



Supplementing Digital Reports 01-06, this report provides a concise glossary of terms and acronyms used in this project, as well as a compiled full bibliography.

## Livingabovestreet.nyc

### About

This report is part of the independent research project “Living Above the Street: Stewarding New York City’s Historic Built Environment Towards Flood Resilience,” which is supported by [Onera Foundation](#) under [2022 Onera Prize for Historic Preservation](#).

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Columbia GSAPP M.S. Historic Preservation '22

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### Further Readings

To view and download the whole series of policy & design reports, please visit:

<https://www.livingabovestreet.nyc/reports>.

This Onera Prize research project is developed upon the author’s M.S. Historic Preservation thesis:

Wang, Ziming. 2022. “Living Above the Street: Flood Retrofitting and Adaptive Streetscape of New York City’s Historic Districts.” M.S. Historic Preservation Thesis, Columbia University.

<https://doi.org/10.7916/fn43-vb19>.

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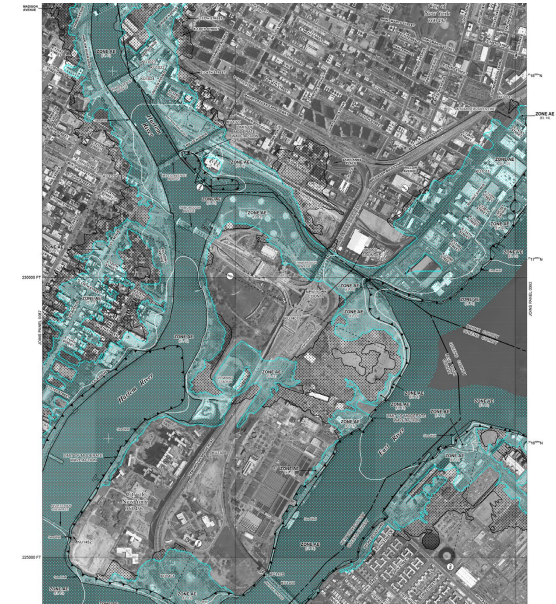
# 01

## Terms & Acronyms

**The National Flood Insurance Program (NFIP).** NFIP is the nationwide flood insurance program administered by the Federal Emergency Management Agency (FEMA). New York City joined NFIP in 1983, allowing homeowners to purchase flood insurance and receive assistance following flood events (NYCDCP 2019b, 2). Currently, properties within the 1% floodplain with Federally-backed mortgages or federal housing subsidies are required to purchase this flood insurance (FEMA 2021, 1-1; NYCDCP 2014, 13).

### FEMA's Flood Maps and the Flood Zone/Basic Flood Elevation (BFE) Language.

- **FEMA's Flood Maps: FIRM (Flood Insurance Rate Maps) and PFIRM (Preliminary Flood Insurance Maps).** FIRM is FEMA's official nationwide map showing areas of high flood risk (namely floodplains), Base Flood Elevations and floodways. New York City's FIRM maps are most recently revised in 2007, containing a stock of approximately 35,500 buildings in its 1% floodplain (The City of New York 2013, 23). Meanwhile, PFIRMs are FEMA's updated, non-final flood maps issued in December 2013, encompassing a stock of 71,500 buildings within the designated 1% floodplain (NYCDCP 2014, 16). New York City's current Building Code requires the usage of PFIRMs (NYCDCP 2014, 12). In accordance with the most recent flood map revisions, all illustrations in this project utilize FEMA's PFIRMs as base maps.



A Pane of FEMA's PFIRM Map (2015) Showing 1% / 0.2% Floodplain and Local BFEs.  
Source: FEMA Map Service Center.

