



Chris Christie
Governor

Kim Guadagno
Lt. Governor

State of New Jersey
Department of Community Affairs
Division of Codes and Standards
PO Box 802
Trenton, New Jersey 08625-0802



Richard E. Constable III
Commissioner

BULLETIN NO.

13-1A

Date: **May 2013**

Subject: **Elevating existing houses**

Reference: **Chapter 3 of the one- and two-family dwelling subcode, N.J.A.C. 5:23-3.21**

In the aftermath of Superstorm Sandy, there have been a number of inquiries about elevating existing houses. The following is intended to offer guidance on some of the technical issues associated with elevating existing houses in flood hazard areas. This guidance is limited to existing houses with no increase in the habitable space. As always, new construction, even if it is to replace storm-damaged structures, must meet all of the applicable requirements of the adopted subcodes.

An elevation is an addition: Elevating an existing house is categorized as an addition under the rehabilitation subcode because it brings about an increase in the mean height of the highest roof of the structure. The addition itself must comply with the requirements for new construction. In the case of elevating an existing house, this would be the new foundation system, and associated work, including pilings.

Increase in height to greater than 35 feet: The rehab subcode prohibits an increase in height beyond that which would be permitted for new construction. Under the one- and two-family dwelling subcode, buildings of unprotected wood-framed (VB) construction are limited to two stories and 35 feet in height. Buildings with a mean roof height of greater than 35 feet or greater than two stories in height must be of VA construction or must have a fire sprinkler system. While these are reasonable requirements when applied to new construction, these requirements become punitive when applied to an existing house being elevated. (Note that “any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access, or limited storage” is not counted as a story. See Section R322.1.5 of the one- and two-family dwelling subcode.)

Clearly, the primary concern here is fire safety, specifically, the ability of the occupants to evacuate safely in the event of a fire. For this reason, a variation is appropriate for increases in height that bring the mean height of the highest roof surface to greater than 35 feet provided that (1) a smoke alarm system or a household fire alarm system is installed in accordance with the one- and two-family dwelling subcode Section R314; and (2) the dwelling unit is separated by a one hour, fire-rated assembly from

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any parking area or other area underneath the dwelling unit where motor vehicles or water craft or other gas-fired engines may be stored. (See FTO-13)

Wind load: An increase in height also necessitates consideration of any increased wind load.

- International Residential Code (IRC) Houses elevated up to a maximum of 42 feet - For houses constructed in compliance with any edition of the International Residential Code (or the International Building Code) with an elevation of the existing house that brings the mean height of the highest roof surface up to, but not above, 42 feet, no additional analysis of the existing building is required. The factors of safety incorporated into the structural requirements of the International Codes are sufficient.
- “Pre-IRC” Houses elevated up to a maximum of 42 feet– Roof Connections - There is some concern with the ability of roof connections to withstand uplift forces for houses constructed prior to adoption of the International Codes. This is because earlier national model codes allowed toe nailing and did not include the requirements for strapping found in the International Residential Code. Toe nails have low capacity to resist uplift forces; therefore, an engineering analysis should be required to demonstrate that the connections will resist the predicted wind forces.
- Houses elevated to greater than 42 feet - For all houses (whether built under the IRC or not) where the mean height of the highest roof surface resulting from elevating the existing house will be greater than 42 feet, an engineering analysis should be required to demonstrate that all of the connections (not limited to the roof) will resist the predicted wind forces.