Chapter 5

NFIP Floodplain Management Requirements

NFIP Regulations

- Chapter 44 of the Code of Federal Regulations (44CFR)
- 44 CFR 59.2(b) To qualify for the sale of federally-subsidized flood insurance a community must adopt and submit to the Administrator as part of its application, flood plain management regulations, satisfying at a minimum the criteria set forth at Part 60 of this subchapter, designed to reduce or avoid future flood, mudslide (i.e., mudflow) or flood-related erosion damages. These regulations must include effective enforcement provisions.

Community Types

- 60.3(a) FEMA has not provided any maps or data
- 60.3(b) FEMA has provided a map with approximate A Zone
- 60.3(c) FEMA has provided a FIRM with BFEs
- 60.3(d) FEMA has provided a FIRM with BFEs and a map that shows a floodway
- 60.3 (e) FEMA has provided a FIRM that shows coastal high hazard areas (V Zones)

NFIP

- NFIP requirements are minimums
- NFIP requirements are cumulative

- NFIP Maps and DATA
  A community must adopt and enforce floodplain management regulations based on data provided by FEMA. This includes the floodplain boundaries, base flood elevations, FIRM zones, and floodway boundaries shown on the current Flood Insurance Rate Map, Flood Boundary Floodway Map and/or Flood Insurance Study.

BASIC RULE #1

- Check to make sure that you have the latest flood maps and data published by FEMA. You must use the latest maps to administer the flood plain management ordinance.

NFIP

- Communities can be more restrictive than FEMA
- There is a 90-day comment period on FEMA proposed map revisions
- Local ordinances should also adopt the county's FIRM to ensure completeness of floodplain management
- A community may vary from the effective FRIM if:'
  - FEMA data disagree with ground elevations
  - When FEMA data are insufficient (e.g. approx. A Zones
  - When FEMA has provided draft revised data
  - When FEMA provides advisory flood hazard data.
  - NOTE: INSURANCE RATES must be based on FIRM

When FIRM and Ground Data disagree

- The BFEs are published in the FIS for flood protection.
- Flood data is interpolated between cross sections, so there can be inaccuracies
- If the actual topographic survey shows an elevation above the BFE, you can record the data and issue the permit.
- The property owner or developer can apply for a LOMA to be removed from the SFHA.
- Conversely, if the survey shows elevation below the BFE, they should be regulated to the BFE.

Regulating Approximate A Zones

- Approximate A Zones are not studied under detailed hydrologic/hydraulic methods
- These areas are unnumbered A zones on the Firm
- They are approximate 100-yr flood zones on the FBFM
- The FIS will not contain specific BFEs
- There will not be a floodway/fringe designation.

Approximate A Zones

- New subdivision proposals and other developments greater than 50 lots or 5 acres (whichever is lesser) include BFEs
- Obtain, review and utilize any BFE and floodway data that are available (historical records).
- Download FEMA's Quick-2 software for computing flood elevations

Approximate A Zones

- Options:
- Require applicants to obtain BFEs
- Leave the development out of the A Zone (i.e. make it open space)

- Submit to FEMA for a Letter of Map Revision (LOMR)

Draft Revised NFIP DATA

- Communities are required to reasonably utilize FEMA's draft or preliminary FIRM or FIS information.
- Draft information is considered best available.
- If new draft data widens the Floodway, use draft data
- If new draft data shrinks the floodway, use existing data
- CLOMR: Conditional Letter of Map Revision: Will become final when LOMR is issued.

Advisory Flood Hazard Data

- Community should reasonably use Advisory Data
- Once adopted, new data should be adopted in the community's floodplain ordinance

BASIC RULE #2

- A permit is required for all development in the SFHA shown on the FIRM

Permits

- A permit is required for all **development** in the SFHA shown on the FIRM
- Development is defined as:
- Any man-made changes to improved or unimproved real estate
- If you are a 60.3 community, you do not have a FIRM and must require a permit for all development projects in your community

Permits are required for:

- Construction of new structures
- Modifications or improvements to existing structures
- Excavation
- Filling
- Paving
- Drilling
- Driving of piles
- Mining
- Dredging
- Land clearing
- Grading
- Permanent storage of equipment or materials

Small projects

- Small projects may be exempt as long as they don't obstruct flood flows:

- E.g. gardens, farming, mailboxes, routine maintenance, roofing

Permits from other Agencies

- It is more effective to withhold local permits until all other state agency permits are obtained:

- Coastal Zone (CAFRA)
- Flood Hazard area
- Septic
- Wetlands

- The State NFIP Coordinator should be able to help.

