

Regulatory Language

[Freeboard \(FRB\)](#)

[Foundation Protection \(FDN\)](#)

[Cumulative Substantial Improvement Rules \(CSI\)](#)

[Lower Substantial Improvement Threshold \(LSI\)](#)

[Protection for Critical Facilities \(PCF\)](#)

[Protection of Floodplain Storage Capacity \(PSC\)](#)

[Natural and Beneficial Functions Regulations \(NBR\)](#)

[Enclosure Limits \(ENL\)](#)

[Other Higher Standard \(OHS\)](#)

[Land Development Criteria \(LD\)](#)

[Low Density Zoning \(LZ\)](#)

[Special Hazards Regulations \(SH\)](#)

[State-mandated Regulatory Standards \(SMS\)](#)

[Building Code \(BC\)](#)

[Staffing \(STF\)](#)

[Manufactured Home Parks \(MHP\)](#)

[Coastal AE Zones \(CAZ\)](#)

Freeboard (FRB)

CRS credit for freeboard is based on how high new buildings and substantial improvements must be elevated or floodproofed. Freeboard language is in the section of the ordinance or law that addresses construction standards for new buildings.

Example 1: Many model ordinances require the lowest floor to be elevated to the base flood elevation plus 1 or more feet. Often “plus 1 foot” is in parentheses because the model ordinance’s authors wanted the community to insert its own level of freeboard. Some communities have adopted the following language, parentheses and all, not realizing that it was an optional requirement more restrictive than the NFIP regulations.

Residential Construction. New construction or substantial improvement of any residential building (or manufactured home) shall have the lowest floor, including basement mechanical and utility equipment, and ductwork, elevated no lower than (one feet) above the base flood elevation.

Non-Residential Construction. New construction or substantial improvement of any commercial, industrial, or non-residential building (or manufactured home) shall:

- a. Have the lowest floor, including basement, mechanical and utility equipment, and ductwork, elevated no lower than (one feet) above the level of the base flood elevation or*
- b. Be floodproofed to a level no lower than (one feet) above the level of the base flood elevation, provided that all areas of the building (including mechanical and utility equipment) below the required elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.*

Using formula 1 the credit is $FB = 1.0$, $FRB = 100 \times 1.0 = 100$.

Example 2: The other common approach is to establish a “flood protection elevation,” “regulatory protection level,” or some similar elevation. The level is set at so many feet above the base flood elevation in the definitions section of the ordinance. The section on standards for new buildings simply requires protection to the “flood protection elevation” and there is no reference to a base flood elevation. If the community uses this approach, it must submit the ordinance language for both the definition and new construction standards.

Definitions: . . .

“FPE” or “Flood Protection Elevation” means: the elevation of the base flood plus two feet at any given location in the floodplain.

Standards for new construction

All new residential buildings shall be elevated so the lowest floor, including basement, mechanical and utility equipment, and ductwork are at or above the FPE. All new non-residential buildings shall be either elevated above the FPE or floodproofed to the FPE.

Using formula 1, the credit is $FB = 2.0$, $FRB = 100 \times 2.0 = 200$.

Example 3: This example is based on formula 5. The ordinance language refers to the bottom of the floor being at or above the base flood elevation, which results in the top of the first floor being 1 foot above the base flood elevation, essentially creating a one-foot freeboard.

All buildings or structures that are erected within an A Zone shall be elevated so that the lowest portion of all horizontal structural members that support floors, including floor slabs, mechanical and utility equipment, and ductwork, but excluding footings, pile caps, and pilings, are located at or above the base flood elevation.

Using formula 5, the credit is $FB = 0.0 + 1.0 = 1.0$, $FRB = 100 \times 1.0 = 100$.

