

Salisbury V-Zone Certificate

National Flood Insurance Program (NFIP) regulations require coastal communities to ensure that buildings built in V Zones are anchored to resist wind and water loads acting simultaneously. Buildings in V Zones are subject to a greater hazard than buildings built in other types of floodplains. Not only do they have to be elevated above the Base Flood Elevation (BFE), they must be protected from the impact of waves, hurricane-force winds and erosion.

A registered professional engineer or architect must certify that the design and planned methods of construction meet NFIP requirements. The community must maintain a copy of this certification in the permit file for all structures built or substantially improved in the V Zone.

National Flood Insurance Program Requirements

- 60.3 - Flood plain management criteria for flood-prone areas
 - (e)(4) - V Zone Anchoring Requirement
 - (e)(5) - Breakaway Wall Requirement

State of Massachusetts Code, MGL 143, Clarifications

- 1 and 2 Family Structures must comply with **Section R322 Flood Resistant Construction** as included in the 2015 IRC Code.
- All other structures must comply with **Appendix G Flood Resistant Construction** as included in the 2015 IBC Code.
- Buildings and Structures located in whole or in part in identified floodways shall be designed in accordance with **ASCE 24 Flood Resistant Design and Construction**.
- **Section R301.1 Application**, *'Buildings and Structures, and parts thereof, shall be constructed to safely support all loads including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code'*.
- **Section R322.1. Structural Systems**, *'Structural Systems of buildings and structures shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood elevation (DFE)'*.
- **Section R322.1.10 As-Built Elevation Documentation**, *'A registered design professional (RGD) shall prepare and seal documentation for submittal of the elevations specified in Sections R322.2, R322.3 or R322.4'*. In Salisbury, this documentation must be a FEMA NFIP Elevation Certificate. **Section R322.1.11 Construction Documents**, *'The construction documents shall include documentation that is prepared and sealed by a registered design professional (RGD) that the design and methods to be used meet the applicable criteria of this section'*.

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.

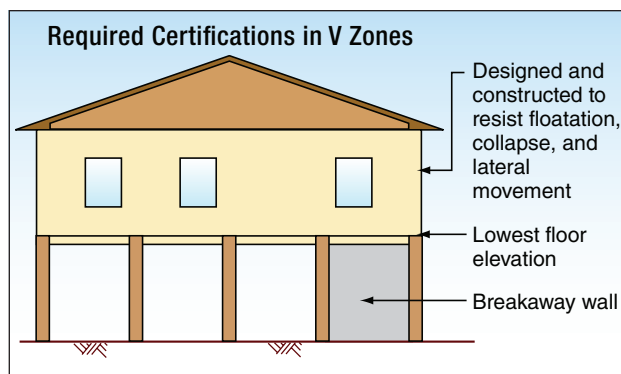
Specifically, NFIP regulations and local floodplain management ordinances require that:

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).
 - The pile or column foundation and structure attached thereto is **anchored to resist flotation, collapse, 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**.

Page 2 shows a sample certification form. It is intended to show one way that a jurisdiction may require that the certification and supporting information be provided. In this example, 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 Fact Sheet No. 8.1, *Enclosures and Breakaway Walls*)
- "As Built" Lowest Floor Elevation, by a surveyor, engineer, or architect (see Fact Sheet No. 1.4, *Lowest Floor Elevation*)

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 floodwaters 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*.)



Note: The V Zone design certificate is not a substitute for the NFIP Elevation Certificate (see Fact Sheet No. 1.4, *Lowest Floor Elevation*), which is required to certify as-built elevations needed for flood insurance rating.

V ZONE DESIGN CERTIFICATE

Name _____ Policy Number (Insurance Co. Use) _____

Building Address of 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 Structure 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 of 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.
- 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 _____ the Breakaway Wall Design Certification Statement (Section IV, check if applicable).

Certifier's Name _____ License Number _____

Title _____ Company Name _____

Address _____

City _____ State _____ Zip Code _____

Signature _____ Date _____ Telephone _____

Place Seal Here