

Differences Between the Insurance and Floodplain Management



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Everyone lives in a flood zone.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

If you build perfectly to the minimum NFIP Standards, would you be surprised to find a foot or more of water in your home or business?



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Freeboard

An additional level of elevation above the base flood elevation as a safety factor to protect structures from:

- Effects of future development in the Watershed; and,
- Events greater than the one percent chance flood.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Freeboard

Insurance premium credits freeboard
of 1-4 feet above BFE.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Your home has a 26% chance of being damaged by a flood during the course of a 30-year mortgage, compared to a 9% chance of fire.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Over 5 million people currently hold flood insurance policies in more than 20,200 communities across the U.S.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Last year, one-third of all claims paid by the NFIP were for policies in low-risk communities.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov



Openings in Foundation Walls and Walls of Enclosures

Below Elevated Buildings in Special Flood Hazard Areas
in accordance with the National Flood Insurance Program

Technical Bulletin 1 / August 2008



FEMA



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

How Openings Affect Flood Insurance Rates

- If openings are not compliant, the floor of the crawlspace or the floor of the enclosure becomes the “lowest floor.” In those cases, the result may be significantly higher flood insurance premiums, especially if the floor of the crawlspace or enclosure is more than a foot or two below the BFE.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Openings Requirements

- Openings that extend above the BFE. Only those portions of openings that are below the BFE can be counted towards the required net open area.
- Final interior grade. The trench that is excavated to construct footings and foundation walls must be backfilled completely, otherwise a basement is created. If the interior grade is higher than the exterior grade, the openings are to be no higher than 1-foot above the interior grade.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Openings Requirements

- Each enclosed area is required to have a minimum of two openings on exterior walls to allow floodwaters to enter directly. In order to meet the requirement, the openings must be located so that the portion of the opening intended to allow for inflow and outflow is below the BFE. Openings that are entirely above the BFE (or any portion of an opening that is above the BFE) will not serve the intended purpose during base flood conditions and thus are not counted towards the compliance with the flood opening requirements.
- The openings should be installed on at least two sides of each enclosed area to decrease the chances that all openings could be blocked with floating debris and to allow for more even filling by floodwater and draining of the enclosed area. It is recommended that openings be reasonably distributed around the perimeter of the enclosed area unless there is clear justification for putting all openings on just one or two sides (such as in townhouses or buildings set into sloping sites).



DNR

Life's Better OUTDOORS
www.dnr.sc.gov



Free-of-Obstruction Requirements

for Buildings Located in Coastal High Hazard Areas
in accordance with the National Flood Insurance Program

Technical Bulletin 5 / August 2008



FEMA



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Free of Obstruction

- The NFIP floodplain management regulations in 44 CFR Section 60.3 allow open wood lattice, insect screening, and non-load-bearing solid breakaway walls below an elevated building in the Coastal High Hazard Area. **These features have been judged not to be obstructions to flood flow or waves, but building designers and owners should be aware that solid breakaway walls and garage doors – even though permitted by floodplain management regulations – can result in significantly higher flood insurance premiums.**



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Wall

Thus, use of breakaway construction below the BFE will not allow a structure to be classified as “free of obstructions” for flood insurance rating purposes (a free-of-obstruction classification makes the building eligible for the lowest V zone flood insurance premium rate).



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Free of Obstruction

- NFIP floodplain management regulations restrict uses of space below the BFE to parking of vehicles, building access, and storage.
- Stairs, ramps, and elevators are permitted. However, depending on how they are constructed, stairs, ramps, and elevators may be considered obstructions for flood insurance rating purposes, and could result in significantly higher flood insurance premiums.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Free of Obstruction

- For *flood insurance rating purposes*, an area beneath a structure elevated on an open foundation is considered to be free of obstructions only if the following criteria are satisfied:
- There are no solid walls of any kind – including breakaway walls – below the BFE (insect screening, open lattice, and open slats are not considered obstructions).
- Any stairs below the BFE are open (any stairs enclosed by or containing solid walls are considered obstructions).



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Free of Obstruction

- There is no machinery or equipment below the BFE. Machinery and equipment include any items permanently affixed to the structure and that provide utility services to the building (e.g., furnaces, hot water heaters, heat pumps, air conditioners, elevators, etc.).