Back to Top

Foundation Protection (FDN)

Buildings on Fill. *A residential or non-residential building may be constructed on permanent land fill in accordance with the following:*

- a. The lowest floor (including basement) of the building or addition shall be at or above the flood protection elevation.*
- b. The fill shall be placed in layers no greater than one foot deep before compacting and should extend at least ten feet beyond the foundation of the building before sloping below the base flood elevation.*

- c. *The top of the fill shall be above the base flood elevation. However, the ten foot minimum may be waived if a structural engineer certifies an alternative method to protect the building from damage due to erosion, scour, and other hydrodynamic forces.*
- d. *The fill shall not adversely affect the flow or surface drainage from or onto neighboring properties*

FDN = 20

Back to Top

Cumulative Substantial Improvement Rules (CSI)

Most ordinances use the NFIP definition for substantial improvement.

“Substantial improvement” means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures that have incurred “substantial damage,” regardless of the actual repair work performed. . . . [44 CFR 59.1]

The underlining in the following example shows how language can be added to the definition to clarify that both repairs and improvements are counted cumulatively.

“Substantial improvement” means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during the life of the structure, the cumulative cost of which equals or exceeds fifty percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures that have incurred “substantial damage,” regardless of the actual repair work performed. . . .

CSI = 45 + 45 = 90.

If “*during the life of the structure*” was replaced with “*during a period of five years*,” then CSI = 25 + 25 = 50.

If the words “*repairs, reconstructions*” were not included in the first example, CSI = 45. If not included in the second example, CSI = 25.

Back to Top

Lower Substantial Improvement Threshold (LSI)

Since communities participating in the NFIP already have a threshold, it is only necessary to change “50%” in the example language provided in the previous section to a lower number. The following is alternative language for cumulative substantial improvements (CSI), which also has a lower threshold (LSI).

A non-conforming building in a Flood Plain District may be altered, enlarged, or extended, on a one-time-only basis, provided the cost of such alterations, enlargements, or extensions does not equal or exceed 40 percent of its pre-improvement market value, unless such building is permanently changed to a conforming structure.

Any non-conforming building in a Flood Plain District that is damaged by flood, fire, explosion, Act of God, the public enemy or other cause may be restored to its original dimensions and conditions, provided the cost of restoring the building to its before damage condition does not exceed 40 percent of its pre-damage market value, excluding the value of the land.

Threshold = 40%, LSI = 30 CSI = 90

Back to Top

Protection for Critical Facilities (PCF)

Critical facilities shall be constructed on properly compacted fill and have the lowest floor (including basement) elevated at least one foot above the elevation of the 500-year flood. A critical facility shall have at least one access road connected to land outside the 500-year floodplain that is capable of supporting a 4,000 pound vehicle. The top of the road must be no lower than six inches (6") below the elevation of the 500-year flood.

PCF = 75

Back to Top

Protection of Floodplain Storage Capacity (PSC)

Whenever any portion of a floodplain is authorized for development, the volume of space occupied by the authorized fill or structure below the base flood elevation shall be compensated for and balanced by a hydraulically equivalent volume of excavation taken from below the base flood elevation. All such excavations shall be constructed to drain freely to the watercourse. No area below the waterline of a pond or other body of water can be credited as a compensating excavation.

PSC = 70 [Another example is on page 61]

Back to Top

Natural and Beneficial Functions Regulations (NBR)

Only those activities listed below are allowed within the floodplain district:

- (a) Public flood control structures and other public works relating to the control of drainage, flooding, erosion, or water quality or habitat for fish and wildlife . . .*

- (c) Storm sewer and drainage ditch outfalls . . .*

- (e) *Public open space and recreational facilities (without buildings or restrooms) . . .*

NBR = 10 if there is a specific list of allowed or permitted activities that does not include uses that are hazardous to public health or water quality. Note that if the regulatory language prohibits all buildings and filling, it could qualify for more points under Activity 420 (Open Space Preservation). If so, NBR = 0, because the same provision cannot be credited twice.