- **1% Annual Chance Floodplain, or Special Flood Hazard Area (SFHA).** Areas designated on the flood map that have a 1% chance, or greater, risk of flooding, in any given year. Also called the 100-year floodplain. FEMA's flood maps designate not only the 1% annual chance floodplain, but also the 0.2% annual chance (or 500-year) floodplain.
- **Base Flood Elevation (BFE).** The elevation of surface water resulting from a 1% annual chance flood. Local BFEs are given by FEMA's flood maps, and vary with different subdivided zones (A Zone, Coastal A Zone and V Zone, see below) inside the 1% floodplain.
- **A Zone, Coastal A Zone and V Zone.** Among the three subdivided zones in the 1% floodplain, A Zone contains the areas subject to still-water inundation and waves under 1.5 feet; V Zone contains areas subject to high-velocity wave action that can exceed 3 feet in height. Coastal A Zone involves moderate wave actions between those in A Zone

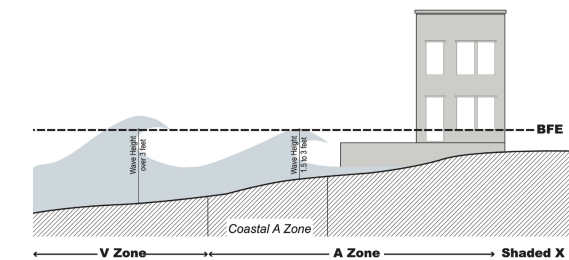
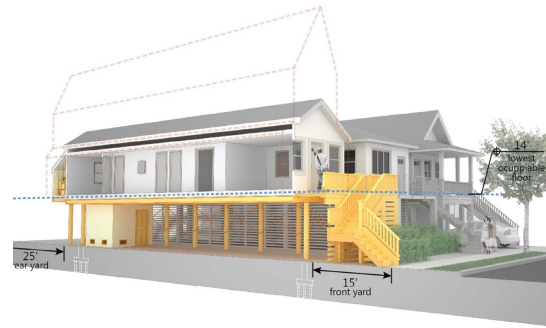


Diagram Showing the Relationship between A Zone, V Zone and BFE. Source: NYCDCP 2013a.

and V Zone (NYCDP 2014, 16). Different wave heights lead to differences in BFE designation.

**Design Flood Elevation (DFE).** New York City’s Building Code specifies a Design Flood Elevation, up to which floodplain buildings must gradually be elevated or floodproofed. DFE is defined by local BFE plus an additional freeboard height of typically 1 or 2 ft. Local freeboard heights vary with different building types and different floodplain designations; refer to Table 2-1 in the city’s Building Code Appendix G (NYCDOB 2014) for details. For simplified calculation, in this project, DFE is always estimated as local BFE plus 1 ft.

**Structural Elevation and Non-Structural Elevation.** Structural elevation refers to the practice of physically lifting a building above flood elevation onto a new or extended foundation, as commonly executed on detached residential houses (FEMA 2014, 5-1); non-structural elevation, on the other hand, involves the “relocation of active uses to above the DFE rather than physically lifting the superstructure” (NYCDP 2016b, 34). In other words, under non-structural elevation, the interior program adapts while the original exterior structure remains largely unchanged. Non-structural elevation is often achieved by placing a new first floor plate above the established flood risk level, as well as constructing rooftop additions (see for example, NPS 2021, 100; NYCDP 2014, 66-67).<sup>1</sup>



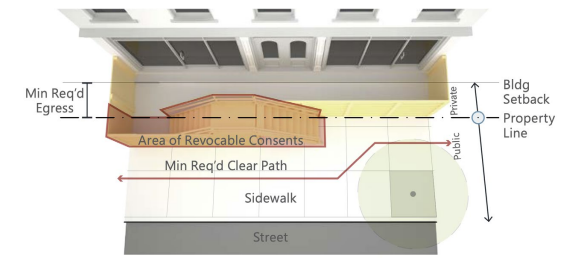
Instances of Structural Elevation and Non-Structural Elevation.  
Source: NYCDP 2014, 43; 73.

