OSFM
NC DEPARTMENT OF INSURANCE

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MIKE CAUSEY, INSURANCE COMMISSIONER & STATE FIRE MARSHAL
BRIAN TAYLOR, CHIEF STATE FIRE MARSHAL

August 27, 2021

Jeff McIntosh
Brunswick County Code Administration
PO Box 249
Bolivia, NC 28422

RE: Fasteners for High Wind Zones
2018 NCRC Table R602.3(1) footnote d

Mr. McIntosh:

This letter is in response to your request for formal interpretation dated August 18, 2021 that was received in NCDOI by email on that same date. Your request for formal interpretation states:

1. Provide clarification for the requirement of a structural analysis for buildings being built prescriptively using Table R602.3(1) footnote d, (ii) in a region with a wind speed that exceeds 130 mph.

    d. Fastening schedule only applies to buildings of conventional wood frame construction where wind or seismic analysis is not required by the applicable code. In areas where wind or seismic analysis is required, required fasteners must be determined by structural analysis. The following are conditions for which codes require structural analysis:

        i. For nominal dimensions on nails see Table R602.3(1a).

        ii. *North Carolina Residential Code* – buildings located in areas where the design wind speed equals or exceeds 130 mph (58 m/s) or townhouses assigned to Seismic Design Category C.

2. Define the documentation requirement of a "Structural Analysis".
3. Does this mean that all connection details for a building in a wind speed exceeding 130 mph be sealed by a NC Design Professional?
4. Does the structural analysis also pertain to the connection of built-up girders and beams?

Remarks:

Code sections noted in this letter are referring to the 2018 edition of the NC Residential Code unless otherwise noted.

The word "this" in question #3 above is assumed to mean the result of answer to question #1.

"d", "i", and "ii" shown in Question #1 above are copies of footnote "d" from Table R602.3(1).

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

It is concluded that the term “design wind speed” in footnote d is referring to “ultimate design wind speed” as used in Table R301.2(5).

It is important to note that the requirement for structural analysis in footnote d applies to 130 mph wind zones as well as those zones exceeding 130 mph.

Code Analysis:

With regard to walls, use of Table 602.3(1) begins with Section 4505.1. 4505.1 states in part:

> **R4505.1 Construction.** … Components of exterior walls shall be fastened in accordance with Table R602.3(1).

Table 602.3(1), footnote d is included in Question #1 above.

Comments: Footnote d is very clear that Table 602.3(1) does not apply in 130 mph design wind speeds for everything in the table except built-up girders and built-up beams.

Conclusions:

1. The intent of Table R602.3(1) footnote d is for a licensed NC engineer evaluate fasteners for connections listed in the table except for built-up girders and built-up beams.
2. A sealed set of drawings from a design professional indicating the fasteners that are required would be considered “structurally analyzed”. If that sealed set of drawings indicates the use of Table R602.3(1) for the fasteners, then the fasteners are considered “structurally analyzed”. The two prior sentences are based on the engineer analyzing the structure and determining what it is needed to fasten members together to meet performance requirements of the code.
3. It means that all fastened connections addressed in Table R602.3(1) except for built-up girders and built-up beams require a seal by a NC licensed engineer.
4. No. Built-up girders and built-up beams, while included in Table R602.3(1), do not have footnote d listed in the heading to column “Number of Fasteners at Each End and Splice for Each Layer” or in the rows pertaining to built-up girders and built-up beams.

Please call if you have comments or questions.

Sincerely,

Carl Martin, RA
Deputy Commissioner
Division Chief of Engineering

cc: File
Bridget Herring, Chair – BCC
Danny Priest, Vice-Chair – BCC
David Smith, Chairman – BCC Residential Standing Committee

ATTACHMENT A

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

325 North Salisbury Street, Room 5_44
Raleigh, North Carolina 27603
(919) 647-0019

APPEAL TO NCDOI/NCBCC Hearing Date _____/____/____

GS 153A-374, GS 160A-434	GS 143-140, GS 143-141
Formal Interpretation by NCDOI __X____	Appeal of Local Decision to NCBCC _____
Appeal of Local Decision to NCDOI _____	Appeal of NCDOI Decision to NCBCC _____

APPELLANT Jeff McIntosh PHONE (910) 253 - 2050 X _____.
REPRESENTING Brunswick County Code Administration
ADDRESS Post Office Box 249
CITY Bolivia STATE NC ZIP 28422
E-MAIL jeff.mcintosh@brunswickcountync.gov FAX (___) _____ - _____.

North Carolina State Building Code, Volume 2018 NCRC - Section Table R602.3(1)

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

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

Please see attached letter and email chain

REASON:

Signature _____ DATE: 08/18/21

APPEAL TO NCDOI/NCBC
FORM 3/14/17

BRUNSWICK COUNTY BUILDING INSPECTIONS

BRUNSWICK COUNTY GOVERNMENT CENTER
BUILDING I
75 COURTHOUSE DRIVE, N.E.
BOLIVIA, NORTH CAROLINA 28422

MAILING ADDRESS:
POST OFFICE BOX 249
BOLIVIA, NORTH CAROLINA 28422

TELEPHONE
(910) 253-2050

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(910) 253-2416

08/17/21

Mr. Carl Martin,

Brunswick County Code Administration is requesting a formal code interpretation for the following Residential Code issues:

1. Provide clarification for the requirement of a structural analysis for buildings being built prescriptively using Table R602.3(1) footnote d, (ii) in a region with a wind speed that exceeds 130 mph.

d. Fastening schedule only applies to buildings of conventional wood frame construction where wind or seismic analysis is not required by the applicable code. In areas where wind or seismic analysis is required, required fastening must be determined by structural analysis. The following are conditions for which codes require structural analysis:
   i. For nominal dimensions of nails see Table R602.3(1a)
   ii. *North Carolina Residential Code*—buildings located in areas where the design wind speed equals or exceeds 130 mph (58 m/s) or townhouses assigned to Seismic Design Category C.

2. Define the documentation requirement of a "Structural Analysis".

3. Does this mean that all connection details for a building in a wind speed exceeding 130 mph be sealed by a NC Design Professional?

4. Does the structural analysis also pertain to the connections of built-up girders and beams?

The purpose of requesting the formal interpretation is to help with consistency across the state and other jurisdictions located in a high wind region. Our department feels it should be written as a formal interpretation so that every jurisdiction throughout the state can be informed officially of your decision.

Thank you for your assistance,

Jeff McIntosh

Commercial Plans Examiner