building or systems. A ~~county~~ code enforcement official's authority to condemn an unsafe building is found in General Statute ~~153A-366~~ 160D-1119~~. A city code enforcement official's authority to condemn an unsafe building is found in General Statute 160A-426~~.

204.3.1 General. No person may commence or proceed with:
1. The construction, reconstruction, alteration, repair, movement to another site, removal or demolition of any building;
2. The installation, extension or general repair of any plumbing system;
3. The installation, extension, alteration or general repair of any heating or cooling equipment system; or
4. The installation, extension, alteration or general repair of any electrical wiring, devices, appliances or equipment without first securing from the Inspection Department with jurisdiction over the site of the work each permit required by the North Carolina State Building Codes and other State or local law or local ordinance or regulation applicable to the work.
(General Statute ~~153A-357 and 160A-417~~ 160D-1110)

204.3.2 Validity. In accordance with General ~~Statutes 153A-358 for counties and 160A-418 for cities~~ Statute 160D-1111, a permit expires 6 months, or any lesser time fixed by local ordinances, after the date of issuance if the work authorized by the permit has not been commenced. If, after commencement, the work is discontinued for a period of 12 months, the permit immediately expires. No work authorized by a permit that has expired may be performed until a new permit has been issued.

204.3.6 Contractor license required. When the General Statutes require that general construction, plumbing, mechanical, electrical, fire protection or gas work be performed by an appropriately licensed individual, no permit for such type work shall be issued to an unlicensed person or firm. Additional requirements may be found in General Statutes 87-14, 87-21(e), 87-43.1, 87-58, 153A-134, ~~153A-357,~~ 160A-194 and ~~160A-417~~ 160D-1110.

204.4.1 Action on permits. In accordance with General Statute ~~153A-357 for counties and General Statute 160A-417 for cities~~ 160D-1110, the Inspection Department shall examine each application for a permit to determine if it is in compliance with the requirements of the technical codes and other pertinent laws and ordinances. If the inspection department is satisfied that the work described in the application conforms to the requirements of the technical codes and other pertinent laws and ordinances, it shall issue a permit to the applicant. If the application does not conform to the requirements of the technical codes and other pertinent laws and ordinances, the application shall be returned to the applicant with the reasons for refusal stated.
(General Statutes ~~153A-352, 160A-412 and 160A-417~~ 160D-1104 and 160D-1110)

204.5.2 Permit intent. A permit issued shall be construed as permission to proceed with the work and not as authority to violate, cancel, alter or set aside any of the provisions of the technical codes. Issuance of a permit shall not prevent the inspection department from requiring correction of errors in plans, construction or violations of this code.
(General ~~Statutes 153A-357 and 160A-417~~ Statute 160D-1110)

204.5.3.2 Violation of code provisions. The code enforcement official may revoke a permit upon determination that the work for which the permit was issued is in violation of, or not in conformity with, the provisions of this or the technical codes.
(General Statute ~~153A-362, 160A-422~~ 160D-1115)

204.6.1 Fees. A permit shall not be issued until the fees prescribed by the local governing authority have been paid. No amendment to a permit shall be released until the additional fee, if any, has been paid.
(General ~~Statutes 153A-354 and 160A-414~~ Statute 160D-402)

204.6.2 Work commencing before permit issuance. If any person commences any work on a building or service systems before obtaining the necessary permit, he or she shall be subject to a penalty as established by the local governing body.
(General ~~Statutes 153A-354 and 160A-414~~ Statute 160D-402)

204.7.1 Periodic inspections for hazardous or unlawful conditions. The inspection department shall make periodic inspections as specified in General ~~Statutes 153A-364 for counties and 160A-424 for cities~~ Statute 160D-1117.

