

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-661-5880**

Log Cabins

Code: 2012 Administrative Code and Policies
Section: 105

Date: July 3, 2012

Question:

Is engineering required for log cabin construction since there are no provisions in the Residential Code to address this type of construction?

Answer:

Log cabins are not addressed directly in the Residential Code and, as such, are considered to be "alternate material, design, and methods". Section 105.1 addresses alternate material, design, and methods and states:

“The provisions of this code are intended to allow the use of any alternate material, design, or method of construction, provided that the alternate has been approved by the code enforcement official. An alternative material, design or method of construction shall be approved where the code enforcement official finds that the proposed alternative material, design or method of construction complies with the intent and provisions of the technical codes.”

The commentary following Section 105.1 states:

“The technical codes are not intended to inhibit innovative ideas or technological advances. A comprehensive regulatory document such as the North Carolina Building Codes cannot envision and then address all future innovations in the industry. As a result, a performance code must be applicable to and provide a basis for the approval of an increasing number of newly developed, innovative materials, systems and methods for which no code text or referenced standards yet exist. The fact that a material, product or method of construction is not addressed in the technical codes is not an indication that such material, product or method is intended to be prohibited. The code enforcement official is expected to apply sound technical judgment in accepting materials, systems or methods that, while not anticipated by the drafters of the current code text, can be demonstrated to offer equivalent performance. By virtue of its text, the code regulates new and innovative construction practices while addressing the relative safety of building occupants. The code enforcement official is responsible for determining if a requested alternative provides the equivalent level of protection of public health, safety and welfare as required by the code.”

Section 105.2 states:

“Whenever there is insufficient evidence of compliance with the provisions of the technical codes, or evidence that a material, design or method does not conform to the requirements of the technical codes, or in order to substantiate claims for an alternative material, design or method, the code enforcement official shall have the authority to require tests as evidence of compliance to be made at no expense to the authority having jurisdiction. Test methods shall be as specified in the technical codes or by other recognized test standards. In the absence of recognized and accepted test methods, the code enforcement official shall approve the testing procedures.”

The use of Section 105.1 is generally not recommended unless the inspector has the expertise and the experience to warrant its use.

In the case of the construction methods of an entire structure, such as a log cabin, being an alternate method, "expertise" would at the least, include the ability to do structural engineering calculations for any or all of the unconventional components of the construction and to be able to demonstrate the ability of the construction method to be at least the equivalent of that prescribed in the technical codes.

In conclusion, unless the inspector can demonstrate his ability to ensure the structural integrity of the log cabin construction, it is expected that all components for a log cabin, which are not addressed in the Code be sealed by a licensed NC design professional and that the design professional stipulate that all of the construction elements meet dead load, live load and wind zone requirements as specified in the NC Residential Code.