BASIC RULE #3

- Development must not increase the flood hazard on other properties

Encroachments

- No project shall increase flows downstream or increase BFEs upstream

- Regulatory Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Encroachments

- In the regulatory floodway, communities must prohibit encroachments including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

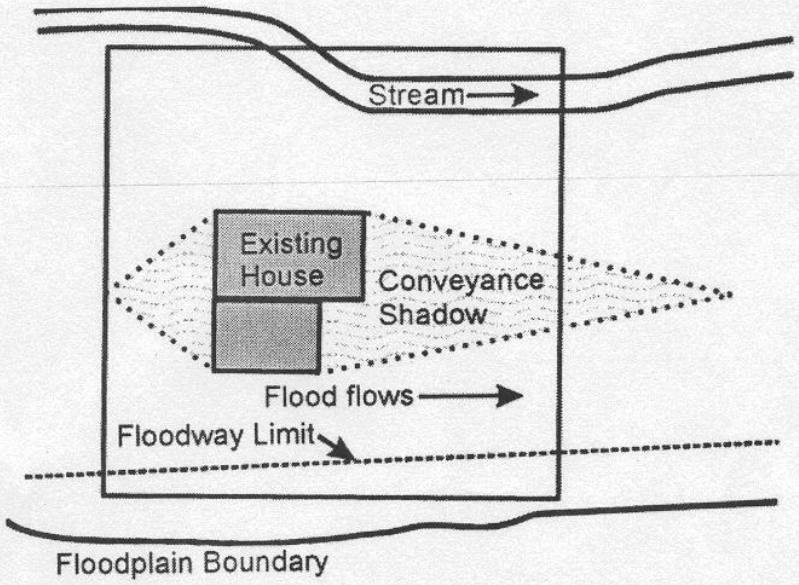
Encroachment Certification or NO-RISE Certificate

SEE

Page 5-23

in FEMA 480

CONVEYANCE SHADOW



Upstream of the existing obstruction: draw lines at a 1:1 ratio.

Downstream: draw lines at a 4:1 ratio

Streams Without Floodway Maps

For purposes of administering the ordinance, you should treat the entire riverine floodplain as a floodway.

Allowable Increases in Flood Height

Sometimes there needs to be an increase (e.g. dams)

The community must apply for a conditional approval from the FEMA Regional Office.

CLOMR (Conditional Letter of Map Revision)

BASIC RULE #4

NEW, SUBSTANTIALLY IMPROVED, OR SUBSTANTIALLY DAMAGED BUILDINGS MUST BE PROTECTED FROM DAMAGE BY THE BASE FLOOD

Structure means, for flood plain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

Residential buildings must be above BFE; non-residential either above the BFE or floodproofed (watertight below BFE).