DNR

Life's Better OUTDOORS
www.dnr.sc.gov



Design and Construction Guidance for Breakaway Walls

Below Elevated Buildings Located in Coastal High Hazard
Areas in accordance with the National Flood Insurance
Program

Technical Bulletin 9 / August 2008



FEMA



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Walls

Some considerations affecting the rates and costs of NFIP flood insurance for elevated buildings in V zones include:

- The use of an enclosure with breakaway walls increases the premium for the entire building.
- An increase in the flood insurance premium resulting from the presence of an enclosure depends upon the area of the enclosure; substantially higher premiums are charged for enclosures that are 300 square feet or greater in area.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Walls

- The presence of garage doors below an elevated building, even if designed in accordance with this Technical Bulletin, may increase the flood insurance premium for the building.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Walls

- An increase in the flood insurance premium resulting from the presence of an enclosure depends upon the area of the enclosure; substantially higher premiums are charged for enclosures that are 300 square feet or greater in area.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Walls

- The presence of garage doors below an elevated building, even if designed in accordance with this Technical Bulletin, may increase the flood insurance premium for the building.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Breakaway Walls

- NFIP flood insurance policies have limits on coverage of contents in enclosures under elevated buildings. Designers, contractors, and owners may wish to contact a qualified insurance agent or the NFIP for more information about policy coverage, coverage limits, and costs.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

How Flood Damage-Resistant Materials Affect Flood Insurance Rates

- Careful attention to compliance with the NFIP regulations for flood damage-resistant materials is important during design, plan review, construction, and inspection. Compliance influences both the building's vulnerability to flood damage and the cost of NFIP flood insurance.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

How Flood Damage-Resistant Materials Affect Flood Insurance Rates

- Flood insurance will not pay a claim for finish materials located in basements or in enclosed areas below the lowest floor of elevated buildings, even if such materials are considered to be flood damage-resistant.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

How Flood Damage-Resistant Materials Affect Flood Insurance Rates

- NFIP claims for damage below the BFE are limited to utilities and equipment, such as furnaces and water heaters.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Repairs, Remodeling, Additions, and Retrofitting

- Designers and owners should know that the work described above may have insurance consequences.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Repairs, Remodeling, Additions, and Retrofitting

- In general, most changes to an existing building that result from less-than-substantial damage, or that do not constitute substantial improvement, will not change the status from pre-FIRM to post-FIRM and thus would not affect the insurance rate.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Repairs, Remodeling, Additions, and Retrofitting

- However, failure to comply with the substantial damage or substantial improvement requirements of the NFIP will result in a building's status being changed and may result in higher flood insurance premiums.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Decks, Pools, and Accessory Structures

- If prohibited elements are attached to a building that is otherwise compliant with NFIP requirements, a higher flood insurance premium may be assessed against the entire building.



DNR

Life's Better OUTDOORS
www.dnr.sc.gov



Home Builder's Guide to Coastal Construction

Technical Fact Sheet Series

FEMA 499 / August 2005



FEMA



DNR

Life's Better OUTDOORS

www.dnr.sc.gov

Coastal Building Successes and Failures



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 1

Purpose: To discuss how coastal building differs from other types of construction. The short answer is, yes, building in coastal areas is different. Coastal areas are characterized by:

- Flood levels, velocities, and windward loading.
- Coastal erosion can undermine a building.
- Wind speeds are typically higher, more closely spaced, and of longer duration.
- Wind-blown rain, corrosion, and

Summary of Coastal Construction Requirements and Recommendations



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 2

Using a Flood Insurance Rate Map (FIRM)



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 3

Coastal Building Materials



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 4

Lowest Floor Elevation



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 5

How Do Siting and Design Decisions Affect the Owner's Costs?



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 6

V-Zone Design and Construction Certification



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 7

Purpose: To explain the certification requirements for structural design and construction in V zones. Structural Design and Methods of Construction Certification As part of the agreement for issuing flood insurance policies 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. These requirements include a certification of the structural design and the methods of construction.

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

1. a registered professional engineer or architect shall design or review the structural design, specifications, and plans for the construction; and
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 for the following information:
 - the location of the lowest structural member of the base floor (including the girch or girch) is elevated to or above the Base Flood Elevation (BFE); and
 - the site or column foundation and structure attached thereto is anchored in sand, silt, and clay, and is not subject to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the Base Flood. Wind loading values used shall be those required by applicable code or local building standards.

The community, through its inspection procedures, will verify that the building is built in accordance with the certified design.

Completing the V-Zone Certification There is no single form certified 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 developed by one state. It is intended to allow one of many possible ways by which a jurisdiction may require that the certification and supporting information be provided in this format. These certifications are evaluated on the form Lowest Floor Elevation, Design and Methods of Construction, Breakaway Wall Collapse.



Other Certifications Required in V-Zones

- Lowest Floor Elevation, by a registered engineer or architect (see Fact Sheet No. 4)
- Breakaway Wall Collapse, by a registered professional engineer or architect (see Fact Sheet No. 27)

The Design and Methods of Construction Certification should have FIRM consideration for V-Zones. The space below the lowest floor must be free of obstructions (e.g., free of any building element, equipment, or other fixed capacity load on transfer). Roof loads to the foundation, in that the base floor members or supports to be subjected into the building, or shall be constructed with non-combustible breakaway walls, open walls, or metal sheathing. (See NFIP Technical Bulletin 5-83 and Fact Sheet No. 27.)