For all activities involving construction within 25 feet of the channel, the following criteria shall be met:

- (a) *A natural vegetation buffer strip shall be preserved within at least 25 feet of the mean high water level of the channel.*
- (b) *Where it is impossible to protect this buffer strip during the construction of an appropriate use, a vegetated buffer strip shall be established upon completion of construction.*
- (c) *The use of native riparian vegetation is preferred in the buffer strip. Access through this buffer strip shall be provided for stream maintenance purposes.*

NBR = 15

Back to Top

Enclosure Limits (ENL)

New construction or substantial improvements of elevated buildings that include enclosed areas formed by foundation and other exterior walls shall be designed to preclude finished living space below the base flood elevation by providing openings in each wall having a total net area of not less than 50% of the total wall area subject to flooding. At least one opening per wall shall be no higher than one foot above grade to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on the exterior walls.

This requirement calls for keeping the walls at least 50% open. "Openings" mean permanent openings, such as vents. Windows, doors, and garage doors do not qualify as "openings." Generally, this requirement is met by using lattice-work.

ENL = 300

Elevated Buildings. *New construction or substantial improvements of elevated buildings that include fully enclosed areas formed by foundation and other exterior walls below the base flood elevation shall be designed to preclude finished living space and designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls. All four of the following must be met:*

- (a) *Designs for complying with this requirement must either be certified by a professional engineer or architect or meet all three of the following minimum criteria:*
- (i) *Provide a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding; and*
 - (ii) *The bottom of all openings shall be no higher than one foot above grade; and*
 - (iii) *Openings may be equipped with screens, louvers, valves, or other coverings or devices provided they permit the automatic flow of floodwaters in both directions.*
- (b) *Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator).*
- (c) *The interior portion of such enclosed area shall not be partitioned or finished into separate rooms.*
- (d) *The total floor area of all such enclosed areas shall not exceed 300 square feet.*

ENL = 100. In the above example, all but section (d) is in a commonly used model ordinance. Section (d) limits the size of enclosures.

Back to Top

Low Density Zoning (LZ)

There are a variety of low density zones in many zoning ordinances. These may be conservation, agricultural, floodplain, “rural residential,” “rural estates,” or other zoning districts. The key part of the ordinance is the section on density or number of dwelling units per acre. Often this appears in a table or matrix that lists all the zones and the various setback, bulk, and density requirements for each.

Back to Top

State-Mandated Regulatory Standards (SMS)

Because the credit is for mandated state regulatory standards, communities cannot adopt new regulatory language. The community must already have the standard incorporated in its ordinance. If the community has the option of adopting a state standard, it is not eligible for credit.

Back to Top

Building Code (BC)

Because the credit is based the community's BCEGS classification and adopting the International Building Code series, this element does not have example regulatory language.

Back to Top

Manufactured Home Parks (MHP)

Credit is provided not for having special regulatory language, but for not having an exemption for existing manufactured home parks or subdivisions. In other words, the community's ordinance makes no mention of manufactured home parks or subdivisions and all manufactured homes, no matter where they are located, must meet the same elevation requirements as conventional housing.

Such ordinance language was a requirement of the NFIP before 1989. When communities were given the option of the 3-foot standard, many kept the higher standard and did not revise their regulations.

The creditable language is also included in the new International Building Code Series. Therefore, it is possible that a community's current ordinance already has the language that is credited by this element.

Back to Top

Coastal AE Zones (CAZ)

Most coastal communities already have language for construction in the V Zone. For this credit, the definition of the area subject to V Zone requirements would include areas further inland, e.g., "all lands seaward of Ocean Boulevard" or "all Special Flood Hazard Areas where the breaking waves are higher than one foot." Care must be taken to ensure that the A Zone requirement for openings (44 *CFR* 60.3(c)(5)) still applies to the coastal A Zone.

Regulatory language for ENL credit is discussed on page 40. CAZ credit is a multiplier of ENL credit, so additional regulatory language is not needed.