

Things to Consider when Building and/or Landscaping in Flood Zone

Overview

Definition of the 100-Year Flood Zone (i.e., “Bordering Land Subject to Flooding”)

- It is a line on a plan and an elevation (or continuum of elevations)
- It is the estimated maximum lateral extent of flood water from 100-year frequency storm (the “1% chance flood”)
- It is a line and elevation shown on the FEMA Flood Map (NOTE: These lines are often inaccurate)
- It is the elevation shown on the FEMA Flood Profile
- If profile is unavailable, it is the maximum lateral extent of flood water observed or recorded (e.g. river gages, photos)
- If there is a conflict, one can use engineering calculations based on 7 inches of precipitation in a 24-hour storm and TR55 (or more recent rainfall data if applicant consents)

FEMA Zones (“Special Flood Hazard Areas” subject to inundation by the 1% annual chance flood)

- AE = 1% chance areas with Base Flood Elevation determined
- A = 1% chance areas with No Base Flood Elevation determined
- X = Areas outside the 1% chance flood area
- Floodway = Channel that must be kept free from encroachment so flood waters can flow without increasing flood height

*Note: Federally backed **flood insurance** is made available to communities that regulate development in the flood plain. FEMA prepares the maps and data. Communities use the maps and data to develop regulations. Insurance agents use the maps and data to rate insurance policies. Lenders use the maps and data to determine when insurance must be purchased as a condition of a loan.*

Pertinent Regulations

1. FEMA

- a. [FEMA FIRM maps](#) and [FEMA Flood Profiles](#) Illustrate 100-year flood elevations
- b. [44 CFR 60.3](#) Defines minimum standards for National Flood Insurance Program (FEMA)

2. State Building Code

- a. [Massachusetts State Building Code \(MSBC\)](#) A series of international model codes (I Code Series by the ICC) and state-specific amendments adopted by the Board of Building Regulation and Standards (BBRS). The current edition is the 9th Edition Residential Volume and 9th Edition Base Volume (see R322 references below)
- b. [ASCE 24-14](#) Flood resistant design standards referenced (ASCE)

3. Wetlands Regulations

- a. [Massachusetts Wetland Regulations 310 CMR 10.57](#) Bordering Land Subject to Flooding regulations
- b. [Newton’s Flood Plain Ordinance \(22-22\)](#)
- c. [Newton Conservation Commission’s policies for construction in Flood Zone](#), and [compensatory flood storage](#)

Building Code Requirements

Building Code Requirements for New or Substantially Improved¹ Buildings – See ISD for Details

1. For A Zones, the design flood elevation shall be the base flood elevation plus one foot. (R322.1.4)
2. Substantial improvements / remodels of a residential structure located in a FEMA floodplain, must bring that structure into compliance with floodplain regulations. (FEMA 44 CFR § 60.3(c)(2))
3. Buildings and structures in A Zones shall have the lowest floors² elevated to or above the design flood elevation. (FEMA 44 CFR § 60.03) (R322.1.5) (R322.2.1) Lowest floor must be 1 foot above BFE. See Figures 2 and 4.

Special Building Code Considerations for New or Substantially Improved Basements – See ISD for Details

1. Basement definition = area of the building having its floor subgrade (i.e., below ground level) on all sides. (FEMA 44 CFR § 60.3) (R322.1.5)
2. Basement use = Basements can only be used for storage (i.e., they can't be finished living space) (FEMA 44 CFR § 60.03) (Building Code R322.1.5)
3. Basement elevation = Basement floors (part of “lowest floors”) must be elevated to or above design flood elevation. (R322.2.1) See **Figure 1**. Basement floors cannot be below design flood elevation.
4. Finishing an existing basement = An existing basement below design flood elevation cannot be finished because finishing is new construction). (FEMA 44 CFR § 60.03) (Building Code R322.1.5)

Building Code Considerations for Walkouts and Crawl Spaces – See ISD for Details

1. Walkout definition = Walkouts are not enclosed, at not subgrade (below ground level) on all sides, are not basements, and are not part of “the lowest floor²”. (FEMA 44 CFR § 60.3) (R322.1.5)
2. Walkout elevation = Walkouts may be below the base flood elevation because they are not part of “the lowest floor²”. (R322.2.1).
3. Finishing a walkout = Walkouts below design flood elevation cannot be finished. (FEMA 44 CFR § 60.03) (Building Code R322.1.5)
4. Enclosed areas, including crawl spaces, that are below the design flood elevation and are not basements shall: (1) be used solely for parking of vehicles, building access or storage and (2) be provided with flood openings that meet the following criteria and are installed in accordance with section R322.2.2.1 (R322.2.2) See **Figures 2 and 3**.

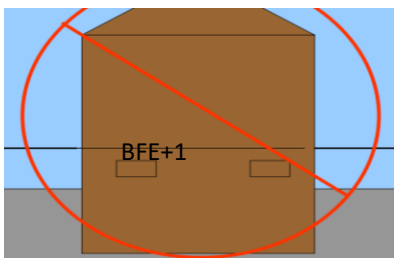


Figure 1.

