



FLOOD-RESILIENT CONSTRUCTION

May 3, 2022

build safe | live safe

presented by
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PRESENTATION DESCRIPTION

This presentation will inform the professional community of the changes made to the NYC Construction Codes as part of the NYC Department of Buildings Code Revision process, collectively known as the 2022 NYC Construction Codes. The 2022 Building Code includes updates to Appendix G as it pertains to the most recent flood-resistant design requirements for safe construction in flood zones, including clarifications to work that increases the degree of non-compliance, periodic inspection of dry floodproofing systems, and alternate means of egress.

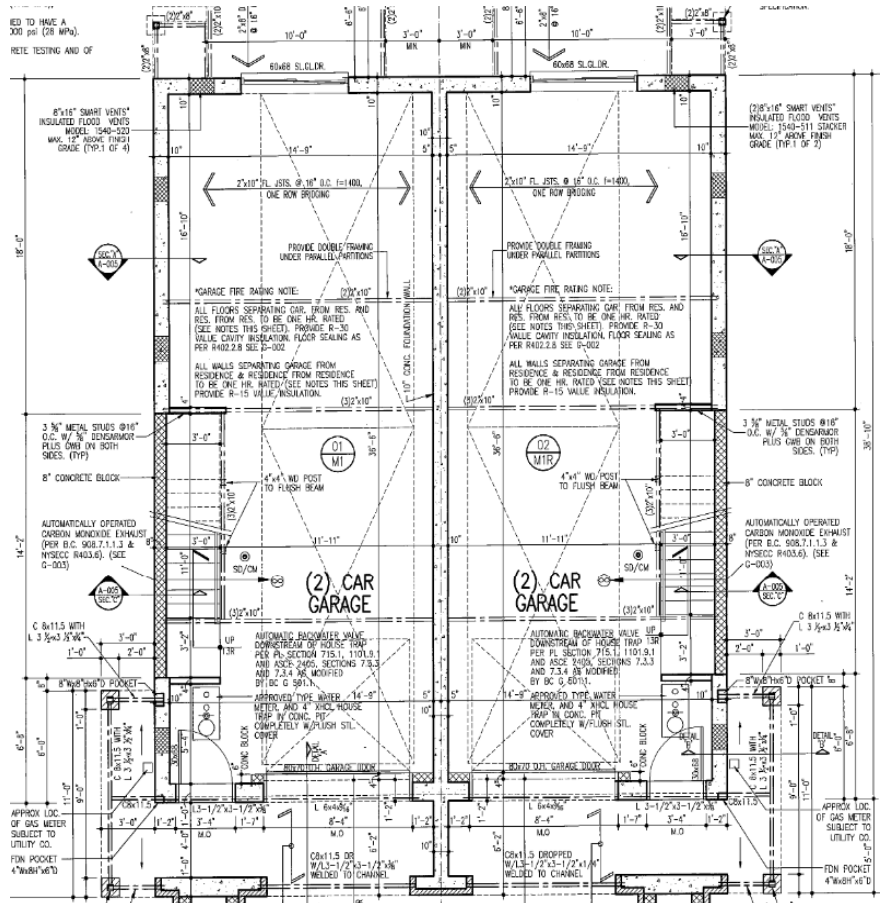
INCREASES TO THE DEGREE OF NON-COMPLIANCE

- BC G102.1, Item 10. Other alterations to pre-FIRM construction. This appendix shall apply to **repair, alteration, reconstruction, rehabilitation, or additions to pre-FIRM buildings and structures**. No increase in the degree of noncompliance with this appendix shall be permitted. The requirements of this Item 10 shall be deemed satisfied if the work would not increase the degree of noncompliance with this appendix.

HABITABLE SPACE CONVERSION

- 10.1. Work that **increases the degree of noncompliance**. Work to pre-FIRM construction deemed as an increase in the degree of noncompliance includes, but is not limited to:
 - 10.1.1. The conversion of any space **below the design flood elevation** from nonhabitable space into habitable space;

HABITABLE SPACE CONVERSION



- Increase in the degree of noncompliance:
 - Nonhabitable space into habitable space below DFE