ELEVATION

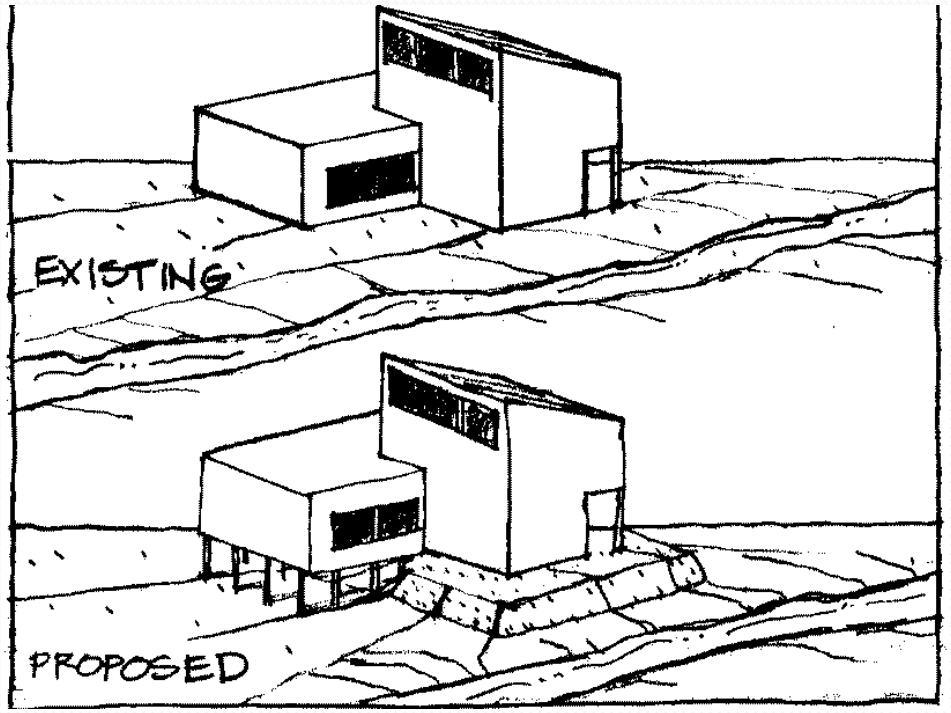
In Zones A1-A30, AE and AH, all new construction and substantial improvements of residential structures must be elevated so that the lowest floor
(including the basement) is elevated to or above the BFE.

3 Ways to Elevate

- Elevation on Fill
- Elevation on piles, posts, piers or columns
- Elevation on walls or a crawlspace

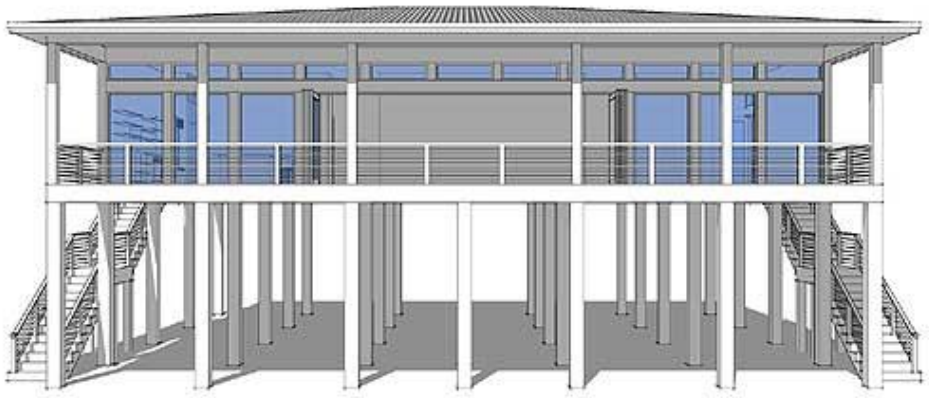
FILL

- Fill should be properly designed, installed in layers, and compacted over time.
- Fill may not increase flood heights.



Piles, Posts, Piers, or Columns

- Appropriate where there is deeper flooding, fill is not feasible or allowed, or areas with high velocity flooding. No obstructions underneath is preferred.



Walls or Crawlspaces

- Stem walls: two sides parallel to flow of water
- Walls can be built with openings

Below Grade Crawlspaces

- Some communities allow below grade crawlspaces tat cannot be more than 2 feet below the closest adjacent grade.
- Not considered a basement, but still pay higher NFIP premium.

How High?

- Lowest floor means the lowest floor of the lowest enclosed area (including basement)
- Minimum requirement is to elevate to the BFE
- In A Zones: the lowest floor is measured from the top of the floor (see page 5-32)

Elevation Certificate

To ensure that a building is elevated above the BFE, the lowest floor is surveyed and an elevation certificate is obtained and kept by the local permit office

House Lifting Video

- https://www.youtube.com/watch?v=6_OQax-ACB8

Enclosures

- Enclosures are created by crawlspaces or solid walls that fully enclose areas below the BFE
- The walls are subject to hydrodynamic and hydrostatic forces
- People are tempted to convert enclosures to living space that can be damaged in floods