Enclosures and Breakaway Walls



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 27

Purpose: To discuss requirements for enclosures and breakaway walls in V zones.

Key Issues

- Spaces below elevated buildings or building annexes, porches, and stoops
- Areas enclosed by solid walls below are subject to strict regulatory under Insurance Program (NFIP). Note the architect's other regulations to strict
- Non-enclosed enclosures in V zones and enclosures in V zones if requirements and must be certified enclosures.
- Enclosures (breakaway and non-breakaway) must be elevated with flood opening made inside and outside to exterior (see Fig. 1)
- For V zones, enclosures below the BFE can be used only for **utility** and **storage**. These areas must not be used for residential purposes, or parking equipment, or to store vehicles.

What is an Enclosure? An "enclosure" is formed when any is enclosed on all sides by walls. It is elevated on an open foundation (not without an enclosure or other structure) and is used for residential purposes, and insurance premiums (a building is all enclosures if it meets minimum code standard) space below the BFE. (See 5-92, Free of Obstruction Requirement)

Enclosures can be divided into two categories:

- **Breakaway enclosures** are designed to be destroyed without damage to the building or its contents.
- **Non-breakaway enclosures** are designed to be destroyed without damage to the building or its contents.

Repairs, Remodeling, Additions, and Retrofitting



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 28

Purpose: To outline National Flood Insurance Program (NFIP) requirements for repairs, remodeling, and additions, and opportunities for retrofitting in coastal flood hazard areas. To provide recommendations for exceeding those minimum requirements.

Key Issues

- Existing buildings that sustain substantial damage or that are substantially improved (see box on next page) will be treated as new construction, and must meet the community's latest flood-resistant construction requirements (e.g., lowest floor elevation, foundation, and building requirements).
- Work on pre-1991 existing buildings that are not substantially damaged or substantially improved (see box on next page) must meet the community's flood-resistant construction requirements that were in effect when the building was originally constructed.
- Work on pre-1991 existing buildings that are not substantially damaged or substantially improved (see box on next page) is not subject to NFIP flood-resistant construction requirements.
- With a couple of minor exceptions (e.g., code violations and historic buildings), substantial damage and substantial improvement requirements apply to all buildings in the flood-hazard area, whether or not a flood insurance policy is in force.
- Buildings damaged by a flood and covered by flood insurance may be eligible for additional programs through the Increased Cost of Compliance (ICC) policy provisions. Check with an insurance agent and the authority having jurisdiction (AHJ) for details.
- Repairs and retrofitting - either before or after storm damage - provide many opportunities for retrofitting homes and making them more resistant to storm damage (see Figure 1).
- Buildings constructed before and after the community's first adoption of a flood hazard map or ordinance are referred to as "pre-FIRM" and "post-FIRM" buildings.

Note: Repairs, remodeling, additions, and retrofitting may also be subject to other community and code requirements, some of which may be more stringent than the NFIP requirements. Check with the AHJ before undertaking any work.



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 28 - Repairs, Remodeling, Additions, and Retrofitting

Protecting Utilities



HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 29

Considerations that must be made when installing utility equipment in a flood-prone area. Proper placement and installation of utility equipment can significantly reduce the costs of damage caused by flooding. To ensure that homes are safe after electricity, water, and gas service is restored.

Utility Equipment

- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.

Utility Equipment

- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.

Utility Equipment

- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.
- In flood-prone areas, utility equipment should be elevated above the BFE.



Utility equipment should be elevated above the BFE.

The code books must be considered, and repair and issue than hand homes. It is not necessarily result in the design requirements costs slightly.

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 29

just the construction cost. Owners high decisions will affect these costs of permitting, design, and construction. The costs of utilities and insurance, and replacement of deteriorated or existing minimum siting, design, and a Flood Insurance Manual (http://www.fema.gov).

Utility Equipment	Risk Level
High	High
Medium	Medium
Low	Low
Extreme	Extreme



Utility equipment should be elevated above the BFE.

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 29

Utility equipment should be elevated above the BFE.

Utility equipment should be elevated above the BFE.

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 29

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 7 - V-Zone Design and Construction Certification

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 27 - Enclosures and Breakaway Walls

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 28 - Repairs, Remodeling, Additions, and Retrofitting

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION Technical Fact Sheet No. 29 - Protecting Utilities



Life's Better OUTDOORS
www.dnr.sc.gov

FEMA Library

<http://www.fema.gov/library/index.jsp>



DNR

Life's Better OUTDOORS
www.dnr.sc.gov

Lisa Jones
State Coordinator
jonesls@dnr.sc.gov



DNR

Life's Better OUTDOORS
www.dnr.sc.gov