TECHNICAL GUIDANCE

FROM: Department of Energy and Environment (DOEE)
Natural Resources Administration
Regulatory Review Division

DATE: May 28, 2024

SUBJECT: **Regulation of Interior Work Inside a Floodplain**

This document provides technical guidance on how to comply with the District's Flood Hazard Rules and Construction Codes, together the District's Floodplain Management Regulations. This and other technical guidance documents are intended to make compliance and the application and permitting processes clearer and easier. However, compliance with the Flood Hazard Rules and Construction Codes is the responsibility of the applicant.

Specifically, this guidance provides information on how the Department of Energy and Environment (DOEE) regulates "interior only" work that is inside the floodplain but that is not a substantial improvement or new construction. Interior work covers development across all building types, including residential, nonresidential and mixed-use. Typical examples of interior work include tenant fit outs and any repair, replacement, or new installation of any mechanical, electrical, or plumbing systems such as furnace, electrical outlets, or water lines. Please contact flood.risk@dc.gov if you have any questions about this document or have questions about your specific project.

Authority to Regulate Interior Work

The Definition of Development Includes Interior Work
All *development* within the Special Flood Hazard Area (SFHA) is subject to the District's Flood Hazard Rules. The term *development* requires that interior work is also subject to compliance with the Flood Hazard Rules. According to Title 20 DCMR, Chapter 31, Section 3199.1, development is defined as, "any manmade change to improved or unimproved real estate, including but not limited to: buildings or other structures, streets and other paving, utilities, filling, grading, excavation, mining, dredging, drilling operations, storage of equipment or materials, and the subdivision of land." Therefore, development is not limited to exterior work, new construction, or substantial improvement. Changes to structures that include interior work are also considered development which is regulated under the Flood Hazard Rules. In these cases, the interior work is not subject to all the requirements in the Flood Hazard Rules (like building elevation), but is still subject to Title 20 DCMR, Chapter 31, Section 3105.6, as further described below.

Exceptions
For development on a parcel that is partially within SFHA, the following situations are not subject to Title 20 DCMR, Chapter 31:

> **Development outside the horizontal extent of the SFHA -** If the limit of disturbance for the development is entirely outside of the horizontal extent of the SFHA, the development is not subject to Title 20 DCMR, Chapter 31. Other regulations such as DOEE's Stormwater and Erosion and Sediment Control regulations may still apply.
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> **Development above the vertical extent (DFE) of the SFHA -** Any development, including interior work located above the vertical extent of the SFHA and not considered a substantial improvement, is not subject to the Flood Hazard Rules. The vertical extent of the SFHA is called the design flood elevation (DFE). See "What is the effective Design Flood Elevation" below for more detail. An example of development that meets this criterion is interior work located on the 11th floor of a building, where the DFE is 6-feet above the first-floor elevation grade. The development on the 11th floor is considered to be protected from the base flood and therefore is compliant with 20 DCMR Chapter 31.

What is the Effective Design Flood Elevation?

The effective design flood elevation (DFE) for the District of Columbia is defined in Section 1612.4.1 of the 2017 Construction Codes, as the "Minimum elevation."

> ***1612.4.1 Minimum elevation.*** *Minimum elevation of the top of lowest floor and floodproofing of all classes of buildings and structures shall be 2 feet (610 mm) above the Base Flood Elevation, or 500-year flood elevation, whichever is higher.*

This has been the effective DFE since May of 2020, when the Department of Buildings (then the Department of Consumer and Regulatory Affairs) adopted the 2017 Construction Code. This

definition supersedes the regulatory flood elevation stated in the Flood Hazard Rules. Note that the term "water surface elevation" may also be used instead of DFE throughout FEMA and ASCE documentation. In most cases that term is equivalent to the "design flood elevation" in the Flood Hazard Rules and "minimum elevation" in the 2017 Construction Codes.

In cases where structures were permitted prior to the 2017 Construction Code adoption, proposed interior work may be subject to a higher design flood elevation than the flood elevation at which building was originally designed and approved. For example, consider a building constructed in 2002, where the 100-year flood elevation was 10 feet. In 2002, the effective DFE was the 100-year flood elevation plus 1.5 feet, or 11.5 feet. In 2023, the effective DFE is the 100-year flood elevation plus 2 feet, or 500-year elevation, whichever is higher. For simplicity we'll say the DFE for this building is the 100-year elevation plus 2 feet, or 12 feet. If the building was only elevated or floodproofed to 11.5 feet when originally constructed in 2002, interior work done in 2023 (even if not a substantial improvement) below 12 feet must now meet flood resistant requirements described below. If the proposed work in 2023 was a substantial improvement, then the entire building must be elevated or floodproofed to the 12-foot standard as required in Title 20 DCMR, Chapter 31.