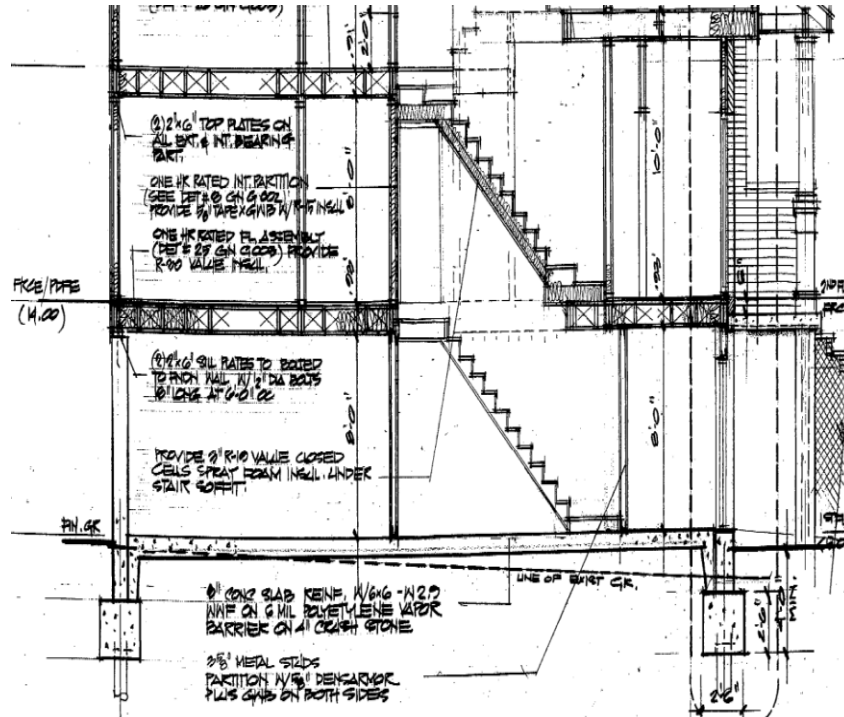
DWELLING UNIT AREA INCREASE

- 10.1. Work that **increases the degree of noncompliance**. Work to pre-FIRM construction deemed as an increase in the degree of noncompliance includes, but is not limited to:

...

- 10.1.2. The creation of a **direct communication** between a **dwelling unit** and a **space below the design flood elevation**;
- 10.1.3. Where a **dwelling unit already has space** below the design flood elevation or has space with which the dwelling unit directly communicates that is below the design flood elevation, **an increase in such space**;