204.8.1 Building occupancy. A new building shall not be occupied, or a change made in the occupancy, nature or use of a building or part of a building until after the inspection department has issued a certificate of compliance. The certificate of compliance shall not be issued until all required service systems have been inspected for compliance with the technical codes and other applicable laws and ordinances and released by the inspection department. (General ~~Statutes 153A-363 and 160A-423~~ Statute 160D-1116)

204.8.2 Certificate of compliance. Upon satisfactory completion of a building, plumbing, mechanical, electrical, fire protection or gas system, or portion thereof, a certificate of compliance shall be issued. The certificate of compliance represents that a structure or system is complete and for certain types of permits is permission granted for connection to a utility system. The certificate of compliance shall not be construed to grant authority to occupy a building.
(General ~~Statutes 153A-363 and 160A-423~~ Statute 160D-1116)

204.8.3 Temporary/partial occupancy. A temporary/partial certificate of compliance may be issued permitting occupancy for a stated period for specific portions of a building or service system that the inspector finds safe for occupancy prior to final completion of the entire building or system.
(General ~~Statutes 153A-363 and 160A-423~~ Statute 160D-1116)

204.9.2 Temporary connection. The inspection department may authorize the temporary connection of the building or system to the utility source of energy, fuel or power for the purpose of testing building service systems.
(General ~~Statutes 153A-363 and 160A-423~~ Statute 160D-1116)

204.10 Appeal of stop ~~Stop~~ work orders. Whenever a stop order has been issued by an inspection department involving alleged violations of the State Building Codes, the owner or builder may appeal in writing to the Commissioner of Insurance, or his or her designee, within 5 days after the date the order is issued, with a copy of the appeal to the inspection department. No further work may take place in violation of a stop order. The Commissioner, or his or her designee, shall promptly conduct an investigation. The inspection department and the owner or builder shall be permitted to submit relevant evidence for the investigation. The Commissioner of Insurance, or his or her designee, shall provide a written statement of the decision setting forth the facts found, the decision reached and the reasons for the decision. In the event of dissatisfaction with the decision, the person affected shall have the option of appealing as set forth in Section 203.1.2.
(General ~~Statutes 153A-361 and 160A-421~~ Statute 160D-1114)

204.14 Code enforcement official not fulfilling responsibilities. When the code enforcement official does not fulfill his responsibilities as specified in Section 204.13, the Commissioner of Insurance or his designee may institute any appropriate actions or proceedings available. (General Statutes 14-230, 14-231, 14-232, ~~153A-356 and 160A-41~~ 160D-1109)

CHAPTER 3 REPRINT OF THE GENERAL STATUTES PERTAINING TO THE ENFORCEMENT OF THE NORTH CAROLINA STATE BUILDING CODE

The North Carolina State Building Codes do not include all additional requirements for buildings and structures that may be imposed by other State agencies, occupational licensing

boards and commissions. It shall be the responsibility of a permit holder, design professional, contractor or occupational license holder to determine whether any additional requirements exist.

The current language of the General Statutes may be viewed at www.ncleg.gov.

The following list, while extensive, may not include all applicable General Statutes.

1-539.2 Dismantling portion of building
14-68 Failure of owner of property to comply with orders of public authorities
14-228–232 Misconduct in public office
14-414 Pyrotechnics defined; exceptions
15-27.2 Administrative search and inspection warrants
42 Article 5 Landlord Tenant
58-2-95 Commissioner to supervise local inspectors
58-31-40 Commissioner to inspect state property; plans submitted
58-79-20 Inspection of premises; dangerous material removed
66-23–27 Electrical materials, devices, appliances and equipment
83A-1–13 Architects
87-1–15 General contractors
87-21 Plumbing, heating and fire sprinkler contractor
87-43 Electrical contractors
87-57–58 Refrigeration contractors
89C-3–23 Engineers
95-69 Uniform boiler and pressure vessel act
105-130–151 Accessibility tax credit
106-581.1 Agriculture Defined
115C-525 Public schools
119 Article 5 Liquefied petroleum gases
130A-336–339 Wastewater system construction
133-1–4 Public works
143-135.1 Inspection of state owned buildings
143-136–143 Building Code Council and Building Code
143-141 Appeals to Building Code Council
143-151.8–21 Code officials qualification board
143-151.42 Prohibition of master meters for electric and natural gas service
143-151.43–64 North Carolina home inspector board
150B-18–21 Administrative Procedures Act
~~153A-97–375 Counties~~
~~160A-167–438 Cities~~
160D Article 11 Building Code Enforcement