**Wet Floodproofing and Dry Floodproofing.** Dry floodproofing is a floodproofing method designed to keep water out of a building or its parameters, requiring the establishment of a watertight seal below the flood risk level, as well as the temporal or permanent sealing of all openings (windows, doors, etc.) below flood level (NPS 2021, 46). The sealing of openings is typically achieved by installing deployable flood shields. Meanwhile, wet floodproofing allows flood water to enter a building during flood events and drain out as it recedes, which is achieved by the placement of vents and openings below flood level (NPS 2021, 56).

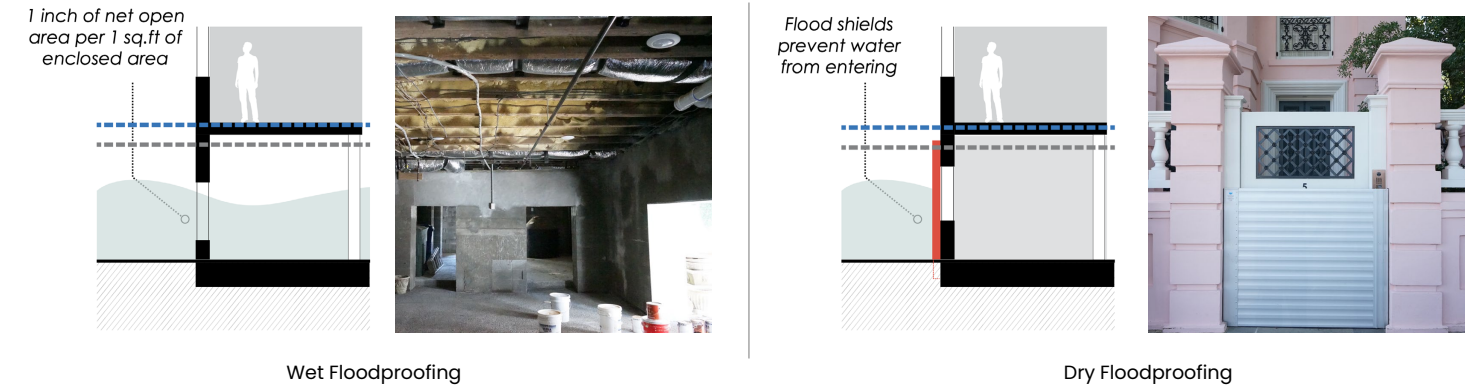
**Flood Vents.** Openings placed in a building’s facade that allow for the entry and exit of flood water, thus allowing for the equalization of hydrostatic pressures inside and outside the structure during flood events (Dunlap 2017).

**Deployable Flood Shields.** Metal panels that may be stacked together to form a watertight seal for window and door openings below flood level. Permanent stanchions, tracks or anchors need to be installed around wall

openings in advance, so that flood shields may be fixed onto them before anticipated flood events. Since these shields will likely block ground-flood egress in flood events, in high-density urban settings, a dry-floodproofing enclosure that incorporates a set of deployable stairs which allows building occupants to cross over the flood barriers shall be placed instead (see NYCDP 2014, 90-93).



A Dry-Floodproofing Enclosure with Temporary Egress.  
Source: NYCDP 2014, 92.



Wet-Floodproofing vs. Dry-Floodproofing.  
Source: NYCDP 2016b, 74 (Diagrams); Photographs taken by the author during Keeping History Above Water 2021 Conference (Instances).

**Flood Adaptation and Flood Retrofitting.** These two words may have been used somewhat interchangeably in existing reports and guidelines. In this project, “flood adaptation” refers to the general in-situ adaptation strategies and treatments on all possible scales; while “flood retrofitting” more specifically refers to retrofitting interventions on individual buildings.

**Acronyms of Governmental Entities.** For simpler expression, this project uses the acronym “NYCLPC” for New York City Landmarks Preservation Commission, “NYCDP” for Department of City Planning of New York City, “NYCDOB” for New York City Department of Buildings, “NYSHPO” for New York State Historic Preservation Office.

<sup>1</sup> NPS’s *Guidelines on Flood Adaptation* (2021) calls the Non-Structural Elevation method “Elevating the Interior Structure.”

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