NFIP

- Allows enclosures below BFE to be used for

1) building access
2) vehicle parking
3) storage

OPENINGS

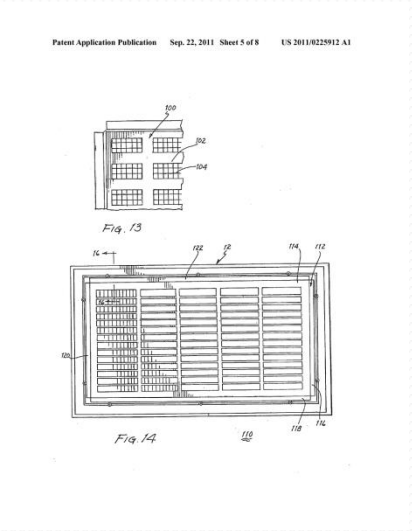
- Enclosures must have openings to allow floodwaters to enter and leave in order to equalize hydrostatic flood forces on both sides of the wall
- 1) Openings must be no higher than one foot above grade
- 2) Openings should be installed on at least two walls of the enclosure to ensure that at least one will work if the other gets blocked or plugged
- 3) Provide a minimum of two openings having a net area of not less than one square foot of enclosed area that is subject to flooding.

EXAMPLES

- Block size: 8” x 16”= 128 square inches

Example: $\frac{\text{1,280 square foot house}}{\text{128 square inches/opening}}$ = 10 openings

Smart Vents



SMART VENT®
Foundation Flood Vents
Authorized Dealer

Smart Vent Video

- http://www.smartvent.com/media/view/demo-videos

Non-Conversion Agreements

Ensures that enclosures are not converted to living space

- See page 5-37

FLOODPROOFING

- Nonresidential buildings must be elevated or floodproofed

- Walls are watertight
- Structural components must resist hydrostatic and hydrodynamic loads and buoyancy
- Utilities are protected from flood damage

Floodproof to the BFE

- However, when rated for flood insurance, one foot is subtracted from the floodproofed elevation.
- Therefore, a building has to be floodproofed to one foot above the BFE in order to get a more favorable insurance rate.
- Floodproofing that requires human intervention is allowed but discouraged.

BASEMENTS

- For purposes of the NFIP, a basement is defined as any area that is subgrade on all sides
- Daylight basements or walkout basements are usually subgrade on three sides, so they aren't basements under the definition, but they are still the lowest floor for floodplain management and insurance purposes.
- The lower level of a split level or bi-level house and other finished floors below grade are considered basements.
- The only way to build a residential basement is if it is elevated on fill and surrounded by fill.

BASEMENT EXCEPTIONS

- A few communities can allow floodproofed residential basements due to specific soil types and flooding conditions.

Basements and LOMR-F Areas

- FEMA requires that before a LOMR-F is issued, the community must ensure that the project meets all floodplain management requirements an that the area is reasonably safe from flooding.

ANCHORING

- Buildings must be properly anchored to stabilize against flood forces.

1) where flood flows are faster than 5 feet / second
2) in coastal areas subject to waves and high winds
3) in manufactured or mobile homes

Flood Resistant Materials

- Building products capable of withstanding direct and prolonged contact (72 hours) with flood waters without sustaining significant damage (any damage requiring more than low-cost cosmetic repair e.g. painting).

Flood Resistant Materials

- Concrete
- Clay
- Ceramic tile
- Galvanized steel
- Vinyl
- Indoor-outdoor carpeting
- Stone, slate
- Polyester epoxy paint
- Styrofoam insulation
- Pressure treated lumber
- etc.

Accessory Structures

- Carports, gazebos and picnic pavilions are not buildings

- Some low-cost accessory buildings may be wet-floodproofed and do not have to be elevated or dry floodproofed such as detached garages, boathouses, pole barns, and storage sheds.

- Accessory buildings must be used only for parking and storage and have flood openings

Manufactured Homes

- Definition: a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities.
- Does not include a recreational vehicle.
- Elevation is required so that the lowest floor is above the BFE.
- Must be adequately anchored.

RECREATIONAL VEHICLES

- An RV must meet the elevation and anchoring requirements of Manufactured homes OR
- Be on site less than 180 consecutive days OR
- Be fully licensed and ready for highway use.

RV parks and campgrounds should not be located in flash flood areas.