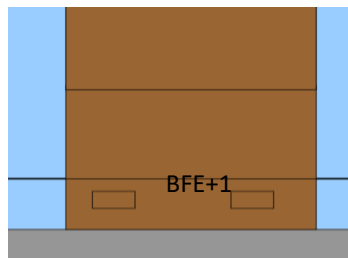


Figure 2.

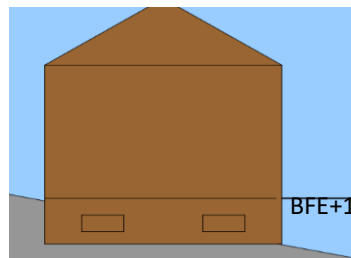


Figure 3.

¹ **Substantial Improvement** = Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair...

² **The lowest floor** = the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; Provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 60.3. (FEMA 44 CFR § 60.3 and R322.2.1)

Wetland Permitting Considerations for Construction AND/OR Landscaping in Flood Zone

Introduction

Project design and the permit application processes are admittedly complicated; we highly recommend working with a professional or a team of professionals familiar with these regulations and processes.

Projects in multiple wetland resource areas will need to prove compliance with all relevant state wetlands regulation performance standards in 310 CMR 10.00.

Abide by these guiding tenets:

1. Avoid alteration
2. Minimize alteration
3. Mitigate for alteration – Provide compensatory flood storage volume
 - a. Provide 100% compensatory flood storage volume for all new fill in flood plain, foot for foot (*310 CMR 10.57 (BLSF) (Newton Flood Plain Ordinance 22-22)*)
 - b. Provide 110% compensatory flood storage volume for all new fill in flood plain, foot for foot (*Newton ConCom Policy*)
4. Maintain unrestricted hydraulic connection
 - a. Construct on pilings. Flood vents do not provide unrestricted hydraulic connection) (*DEP interpretation of 310 CMR 10.57 (BLSF)*) See **Figure 4**.
 - b. Limit “skirting” around structures built on pilings to >50% openness (*Newton ConCom Policy*)
 - c. Elevate fences 6” off ground and have >50% openness (*Newton ConCom Policy*)
 - d. Do not restrict flows (*310 CMR 10.57 (BLSF) (Newton Water, Sewer, and Drain Ordinance 29-116) (Newton Flood Plain Ordinance 22-22)*)

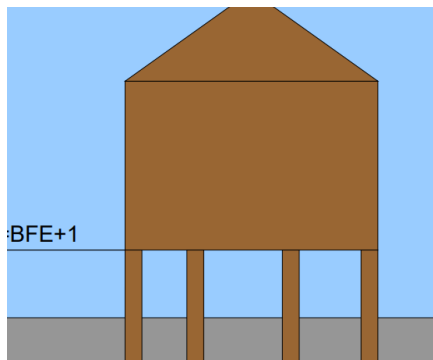


Figure 4.

Wetland Permit Process

1. Determine whether your property is in Flood Zone.
 - Use **FEMA maps, FEMA flood elevations, and FEMA Flood Insurance Study flood profiles**
 - Use **the City's GIS flood plain layer**; it displays the FEMA flood elevations onto the City's one-foot LIDAR topography AND the City's additional regulatory flood areas defined in the **Newton Floodplain Ordinance**.

You may need to **have your property surveyed** to determine with accuracy:

- the extent of the FEMA 100-year flood elevation on your property,
- the "depth" the flood elevation at different points on your property,
- whether there are City Floodplain resource areas on your property, and
- whether flood insurance may or may not be required and/or advisable.

NOTE: Be sure it is clear which datum all elevations are based on: NAVD88 or City of Newton Vertical Datum; they differ by 6.53 feet

2. Ensure that your proposed project satisfies the requirements of all pertinent regulations, especially:
 - **state building code** requirements – e.g., the requirement that the "lowest floor" must be 1 foot above the Base Flood Elevation and that the use of basements is limited to storage,
 - the **state Wetlands Protection Act** – protecting the ability of flood plains to flood naturally,
 - the **Newton Conservation Commission's policies for construction in Flood Zone**, and **compensatory flood storage**.
3. Submit a complete Notice of Intent (NOI) application (i.e., a wetland permit application) to the Newton Conservation Commission. A wetland application information and materials can be found on the Newton Conservation Commission website.

An NOI for work in Flood Zone must include a number of required attachments, such as, but not limited to:

- **Clear site plans** showing all existing and proposed conditions.
 - **Cut and fill calculations** for all grading and construction with the flood zone and flood elevation.
 - A clear illustration of **compensatory storage** being provided at appropriate elevations.
 - **Construction design details** that prove compliance with:
 - State Wetlands Protection Act requirements for the free flow of flood waters through compensatory storage areas (i.e., that structures be constructed on pilings).
 - Newton Conservation Commission's policies:
 - requiring the provision of excess compensatory flood storage.
 - governing construction, skirting, and fences within the flood zone/elevation, and
 - **Mitigation plans** which appropriately address the proposed alteration of the flood zone.
4. After receipt of a wetland permit, submit your building permit application.