Requirements for Interior Work in the Special Flood Hazard Area

The Flood Hazard Rules apply to all development in the SFHA, including work on the interior of a structure that is not substantial improvement. According to Title 20 DCMR, Chapter 31, Section 3105.6 (c) through (m) reproduced below:

The following minimum standards shall apply for all new construction or development proposed to be undertaken within any SFHA:

(c) *Water and sanitary sewer facilities and systems shall be designed as follows:*

(1) All new or replacement water and sanitary facilities and systems shall be designed in accordance with ASCE 24 publication (Flood Resistant Design and Construction), and located and constructed to minimize or eliminate flood damage and the infiltration of flood waters;

(2) Sanitary sewer facilities and systems shall be designed in accordance with ASCE 24 publication (Flood Resistant Design and Construction) to prevent the discharge of untreated sewage into flood waters; and

(3) No part of any on-site sewage system, and waste disposal system shall be located within any SFHA except in strict compliance with all local regulations for such systems. If any such system is permitted, it shall be located so as to avoid impairment to it, or contamination from it, during a flood;

(d) All gas lines, electrical, meters, transformers, generators, and telephone systems, and utilities other than water and sanitary sewer systems, shall be located, elevated

(wherever possible), and constructed to minimize the chance of impairment during a flood;

(h) Anchoring shall be used as follows:

(2) All air ducts, large pipes, storage tanks, and other similar objects or components located below the regulatory flood elevation shall be securely anchored or affixed to prevent flotation;

(i) Floors, walls, and ceilings shall be designed as follows:

(1) Wood flooring used at or below the regulatory flood elevation shall be installed to accommodate a lateral expansion of the floor, perpendicular to the flowing grain without causing structural damage to the building;

(2) Plywood used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" variety;

(3) Walls and ceilings at or below the regulatory flood elevation shall be designed and constructed of materials that are water resistant and will withstand flooding;

(4) Windows, doors, and other components at or below the regulatory flood elevation shall be made of metal or other water resistant material; and

(5) Wood fasteners used at or below the regulatory flood elevation shall be of a corrosive resistant type (such as hot dipped galvanized or stainless steel);

(j) Paints and adhesives shall be used as follows:

(1) Paints or other finishes used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" quality;

(2) Adhesives used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" quality; and

(3) All wooden components (such as doors, trim, and cabinets shall be finished with a "marine" or "water resistant" paint or other finishing material;

(k) Electrical distribution panels shall be at least three feet (3 ft.) above the base flood elevation. Separate electrical circuits shall serve lower levels and shall be dropped from above;

(l) Water heaters, furnaces, air conditioning and ventilating units, and other electrical, mechanical, or utility equipment or apparatuses shall not be located below the regulatory flood elevation; and

(m) All gas and oil supply systems shall be designed to prevent the infiltration of flood waters into the system and discharges from the system into the flood waters. Additional provisions shall be made for drainage of these systems in the event that flood water infiltration occurs."

The 2017 Construction Codes also include language relevant to interior work, such as:

G1001.6 Protection of mechanical, plumbing and electrical systems. *Mechanical, plumbing and electrical systems, including plumbing fixtures, located wholly or partially within flood hazard areas shall be elevated to or above the design flood elevation. Exception: Electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances; plumbing fixtures, duct systems and other service equipment shall be permitted to be located below the design flood elevation provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in compliance with the flood-resistant construction requirements of this code. Electrical wiring systems shall be permitted to be located below the design flood elevation provided that they conform to the provisions of NFPA 70.*

801.5 Applicability. *For buildings in flood hazard areas as established in Section 1612.3, interior finishes, trim and decorative materials below the elevation required by Section 1612 shall be flood-damage-resistant materials.*

G1001.5 Flood damage-resistant materials. *Flood damage resistant materials shall be used below the design flood elevation.*

Examples of Interior Work and What Compliance Is Required

To help applicants understand how the elevation of the proposed work and the elevation of any existing floodproofing system changes compliance requirements, please see the following table with some examples of interior work.

Substantial Improvement?	Elevation of Proposed Work	Floodproofing Elevation?	Subject to Flood Hazard Rules?
No	A portion of the work is below DFE	Building has a dry floodproofing system that *meets* the DFE per 2017 Codes adopted in 2020	No
No	A portion of the work is below DFE	Building has a dry floodproofing system that *is lower than* the DFE per 2017 Codes adopted in 2020	Yes. However, a new floodproofing system is *not* required.
No	Building's lowest floor is below the DFE, but all the proposed work is above DFE (i.e. 3rd story tenant fit out)	Not relevant.	No
No	All proposed work is *above* DFE	Building has a dry floodproofing system that *is lower than* the DFE per 2017 Codes	No
Yes	All proposed work is *above* DFE	Building has a dry floodproofing system that *is lower than* the DFE per 2017 Codes	Yes. If it's a substantial improvement, the floodproofing system will need meet the DFE per 2017 codes adopted in 2020.