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

325 North Salisbury Street, Room 5_44
Raleigh, North Carolina 27603
(919) 647-0009

APPEAL TO NCDOI/NCBCC Hearing Date_____/_____/_____

GS ~~153A-374, GS 160A-434~~ 160D-1127
Formal Interpretation by NCDOI _____
Appeal of Local Decision to NCDOI _____

GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC _____
Appeal of NCDOI Decision to NCBCC _____

APPELANT _____ PHONE: (___) - x
REPRESENTING: _____
ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____
E-MAIL: _____ FAX: (___) -

North Carolina State Building Code, Volume _____ - Section _____

REQUEST ONE: [ ] Formal Interpretation by NCDOI [ ] Appeal of Local Decision to NCBCC
[ ] Appeal of Local Decision to NCDOI [ ] Appeal of NCDOI Decision to NCBCC

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

REASON:

Signature: _____ Date: _____

202.9.1 Engineering Division. A written technical interpretation shall be provided as specified in Section 203.2.1.2. Any person may appeal in writing an order, decision, or determination pertaining to the code or any state building law by filing written notice with the Commissioner of Insurance or his designee within 10 days after the order, decision or determination. A copy of the appeal shall be furnished to each party.
(General Statutes 143-140, ~~153A-374 and 160A-434~~ and 160D-1127)

203.2.2 Appeals. Any person may appeal in writing an order, decision or determination of a code enforcement official pertaining to the code or any state building law. The appeal shall be addressed to the Chief Engineer for the Department of Insurance by filing written notice within 10 days after the order, decision or determination. The appeal shall contain the type and size of the building in question, the location of the building, and shall reference the code sections in question. The decision shall be in writing and shall set forth the facts found. The decision rendered shall be based on the technical provisions of the code, public health and safety and shall be construed liberally to those ends. A decision shall be binding on all parties unless an appeal is submitted to the Building Code Council as specified in Section 201.9.2. A copy of the appeal and written decision shall be furnished to each party.
(General ~~Statutes 153A-374 and 160A-434~~ Statute 160D-1127)

Item B – 2 Request from Brian Williams representing Ferguson Enterprises to amend the 2018 Fuel Gas Code, Chapter 4 as follows:

403.6 Plastic pipe, tubing and fittings. Polyethene plastic pipe, tubing and fittings used to supply fuel gas shall conform to ASTM D2513. Such pipe shall be marked "Gas" and "ASTM D2513".

Crosslinked PEX-Aluminum-PEX (PEX-AL-PEX) composite pipe, tubing and fittings used to supply and or distribute fuel gas shall conform to ASTM F1281. Such pipe shall be marked "Gas" and "ASTM F1281".

Polyvinyl chloride (PVC) and chlorinated polyvinyl chloride (CPVC) plastic pipe, tubing and fittings shall not be used to supply fuel gas.

404.3 PEX-AL-PEX PEX-AL-PEX piping systems shall be installed in the accordance with the terms of their approval, the conditions of listing, the manufacturer's instructions and this code.

(NOTE: The remainder of Section 404 would be renumbered to accommodate adding PEX-AL_PEX in 404.3.)

404.5~~5~~6 Fittings in concealed locations. Fittings installed in concealed locations shall be limited to the following types:

1. Threaded elbows, tees, and couplings.
2. Brazed fittings.
3. Welded fittings.
4. Fittings listed to ANSI LC-1/CSA 6.26 or ANSI LC-4.
5. Fittings listed to be used with PEX-AL-PEX piping systems.

404.17.1 Limitations. Plastic pipe shall be installed outdoors underground only. Plastic pipe shall not be used within or under any building or slab or be operated at pressures greater than 100 psig (689 kPa) for natural gas or 30 psig (207 kPa) for LP-gas.

