## Add Additional Elevation (Freeboard) – FPM ordinance text changes and local technical code amendments (FBC, R and FBC, B)

## Alternative A: require all buildings to be elevated to at least BFE + 1 ft

**NOTE!** The 2015 I-Codes, on which the 6th Edition FBC will be based, require minimum freeboard of BFE + 1 foot in all flood zones for all buildings, including dwellings. It will also treate Coastal A Zone (CAZ) like Zone V, if the LiMWA is delineated or the CAZ is designated by the community.

The changes shown below for addition of 1-foot freeboard will be in the 6th Edition FBC, R.

If you adopt freeboard now (or if you format existing freeboard as shown in these instructions), you will not need to change your local FBC amendment when the 6th Edition FBC, R is effective (end of in 2017).

## Alternative B: require all buildings be elevated to at least BFE + 2 ft

**Description:** Elevating buildings higher than the minimum required base flood elevation reduces the frequency and severity of flood damage. Reflecting that reduction, NFIP flood insurance premiums are lower for individual buildings that are elevated above the minimum BFE (see graphic). An independent study conducted for FEMA determined that the incremental added cost of additional elevation can be offset within a few years (depending, of course, on a number of factors such as foundation type; elevation on fill tends to be the most expensive method of elevation). See the last page for additional reasons to consider elevating buildings higher than the minimum requirement.

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**How the FBC, Building specifies elevations:** The FBC, B does not specify building elevations in the body of the code. Rather, it is done by reference to ASCE 24 which requires buildings within the scope of the FBC, B to be above the BFE as a function of flood zone and risk category. To see the existing elevation requirements in ASCE 24, see the summary table of elevation requirements in “Highlights of ASCE 24” available at State Floodplain Management Office's website at:  <http://www.floridadisaster.org/Mitigation/SFMP/lobc_resources.htm> Note that higher elevations are required for the more important buildings: Category III and Category IV buildings are required to be elevated higher than Category II buildings, and Category II buildings are required to elevated higher than Category I buildings. Category I buildings “represent a low hazard to human life in the event of failure, including but not limited to agricultural facilities, certain temporary facilities, and minor storage facilities.” The majority of buildings are Category II.

To determine the elevation requirement for a specific building within the scope of the FBC, B, the designer (and code official) must first determine the flood zone and the risk category of the building, and then use the tables in ASCE 24 to determine the minimum required elevation of the lowest floor or lowest horizontal structural member of the lowest floor. In coastal high hazard areas and at locations determined to have Coastal A Zone conditions, the elevation of the lowest horizontal structural member is also a function of the orientation of that member relative to the direction of wave approach.

Note that State agency regulations are incorporated into the FBC for hospitals (Sec. 419), nursing homes (Sec. 420), and educational facilities (Sec. 423). Sec. 419 and Sec. 420 already require BFE + 2 ft or the height of hurricane Cat 3 surge inundation elevation, whichever is higher. Sec. 423 requires compliance with ASCE 24 (with relocatable units elevated to BFE + 1 ft).

**How the FBC, Residential specifies elevations:** The FBC, R is prescriptive. The minimum elevations are specified in the 6th Edition[[1]](#footnote-1) FBC, R Sec. R322 and are based on flood zone:

* R322.2.1 (Zone A, including Coastal A Zone if designated per R322.2) specifies the elevation of the lowest floor – and requires an additional foot of elevation if the building is located in a designated Coastal A Zone.
* R322.3.2 (Zone V) specifies elevation of the lowest horizontal structural member.

**How the proposed floodplain management regulations specify elevations in “approximate Zone A” without BFEs.** FBC, B, Sec. 1612.3.1 specifies that where the design flood elevation (which is the same as the BFE in communities that use FEMA’s FIRMs) is not specified, the building official may require use of data from other sources or may require the applicant to determine the DFE. Similarly, FBC, R Sec. R322.1.4.1 specifies that where design flood elevations (which is the same as the BFE unless the community has adopted a map that shows higher flood elevations) are not specified, the building official may require use of data from other sources or may require the applicant to determine the DFE. Also see Sec. 105.2 of the Model Floodplain Management Ordinance, which is consistent with the FBC.

If data from another source are not available, Sec. 105.2 of the ordinance specifies the Floodplain Administrator may require the applicant to develop BFE data. Alternative, the Floodplain Administratory may assume the BFE is not less than 2 ft above the highest adjacent grade at the building footprint – provided there is no evidence indicating flood depths have been or may be greater. This “default” to just 2 ft above grade is allowed by FEMA policy, but should not be used to circumvent knowledge of hazards in every Zone A without BFEs. If a community wishes to increase the default elevation, additional height may be added here. This is not the same as freeboard, which is done by modifying the requirements that specify how high the lowest floor is relative to the flood elevation.