How Applicants Comply with Section 3105.6

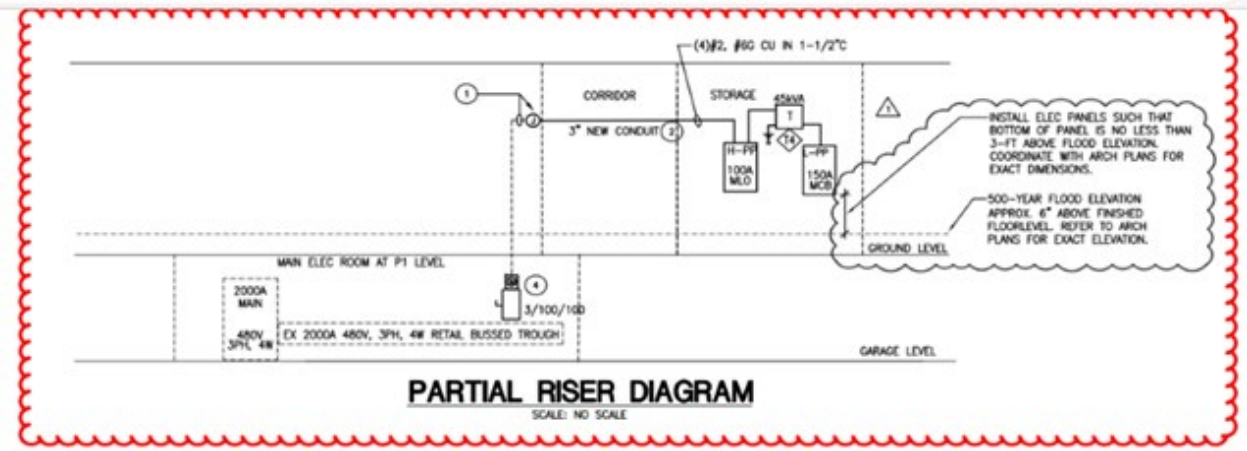
To comply with Title 20 DCMR, Chapter 31, Section 3105.6 subsections c, d, and h-m (described above), the applicant has two options:

1. Submit a riser diagram, which shows the design flood elevation, for each component. For each component below the design flood elevation, make a notation explaining the wet flood proofing technique proposed, or stating the proposed elevation of the component at or above the DFE.

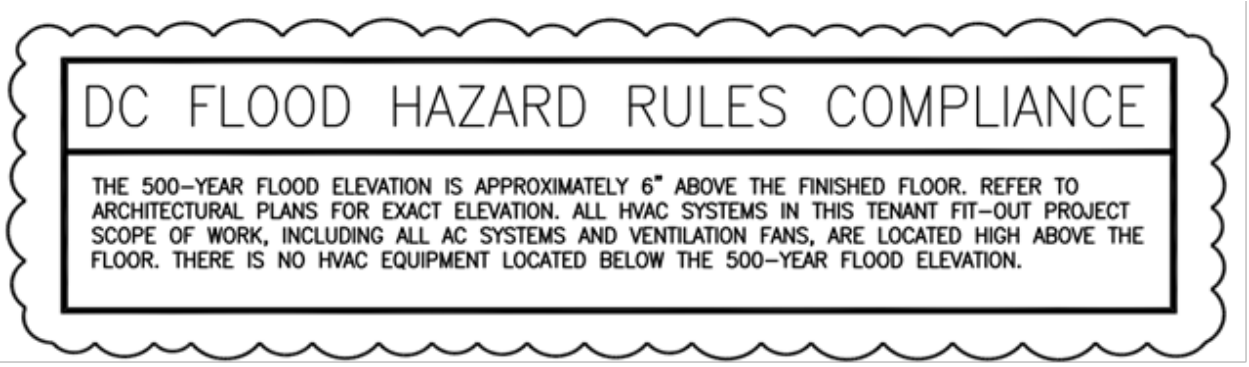
2. Make a notation on each mechanical, electrical, plumbing or finishes plan stating, "All mechanical, electrical, plumbing, and finishes below the design flood elevation will be installed and constructed, according to ASCE 24-14."

The following are examples of how plans can be submitted to meet the requirements of Section 3105.6.

Example 1: Electrical Panel Riser Diagram



Example 2: Compliance Notation on Mechanical Cover Sheet



Example 3: Compliance Notation on Plumbing Cover Sheet

Example 4: Insert ASCE 24-14 flood protection techniques