Exceptions:

1. Plastic pipe shall be permitted to terminate above ground outside of buildings where installed in premanufactured anodeless risers or service head adapter risers that are installed in accordance with the manufacturer's instructions.
2. Plastic pipe shall be permitted to terminate with a wall head adapter within buildings where the plastic pipe is inserted in a *piping* material for fuel gas use in buildings.
3. Plastic pipe shall be permitted under outdoor patio, walkway and driveway slabs provided that the burial depth complies with Section 404.12.
4. PEX-AL-PEX composite piping systems when installed in accordance with section 403.6.

405.3 Plastic Pipe. Plastic pipe bends shall comply with the following:

1. The pipe shall not be damaged, and the internal diameter of the pipe shall not be effectively reduced.
2. Joints shall not be located in pipe bends.
3. The radius of the inner curve of such bends shall be ~~not less than 25 times the inside diameter of the pipe~~ in accordance with the manufacturer's instructions.
4. Where the piping manufacturer specifies the use of special bending tools or procedures, such tools or procedures shall be used.

407.2 Design and installation. Piping shall be supported with ~~metal~~ pipe hooks, ~~metal~~ pipe straps, ~~metal~~ bands, ~~metal~~ brackets, ~~metal~~ hangers or building structural components, suitable for the size of *piping*, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected *appliances* and shall not be supported by other *piping*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section 415. Supports, hangers and anchors shall be installed so as to not interfere with the free expansion and contraction of *piping* between the anchors. The components of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.

415.1 Interval of support. *Piping* shall be supported and intervals not exceeding the spacing specified in Table 415.1. Spacing of supports for CSST and PEX-AL-PEX shall be in accordance with the ~~CSST~~ manufacturer's instructions.

Add to Chapter 8 - Reference Standards:
ASTM F1281-17 Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe

Item B – 3 Request from Wayne Hamilton representing the NC Building Code Council Tent Ad-hoc Committee to amend the 2018 NC Fire Code, Section 3103.4 as follows:

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

Item B – 4 Request from Wayne Hamilton representing the NC Building Code Council Tent Ad-hoc Committee to add to the 2018 NC Fire Code, Section 3103.13 as follows:

3103.13 Special amusement building. Tents and other membrane structures erected as a *special amusement building* shall comply with Section 914.7 of this code and Section 411 of the *International Building Code*.

Item B – 5 Request from Bryan Dale Robinson representing the City of Raleigh to amend the 2018 NC Building Code as follows:

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

Item B – 6 Request from Drew Crawford representing DIYtiny, INC to add to the 2018 NC Building Code, Sections 101.2.6 and amend Section 202 as follows:

101.2.6 A *Tiny House* shall be constructed in accordance with the *International Residential Code* and shall be separated in accordance with Table 602.

Section 202
Definitions
TINY HOUSE. A detached single-family dwelling that is 400 square feet (37 m^2) or less in floor area, excluding lofts.

Item B – 7 Request from Drew Crawford representing DIYtiny, INC to amend the 2018 NC Residential Building Code, Sections R202, R305, R328 as follows:

Section R202
Definitions
TINY HOUSE A detached single-family *dwelling* that is 400 square feet (37 m^2) or less in floor area excluding lofts.

R305.1 Minimum height. *Habitable space*, hallways and portions of *basements* containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm). Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (2032 mm).
Exceptions:
1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524 mm) and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 mm).
2. The ceiling height above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a ceiling height of not less than 6 feet 8 inches (2032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
3. Beams, girders, ducts or other obstructions in *habitable space* shall be permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.
4. Ceiling heights in lofts are permitted to be less than 6 feet 8 inches.
5. Kitchens shall have a ceiling height of not less than 6 feet 8 inches in a *tiny house*.

R328.1.2 Maximum area. *Lofts* shall have a floor area not greater than ~~70~~ 100 square feet (~~6.50~~ 9.29 m^2).