**INSTRUCTIONS**

***Submit your draft ordinance (in <track changes>) to Technical Support*** ***flood.ordinance@em.myflorida.com*** ***for review well in advance of your first reading.***

**Alternative A** is used if the intent is to require dwellings to be elevated to at least BFE + 1 ft (FBC, Building already requires all buildings to be elevated to at least BFE + 1 ft, except Category 1).

**Alternative B** is used to require all buildings to be elevated to at least BFE + 2 ft.

**Alternative A. Use this set of instructions if your community already has or elects to adopt requirements so that ALL buildings other than Category I buildings are elevated to at least BFE + 1 ft.**

This option requires only modifying two sections in the FBC, Residential. See Alternative B if your community elects to add more than one foot of freeboard to the elevation requirements for all buildings.

***Step A-1.*** *See the General Instructions. Choose the appropriate Whereas clause identified in Step 1 of the General Instructions. If your community already has freeboard or you are adopting it for the purpose of participating in the CRS, insert the following brief description of the higher standard in the appropriate whereas clause:*

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| *increase the minimum elevation requirement* |

*If your community is adopting freeboard for the first time (and not for the purpose of participating in the CRS), use the following whereas clause:*

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| **WHEREAS,** the **{community’s governing body}** is adopting a requirement to increase the minimum elevation requirement for buildings and structures in flood hazard areas and, pursuant to section 553.73(5), F.S., is formatting that requirement to coordinate with the *Florida Building Code*;  |

***Step A-2.*** *In SECTION 2 of the ordinance package (which contains the floodplain management regulations), modify language for Sec. 304.6 (certain existing manufactured homes). Change the minimum foundation height from 36 inches to 48 inches. Communities may choose NOT to do this, but it is important to realize that omitting freeboard for these specific “certain” manufactured homes will mean the intended added level of safety and damage reduction afforded by freeboard is not uniformly imposed (and may result in fewer CRS points for freeboard).*

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| **304.6 Elevation requirement for certain existing manufactured home parks and subdivisions.** Manufactured homes that are not subject to Section 304.5 of this ordinance, including manufactured homes that are placed, replaced, or substantially improved on sites located in an existing manufactured home park or subdivision, unless on a site where substantial damage as result of flooding has occurred, shall be elevated such that either the:1. Bottom of the frame of the manufactured home is at or above the elevation required, as applicable to the flood hazard area, in the *Florida Building Code, Residential* Section R322.2 (Zone A) or Section R322.3 (Zone V); or
2. Bottom of the frame is supported by reinforced piers or other foundation elements of at least equivalent strength that are not less than 48 inches ~~36 inches~~ in height above grade.
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***Step A-3.*** *Add a new SECTION 3 to the ordinance package to adopt local technical amendments to the FBC, Residential as follows. Maintain strikethrough and underlining to denote changes to the FBC.*

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| **SECTION 3. {Insert citation for current chapter Buildings; insert appropriate section number) is hereby amended by adding the following technical amendments to fhe *Florida Building Code, Residential.*****R322.2.1 Elevation requirements.**1. Buildings and structures in flood hazard areas not designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot or the design flood elevation, whichever is higher.
2. Buildings and structures in flood hazard areas designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or to the design flood elevation, whichever is higher.
3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM plus 1 foot, or at least 3 feet ~~2 feet (610 mm)~~ if a depth number is not specified.
4. Basement floors that are below grade on all sides shall be elevated to or above the base flood elevation plus 1 foot or the design flood elevation, whichever is higher.

**Exception:** Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R322.2.2. |
| ***Note: Communities with only Zone A need not modify R322.3.2 because it applies in Zone V and Coastal A Zone.*****R322.3.2 Elevation requirements.**1. All buildings and structures erected within coastal high-hazard areas shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of piling, pile caps, columns, grade beams and bracing, is elevated to or above the base flood elevation plus 1 foot or the design flood elevation, whichever is higher.
2. Basement floors that are below grade on all sides are prohibited.
3. The use of fill for structural support is prohibited.
4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways.

**Exception:** Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections R322.3.4 and R322.3.5. |

**Alternative B. Use this set of amendments if your community already has or elects to adopt requirements so that ALL buildings are at least elevated to BFE + 2 ft.**

This option requires modifying both the FBC, Residential and the FBC, Building, resulting in all buildings being elevated to BFE + 2 ft or higher. These instructions also apply for other increments, such as 18 inches or 3 feet. *REMINDER – the following shows the sections as they will appear in the 6th edition (including the treatment of Coastal A Zones).*

***Step B-1****. See the General Instructions. Choose the appropriate Whereas clause identified in Step 1 of the General Instructions. If your community already has freeboard or you are adopting it for the purpose of participating in the CRS, insert the following brief description of the higher standard in the appropriate whereas clause:*

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| *increase the minimum elevation requirement* |

*If your community is adopting freeboard for the first time (and not for the purpose of participating in the CRS), use the following whereas clause:*