AO and AH Zones (no BFEs)

- All new construction and substantial improvements must have the lowest floor (including basement) elevated above the highest adjacent grade:

  - At least as high as the depth number specified in feet on the community's firm or

  - At lease two feet if no depth number is specified.

A99 and AR Zones

- A99 Zone is an SFHA that will be protected by a federal flood control project that is currently under construction
- AR Zone is an SFHA that used to be a B,C, or X zone that used to be protected by an accredited flood control system. The system has been decertified but is in the process of being restored to provide protection to the base flood level.

  These are rare, but until the projects are completed the area is treated as an SFHA

New Buildings in V Zones

- BASIC RULE #5: Due to wave impacts, V Zones have special building protection standards in addition to the requirements for A Zones.

- Buildings must be landward of the mean high tide.
- Buildings cannot be built over water.
- Avoid building in dunes or mangroves.

ELEVATION ON PILES OR COLUMNS

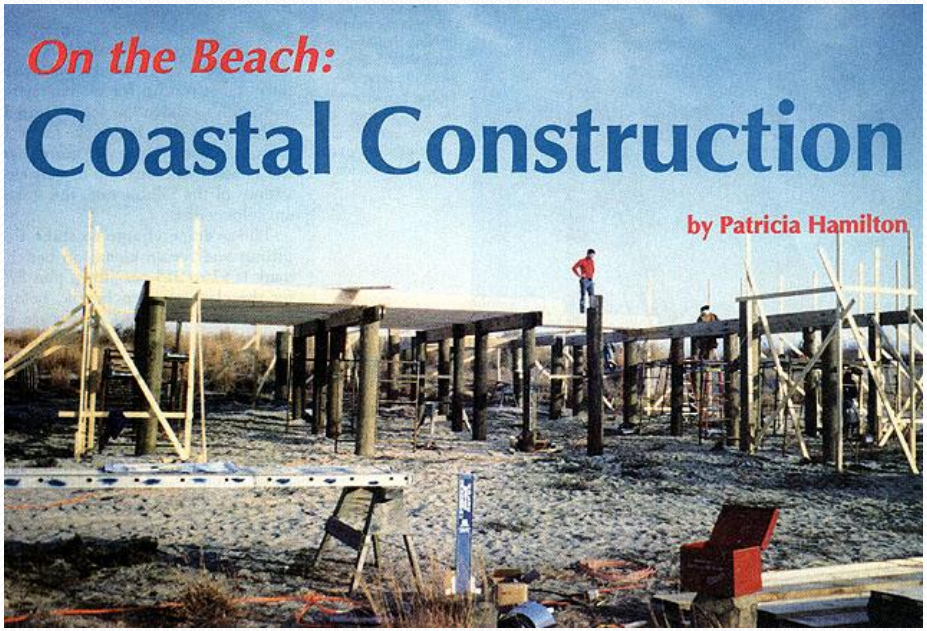
- All new construction and substantial improvements to buildings in V Zones must be elevated on pilings, posts, piers, or columns

- How High: In V Zones the lowest floor is measured from the bottom of the lowest horizontal structural member.

Wind and Water loads

- Piles made of wood, steel or pre-cast concrete are preferred over block columns and similar foundations that are less resistant to lateral forces.

- Piles must be embedded well below the scour depth. (p. 5-53)



CERTIFICATION

- An engineers certification is required for all coastal construction and must be maintained in the community's files.

  See page 5-55

BREAKAWAY WALLS

- Preferred: leave area below the elevated floor free of obstruction
- Only breakaway walls are allowed in V Zone
- Enclosed breakaway wall enclosures should be less than 300 square feet.

Coastal AE Zones

- NFIP regulations apply the same minimum requirements to both coastal AE Zones and riverine AE Zones

OTHER REQUIREMENTS

- Subdivisions: locate structures on highest ground; utilities and facilities must be constructed to minimize flood damage; provide adequate drainage for each building site.
- Water and sewer: Minimize flood damage and infiltration. Manholes should be raised above 100-year flood level. Pumping stations should have electrical panels above BFE.

Watercourse Alterations

- FEMA, state, and adjacent communities must be notified if a community is changing a waterway.

- The community must assure that the flood carrying capacity is maintained.