R328.1.3 Minimum horizontal dimensions. *Lofts* shall not be less than 5 feet (1524 mm) in any horizontal dimension.

R328.2 Loft access and egress. The access to and primary egress from *lofts* shall be any type described in Sections R328.2.1 through R328.2.4. The *loft* access and egress elements along its required minimum width, shall meet the *loft* where its ceiling height is not less than 3 feet (914mm).

R328.2.1.2 Headroom. The headroom ~~in~~ above *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, or landing platform nosings in the ~~middle~~ center of their width, and vertically from the landing platform along the center of its width.

R328.2.1.4 Landings. Intermediate landings and landings at the bottom of *stairways* shall comply with Section R311.7.6, except that the depth in the direction of travel shall be not less than 24 inches (610 mm).

~~**R328.2.1.4**~~ **R328.2.1.5 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)~~ not less than 20 inches (508 mm) in width and in depth measured horizontally from and perpendicular to the nosing of the landing platform. The landing platform riser height to ~~the edge of~~ the *loft*~~, and 16 to~~ floor shall be not less than 16 inches (406 mm) and not greater than 18 inches ~~(406 to~~ 457 mm)~~ in height measured from the landing platform to the loft floor~~.

~~**R328.2.1.5**~~ **R328.2.1.6 Handrails.** *Handrails* shall comply with Section R311.7.8.

~~**R328.2.1.6**~~ **R328.2.1.7 Stairway guards.** *Guards* at open sides of *stairways*, landings and landing platforms shall comply with Section R312.1.

R328.2.2.1 Size and capacity. Ladders accessing lofts shall have a rung width of not less than 12 inches (305 mm) and 10 inches (254 mm) to 14 inches (356 mm) spacing between rungs. Ladders shall be capable of supporting a ~~200~~ 300 pound (~~75~~ 136 kg) load on any rung. Rung spacing shall be uniform within 3/8-inch (9.5 mm).

R328.2.5 Loft Guards. *Loft guards* shall be located along the open ~~side~~ sides of *lofts*. *Loft guards* shall not be less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less. *Loft guards* shall comply with Section R312.1.3 and Table R301.5 for their components.

Item B – 8 Request from Ben Edwards representing Mathis Consulting Co. to amend the 2018 NC Residential Code, Section N1106.4, N1106.3, N1106.1 and Chapter 44, and the deletion of Section 1106.7.1 as follows:

N1106.2 (R406.2) Scope.
Compliance with this section requires that the provisions identified in Sections N1101.14 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~~ components shall have performance characteristics equal to or better than the requirements in Table 402.1.1 or Table 402.1.3 of the 2012 *North Carolina Energy Conservation Code*. Minimum standards associated with compliance shall be the ~~ANSI RESNET ICC 301-2014 *Standard for the Calculation and Labeling of the Energy Performance of Low Rise Residential Buildings using an Energy Rating Index*~~ ANSI/RESNET/ICC 301-2019 *Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units 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 a semi-conditioned space shall be insulated to a minimum R-4; return ducts inside conditioned and semi-conditioned spaces are not required to be insulated. Ducts located inside a conditioned space are not required to be insulated other than as may be necessary for preventing the formation of condensation on the exterior or cooling ducts.

N1106.3 (R406.3) Energy rating index.

The Energy Rating Index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that *ERI reference design* has an Index value of 100 and a *residential building or dwelling unit* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1 percent change in the total energy use of the rated design relative to the total energy use of the *ERI reference design*. The ERI shall consider all energy used in the *residential building or dwelling unit*.

N1106.6.1 (R406.6.1) Compliance software tools.