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|  **WHEREAS,** the **{community’s governing body}** is adopting a requirement to increase the minimum elevation requirement for buildings and structures in flood hazard areas and, pursuant to section 553.73(5), F.S., is formatting that requirement to coordinate with the Florida Building Code;  |

***Step B-2.*** *In SECTION 2 of the ordinance package (which contains the floodplain management regulations), modify language for Sec. 304.6 (certain existing manufactured homes). Change the minimum foundation height from 36 inches to 60 inches. Communities may choose NOT to do this, but it is important to realize that omitting freeboard for these specific “certain” manufactured homes will mean the intended added level of safety and damage reduction afforded by freeboard is not uniformly imposed (and may result in fewer CRS points for freeboard).*

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| **304.6 Elevation requirement for certain existing manufactured home parks and subdivisions.** Manufactured homes that are not subject to Section 304.5 of this ordinance, including manufactured homes that are placed, replaced, or substantially improved on sites located in an existing manufactured home park or subdivision, unless on a site where substantial damage as result of flooding has occurred, shall be elevated such that either the:1. Bottom of the frame of the manufactured home is at or above the elevation required, as applicable to the flood hazard area, in the *Florida Building Code, Residential* Section R322.2 (Zone A) or Section R322.3 (Zone V); or
2. Bottom of the frame is supported by reinforced piers or other foundation elements of at least equivalent strength that are not less than 60 inches ~~36 inches~~ in height above grade.
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***Step B-3.*** *Add a new SECTION 3 to the ordinance package to adopt local technical amendments to the FBC, Building as follows. Maintain strikethrough and underlining to denote changes to the FBC.*

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| **SECTION 3. {Insert citation for current chapter Buildings; insert appropriate section number) is hereby amended by the following technical amendments to the *Florida Building Code, Building.*** **1612.4.2 Elevation requirements.**  The minimum elevation requirements shall be as specified in ASCE 24 or the base flood elevation plus 2 feet (610 mm), whichever is higher.   |

***Step B-4.*** *Add a new SECTION 4 to the ordinance package to adopt local technical amendments to the FBC, Residential as follows. Maintain strikethrough and underlining to denote changes to the FBC.*

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| **SECTION 4. {Insert citation for current chapter Buildings; insert appropriate section number) is hereby amended by the following technical amendments to the *Florida Building Code, Residential.*** **R322.2.1 Elevation requirements.**1. Buildings and structures in flood hazard areas not designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 2 feet or the design flood elevation, whichever is higher.
2. Buildings and structures in flood hazard areas designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 2 feet ~~1 foot (305 mm)~~, or to the design flood elevation, whichever is higher.
3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM plus 2 feet, or at least 4 feet ~~2 feet (610 mm)~~ if a depth number is not specified.
4. Basement floors that are below grade on all sides shall be elevated to or above the base flood elevation plus 2 feet or the design flood elevation, whichever is higher.

**Exception:** Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R322.2.2. |
| ***Note: Communities with only Zone A need not modify R322.3.2 because it applies in Zone V and Coastal A Zone.*****R322.3.2 Elevation requirements.**1. All buildings and structures erected within coastal high-hazard areas shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of piling, pile caps, columns, grade beams and bracing, is elevated to or above the base flood elevation plus 2 feet or the design flood elevation, whichever is higher.
2. Basement floors that are below grade on all sides are prohibited.
3. The use of fill for structural support is prohibited.
4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways.

**Exception:** Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections R322.3.4 and R322.3.5. |

***ADDITIONAL REASONS TO ADOPT ADDITIONAL ELEVATION (FREEBOARD).***

* After flood events, buildings that are either above floodwater or only minimally flooded can be more quickly re-occupied, allowing people to get more quickly get back to their homes, businesses, and community.
* When people get back in their homes quickly, there’s less cost burden on government at all levels (and nonprofits) because less temporary housing and other emergency assistance is needed.
* When families and businesses get back more quickly, they more quickly begin spending money locally, thus helping local tax revenues get back to more normal levels.
* People not covered by flood insurance have to pay for repairs out of pocket or get Small Business Administration loans (which are not really “low” interest loans). When buildings are higher, owners are less likely to have to dip into savings or borrow to pay for repairs.
* Several FEMA estimated that nearly 1 in 4 small businesses damaged in disasters end up closing for good: build higher and better protected, stay in business.
* Freeboard can be a creditable element in a local floodplain management program that qualifies for the Community Rating System. Communities that participate in the CRS qualify for lower flood insurance premiums in most flood-prone areas.
1. The 6th Edition FBC, R treats CAZ like Zone V if the FIRM has a LiMWA or if the community designates the CAZ (with an exception for backfilled stemwalls). CRS communities may want review the instructions for treating CAZ like Zone V before the 6th edition is effective (sometime in 2017). [↑](#footnote-ref-1)