



Flood Risk Reduction

FAST FACTS :

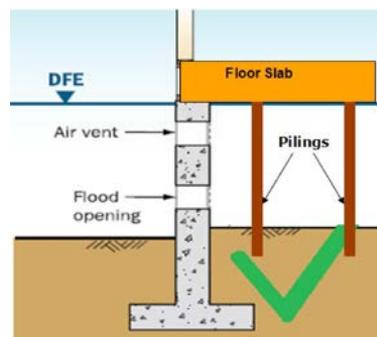


- Hoboken is vulnerable to two interconnected types of flooding: coastal flooding from storm surge and high tide, as well as localized stormwater flooding from rainfall events.
- Both types of flooding can be attributed to several factors, including naturally low topography and proximity to the Hudson River; impervious ground coverage and stormwater runoff; and existing, antiquated sewer infrastructure with insufficient discharge capability, particularly during high tide.
- Designing and building in dense, urban, flood-prone areas require special approaches and techniques to make sure residents and businesses experience minimal disruption and damage during and after a storm.
- Hoboken’s Resilient Building Design Guidelines provide guidance on design, permitting and construction for flood risk reduction, www.hobokennj.gov/docs/communitydev/Resilient-Buildings-Design-Guidelines.pdf.
- Hoboken regulates development in the A (1% annual chance flood hazard), V (1% annual chance flood hazard + wave action), and X Shaded (0.2% annual flood hazard) areas on the adopted regulatory flood maps, which are the FEMA advisory base flood elevation (ABFE) maps dated February 22, 2013.
- **Design Flood Elevation (DFE) = Base Flood Elevation (BFE) + Freeboard.** The DFE is the elevation to which construction is regulated in Hoboken. It is calculated by taking the BFE on the adopted regulatory flood maps and adding required freeboard. Freeboard is a specified height above the anticipated flood elevation that accounts for future conditions and limitations in estimating flood elevations, and ranges from 1-3 feet.

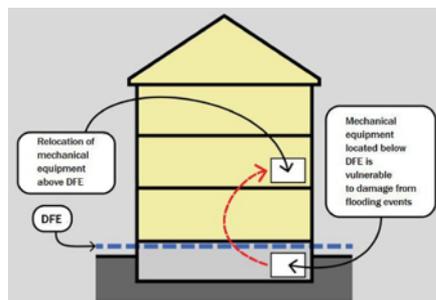
RESILIENT BUILDING DESIGN EXAMPLES :

The **Resilient Building Design Guidelines** provide detailed design standards and guidelines for flood resilient construction, www.hobokennj.gov/docs/communitydev/Resilient-Buildings-Design-Guidelines.pdf. Examples of the various types of resilient building improvements are provided here.

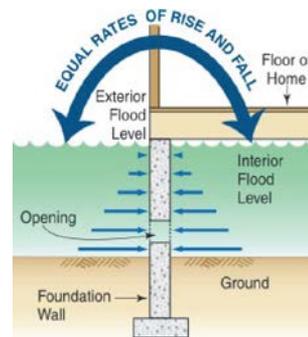
Foundation Design



Mechanical Systems and Utilities



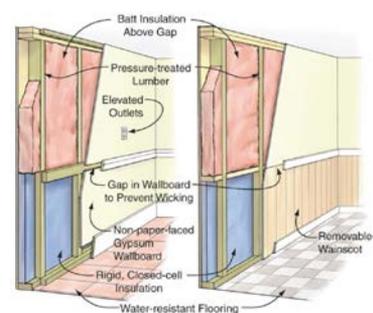
Wet Flood-proofing



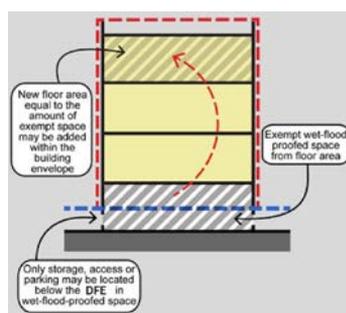
Dry Flood-proofing



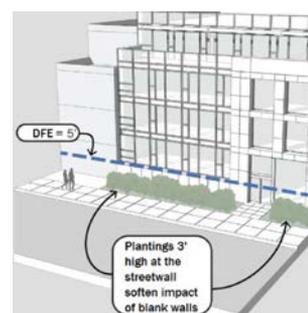
Flood Resistant Materials



Designing below the DFE



Streetscape



Parking



WHAT YOU CAN DO:



Elevated HVAC Units



Hydrostatic Flood Vent



Backflow Preventer



Split Stoop for Elevation



Parking Garage Flood Vents

You can help! We can work together to lower individual and community-wide flood risk.