Compliance software tools for this section shall be ~~in compliance with ANSI RESNET ICC 301-2014~~ *approved* and capable of calculating the ERI as described in Section N1106.3 (406.3) and capable of the following:

1. Automatic generation of the *ERI reference design* using only the input for the *rated design,* with no ability for the user to modify the *ERI reference design* characteristics directly.
2. 8,760-hour annual simulation with hourly schedules for occupancy, lighting power, equipment power, and thermostat setpoints.
3. Sizing equipment in accordance with Section N1103.7 (403.7), modeling at least 10 thermal zones, thermal mass effects, and corrections for HVAC part-load performance, efficiency, and capacity.
4. Creating lists of component characteristics and performance ratings for the *ERI reference* and *rated designs.*

~~**N1106.7.1 (R406.7.1) Minimum capabilities.**~~

~~Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI as described in Section N1106.3 and shall be in compliance with ANSI/RESNET/ICC 301, and the software shall include the following capabilities:~~

~~1. Computer generation of the *ERI reference design* using only the input for the *rated design.*~~

~~The calculation procedure shall not allow the user to directly modify the building component characteristics of the *ERI reference design.*~~

~~2. Calculation of the whole-building, as a single *zone*, sizing for the heating and cooling equipment in the *ERI reference design* residence in accordance with Section N1103.7.~~

~~3. Calculations that account for the effects of indoor and outdoor temperatures and part load ratios on the performance of heating, ventilating and air-conditioning equipment based on climate and equipment sizing.~~
~~4. Printing code official inspection checklist listing each of the rated design component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.~~

Chapter 44 (Chapter 6) Referenced Standards
Residential Energy Services Network, Inc. (RESNET)
4867 Patina Court
Oceanside, CA 92057

~~ANSI RESNET ICC 301-2014 Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index~~ ANSI/RESNET/ICC 301-2019 Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units using an Energy Rating Index - including ANSI/RESNET/ICC 301-2019 Addendum A-2019 and Addendum B-2020.
N1106.2~~, N1106.6.1, N1106.7.1~~.

Item B – 9 **Request from Kerry Sutton representing American Concrete Institute (ACI), Dave Tepke representing ACI Carolinas Chapter, Mark LeMay representing International Concrete Repair Institute (ICRI), Bill Brickey representing ICRI Carolinas Chapter, Keith Kesner representing CVM, Tim Cooke representing SKA Consulting Engineering, and Douglas Allen representing Simpson Strong-Tie to add to the 2018 NC Existing Building Code, Section 606.1.1 and to amend Chapter 16 as follows:**

606.1.1 Repairs to structural concrete. Repairs to structural concrete elements in accordance with ACI 562 shall be permitted.
Exception:
1. Where seismic design governs. ACI 562 shall not be used for evaluation and design.
2. Dwellings and accessory buildings constructed under the NC Residential Code.

Add new referenced standard to Chapter 16 as follows:

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

562-16: Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures
606.1.1

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 March 9, 2021 and the Final Adoption meeting may take place on or after June 8, 2021. The written public comment period expires on April 16, 2021.

Item C – 1 Request from Wayne Hamilton representing the NC Building Code Council to repeal the 2018 NC Fire Code, Section 304.4.4 as follows (201208 Item B-1)**:**

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

Item C - 2 Request by Tim Henshaw representing the NC Fire Code Revision Committee to amend the 2018 NC Fire Code, Section 510 and Chapter 80 as follows (201208 Item B-5)**:**

SECTION 510
EMERGENCY RESPONDER ~~RADIO~~ COMMUNICATION COVERAGE

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

Exceptions:

1. Where *approved* by the building official and the *fire code official*, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an *approved* ~~radio~~ communications coverage system.

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

3. In facilities where emergency responder ~~radio~~ communication coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the *fire code official* shall have the authority to accept an automatically activated emergency responder ~~radio~~ communication coverage system.

4. New buildings 7,500square 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~~ communication coverage shall be listed in accordance with UL 2524. Systems, components and equipment required to provide the ~~emergency responder radio coverage~~ in-building 2- way emergency responder communication coverage system shall comply with Sections 510.4.1 through ~~510.4.2.5~~ 510.4.2.8.

