V Zone Design and Construction Certification

Purpose: *To explain the certification requirements for structural design and methods of construction in V Zones.*

Structural Design and Methods of Construction Certification

As part of the agreement for making flood insurance available in a community, the National Flood Insurance Program (NFIP) requires the community to adopt a floodplain management ordinance that specifies minimum design and construction requirements. Those requirements include a **certification of the structural design and the proposed methods of construction** (a similar documentation requirement appears in the 2009 IRC, Section R322.3.6). It is recommended that the design professional use ASCE 24 and ASCE 7 as appropriate engineering standards.

Specifically, NFIP regulations and local floodplain management ordinances require that:

1. A **registered professional engineer or architect shall develop or review the structural design, specifications, and plans** for the construction.
2. A **registered professional engineer or architect shall certify that the design and methods of construction** to be used are in accordance with accepted standards of practice in meeting these criteria:

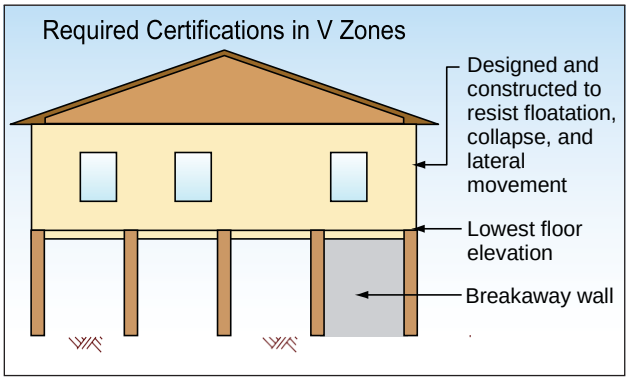
   The **bottom of the lowest horizontal structural member of the lowest floor** (excluding the pilings or columns) is elevated to, or above, the Base Flood Elevation (BFE) plus one foot of freeboard.

   The pile or column foundation and structure attached thereto is **anchored to resist flotation, col- lapse, and lateral movement due to the effects of wind and water loads acting simultaneously** on all building components. ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures*, provides guidelines on different load combinations, which include flood and wind loads.

Completing the V Zone Design Certificate

There is no single V Zone certificate used on a nationwide basis. Instead, local communities and/or states have developed their own certification procedures and documents. Registered engineers and architects involved in V Zone construction projects should **check with the authority having jurisdiction regarding the exact nature and timing of required certifications**.

Martin County's certification form is attached. It is intended to be used as verification that the certification and supporting information is provided. The certification statement can address both design and proposed methods of construction and breakaway wall design.



Other Certifications Required in V Zone

Breakaway Wall Design by a registered professional engineer or architect (see attached requirements and recommendations for *Enclosures and Breakaway Walls*)

"As Built" Lowest Floor Elevation, by a surveyor, engineer, or architect (Elevation Certificate)

The V Zone Design certification should take into consideration the NFIP Free-of-Obstruction requirement for V Zones: the space below the lowest floor must be free of obstructions (e.g., building element, equipment, or other fixed objects that can transfer flood loads to the foundation, or that can cause flood- waters or waves to be deflected into the building), or must be constructed with non-supporting breakaway walls, open lattice, or insect screening. *(See NFIP Technical Bulletin 5 and Fact Sheet No. 8.1, Enclosures and Breakaway Walls.)*

V ZONE DESIGN CERTIFICATE

Name _____ Policy Number *(Insurance Co. Use)* _____

Building Address or Other Description _____

Permit No._____ City_____ State_____ Zip Code _____

SECTION I: Flood Insurance Rate Map (FIRM) Information

Community No._____ Panel No._____ Suffix_____ FIRM Date_____ FIRM Zone(s) _____

SECTION II: Elevation Information Used for Design

[NOTE: This section documents the elevations/depths used or specified in the design – it does not document surveyed elevations and is not equivalent to the as-built elevations required to be submitted during or after construction.]

1. FIRM Base Flood Elevation (BFE)..... _____ feet*
2. Community's Design Flood Elevation (DFE)..... _____ feet*
3. Elevation of the Bottom of Lowest Horizontal Structural Member ..... _____ feet*
4. Elevation of Lowest Adjacent Grade..... _____ feet*
5. Depth of Anticipated Scour/Erosion used for Foundation Design ..... _____ feet
6. Embedment Depth of Pilings or Foundation Below Lowest Adjacent Grade..... _____ feet

* Indicate elevation datum used in 1-4: ❑ NGVD29 ❑ NAVD88 ❑ Other _____

SECTION III: V Zone Design Certification Statement

I certify that: (1) I have developed or reviewed the structural design, plans, and specifications for construction of the above-referenced building and (2) that the design and methods of construction specified to be used are in accordance with accepted standards of practice for meeting the following provisions:

The bottom of the lowest horizontal structural member of the lowest floor (excluding piles and columns) is elevated to or above the BFE plus one foot of freeboard.

The pile and column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of the wind and water loads acting simultaneously on all building components. Water loading values used are those associated with the base flood. Wind loading values used are those required by the applicable State or local building code. The potential for scour and erosion at the foundation has been anticipated for conditions associated with the base flood, including wave action.

SECTION IV: Breakaway Wall Design Certification Statement

[NOTE. This section must be certified by a registered engineer or architect when breakaway walls are designed to have a resistance of more than 20 psf (0.96 kN/m2) determined using allowable stress design]

I certify that: (1) I have developed or reviewed the structural design, plans, and specifications for construction of breakaway walls to be constructed under the above-referenced building and (2) that the design and methods of construction specified to be used are in accordance with accepted standards of practice for meeting the following provisions:

Breakaway wall collapse shall result from a water load less than that which would occur during the base flood.

The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (see Section III).

SECTION V: Certification and Seal

This certification is to be signed and sealed by a registered professional engineer or architect authorized by law to certify structural designs. ☐ I certify the V Zone Design Certification Statement (Section III) and if applicable,

☐ I certify the Breakaway Wall Design Certification Statement (Section IV).

Certifier's Name_____ License Number _____

Title_____ Company Name _____

Address_____

City_____ State _____ Zip Code _____

Signature_____ Date_____ E-mail _____

Place Seal Here

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