1. **Know your zone.** Use the FEMA ABFE maps available at <https://msc.fema.gov/portal> to determine if your property is within a regulated flood hazard zone and what the design flood elevation (DFE) is for that zone.
2. **Obtain or Review your Elevation Certificate** or site survey with spot elevations from a licensed Professional Land Surveyor.
3. **Use flood resistant building materials.** Materials resistant to water damage and mold should be used when rehabilitating any part of a structure in the SFHA that falls below the DFE.
4. **Elevate utility equipment.** All new or replacement utility breaker panels and meters must be elevated above DFE. HVAC, boilers, and water heaters should also be relocated above DFE. Where relocation is not possible, equipment should be elevated to the greatest extent possible.
5. **Elevate utility connections.** All new or replacement utility connections and wiring must be elevated above DFE. When electrical wiring is replaced in an area below DFE, it should be installed "top-down" and outlets should be elevated. Any wiring installed below DFE must be water-resistant.
6. **Install backflow preventers.** Install a backflow prevention system to prevent sewage from backing up into the building. Backflow preventers are required on new and replacement sewer lines.
7. **Install sump pumps.** Drainage collection systems and sump pumps should be installed to control interior water levels, collect seepage, and manage hydrostatic pressures on the slab and walls.
8. **Eliminate space below grade.** Any crawl space or cellar below grade should be filled in. Where an enclosed area is below grade on all sides, the floor of the basement or crawl space should be raised to the level of the lowest adjacent grade or higher and designed with flood vents.
9. **Install flood openings.** The floor of the lowest enclosed area should be at or above the lowest adjacent grade on at least one side of the building; this area should be fitted with engineered flood vents.
10. **Wet flood-proof emergency exits.** All emergency exit stairwells and corridors shall be wet flood-proofed and designed with flood vents to maintain the operation of the exit door.

If you are RETROFITTING a RESIDENTIAL building:

1. **Elevate residential units.** Dwelling units below grade should be elevated or eliminated. Floors may be shifted within the existing building to achieve the necessary elevation. It may also be possible to add a floor or horizontal extension to replace the lost residential floor area.
2. **Consider a change of use.** Non-residential uses such as commercial offices and retail spaces are permitted below DFE and can be dry flood-proofed, whereas residential uses are not.

If you are RETROFITTING a COMMERCIAL or MIXED USE building:

1. **Dry flood-proof commercial space.** Unlike residential properties, non-residential commercial space may be dry flood-proofed, preventing water from entering the space. A dry flood-proofed building must provide a FEMA Flood-proofing Certificate in lieu of an Elevation Certificate.

If you are constructing a NEW RESIDENTIAL or COMMERCIAL building:

1. **Wet flood-proof building amenities.** Enclosed areas below DFE can be used only for building access, storage and parking. Residential services located below DFE may only be wet flood-proofed.
2. **Construct parking at-grade.** A parking deck may only be elevated if constructed over piers or piles that are unenclosed or enclosed only by permeable walls or walls fitted with flood vents.

LEARN MORE:

Hoboken Resilient Building Design Guidelines <http://www.hobokennj.gov/docs/communitydev/Resilient-Buildings-Design-Guidelines.pdf>

Hoboken Flooding Information <http://hobokennj.gov/departments/environmental-services/storm-flood-zones/>

US FEMA Advisory Base Flood Elevation Maps <https://msc.fema.gov/portal>

US FEMA Flood Damage-Resistant Materials Requirements <http://www.fema.gov/media-library/assets/documents/2655>

US FEMA Flood proofing Non-Residential Buildings <http://www.fema.gov/media-library/assets/documents/34270>