510.4.1 ~~Radio Signal Strength~~ Emergency communication coverage system signal strength. The building shall be considered to have acceptable ~~emergency responder radio coverage~~ in-building 2- way emergency responder communication 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 power or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section ~~1203~~ 604. The standby power supply shall be capable of operating the ~~emergency responder radio~~ in-building 2- way emergency responder communication coverage system ~~for a~~

~~duration of not less than 24 hours.~~ at 100-percent system capacity for a duration of not less than 12 hours.

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

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.

2. Battery systems used for the emergency power source shall be contained in a NEMA ~~4 type water proof cabinet~~ 3R or higher-rated cabinet.

3. ~~The signal booster system and battery system shall be electrically supervised and monitored by a supervisor service, or when approved by the *fire code official*, shall sound an audible signal at a constantly attended location.~~ Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.

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

5. Active RF emitting devices used in in-building 2- way emergency responder communication coverage systems shall have built-in oscillation detection and control circuitry.
6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any in-building 2- way emergency responder communication coverage network shall be coordinated and approved by the *fire code official*.

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

1. Loss of normal AC power supply.

2. System battery charger(s) failure.

3. Malfunction of the donor antenna(s).

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

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

6. Failure of critical system components.

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

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

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

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

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

Exception: 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 C - 3 **Request from Tim Henshaw representing NC Fire Code Revision Committee to amend the 2018 NC Building Code, Section 403.4.5, 916, and 916.1 as follows** (201208 Item B-6)**:**

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 C - 4 **Request from the NC Building Code Council, Electrical Ad-Hoc Committee, to adopt the 2020 North Carolina Electrical Code** (201208 Item B-7)**.**

The Base Documents for the 2020 NC Electrical Code is the 2020 National Electrical Code (NEC) and 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.

The 2020 NC Building Code Council, Electrical Ad-Hoc Committee proposed amendments are posted at the following website and are replacements to the Sections printed in the Base Document: https://www.ncosfm.gov/bcc-agenda-20201208-proposed-2020-state-electrical-code-amendments.

The fiscal note for this item can be viewed online at: https://www.ncosfm.gov/bcc-agenda-20201208-proposed-2020-state-electrical-code-amendments.

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 December 8, 2020. The Final Adoption meeting will take place on March 9, 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 Colin Triming representing the NC Fire Code Revisions Committee to amend the 2018 N.C. Fire code, Section 1010.1.9.7 as follows** (200901 Item B-1)**:**

[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 D – 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 (200901 Item B-2)**:**

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

Item D – 3 Request from Bridget Herring to amend the 2018 N.C. Residential Code, Section N1101.13 as follows (200901 Item B-5)**:**

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 D – 4 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 (200901 Item B-6)**:**

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 D – 5 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 (200901 Item B-7)**:**

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 D – 6 Request from Julius Ballanco representing JB Engineering and Code Consulting, P.C. to amend the 2018 Residential Code, Chapter 44 as follows (200901 Item B-8)**:**

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 D – 7 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 (200901 Item B-9)**:**

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 D – 8 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 (200901 Item B-10)**:**

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 D – 9 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 (200901 Item B-11)**:**

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 D – 10 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 (200901 Item B-12)**:**

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 D – 11 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 (200901 Item B-13)**:**

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 D – 12 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 (200901 Item B-14)**:**

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 D – 13 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to amend the 2018 Energy Code, Section R406.2 as follows (200901 Item B-15)**:**

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 FENESTRATION 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.
g. 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.

The fiscal note for this item can be viewed online at: https://www.ncosfm.gov/bcc-agenda-2020-09-01-fiscal-note-items-b15-and-b21pdf.

Item D – 14 Request from Robert Privott representing N.C. Home Builders Association and Jeff Tiller to add the 2018 N.C. Energy Code, Chapter 2 Definitions as follows (200901 Item B-20)**:**

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 D – 15 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 (200901 Item B-21)**:**

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.

The fiscal note for this item can be viewed at: https://www.ncosfm.gov/bcc-agenda-2020-09-01-fiscal-note-items-b15-and-b21pdf.

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