DWELLING UNIT AREA INCREASE

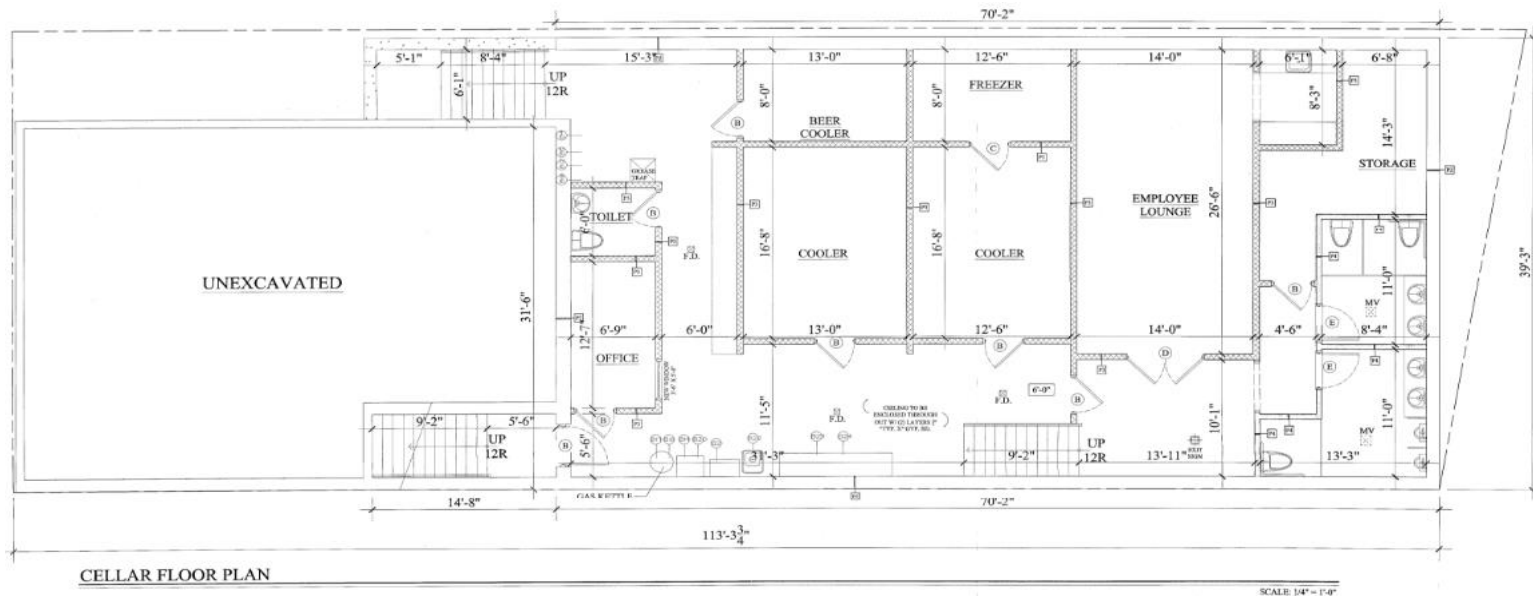


- Increase in the degree of noncompliance:
 - Creating a direct communication between a dwelling unit and a space below the design flood elevation
 - Enlarging, expanding or otherwise **increasing existing space** below the design flood elevation that directly communicates with the dwelling unit

CONVERSION OF ACCESSORY SPACES & NEW EQUIPMENT INSTALLATION

- **10.1.** Work that **increases the degree of noncompliance**. Work to pre-FIRM construction deemed as an increase in the degree of noncompliance includes, but is not limited to:
...
- **10.1.4.** The **conversion of any space below the design flood elevation** in a non-residential building (for flood zone purposes) to accessory (as such term is defined in NYC ZR) to a group R1, R-2, or R-3 occupancy, when such space was not previously accessory to such occupancy;
- **10.1.5.** The **installation of new components, materials, finishes, plumbing fixtures and equipment below the design flood elevation that are not permitted by this appendix to be located below the design flood elevation**, where such similar items did not previously exist, except for new components, materials, finishes, and equipment as permitted by Item 10.2.2;

NEW EQUIPMENT INSTALLATION



- Increase in the degree of noncompliance:
 - **Installation of new components**, materials, finishes, plumbing fixtures and equipment not permitted to be located below the design flood elevation

LOWERING FLOOR LEVEL & OCCUPANCY CHANGE

- **10.1.** Work that increases the degree of noncompliance. Work to pre-FIRM construction deemed as an increase in the degree of noncompliance includes, but is not limited to: ...
- **10.1.6.** The lowering of the elevation of a floor of a basement (for floodzone purposes), or a portion thereof located below the design flood elevation, except as permitted by Item 10.2.4;
- **10.1.7.** An alteration consisting of a change in use, occupancy or how such space is used in a building, or portion thereof, that results in a more restrictive flood design class per ASCE 24; and
- **10.1.8.** Any condition not addressed in Items 10.1.1 through 10.1.7 as determined by the commissioner.

CHANGE OF OCCUPANCY

TABLE 1-1
FLOOD DESIGN CLASS OF BUILDINGS AND STRUCTURES

USE OF OCCUPANCY OF BUILDINGS AND STRUCTURES	FLOOD DESIGN CLASS
Buildings and structures that normally are unoccupied and pose minimal risk to the public or minimal disruption to the community should they be damaged or fail due to flooding. Flood Design Class 1 includes: <ol style="list-style-type: none"> certain temporary structures that are in place for less than 180 days, accessory storage buildings and minor storage facilities, small structures used for parking of vehicles, and certain agricultural structures.^a 	1
Buildings and structures that pose a moderate risk to the public or moderate disruption to the community should they be damaged or fail due to flooding, except those listed as Flood Design Classes 1, 3, and 4. Flood Design Class 2 includes the vast majority of buildings and structures that are not specifically assigned another Flood Design Class, including most residential, commercial, and industrial buildings.	2
Buildings and structures that pose a high risk to the public or significant disruption to the community should they be damaged, be unable to perform their intended functions after flooding, or fail due to flooding. Flood Design Class 3 includes: <ol style="list-style-type: none"> buildings and structures in which 300 or more persons may assemble in one place, such as theaters, lecture halls, and religious institutions with large areas used for worship; museums; community centers and other recreational facilities; athletic facilities with seating for spectators; elementary schools, secondary schools, and buildings with college or adult education classrooms; jails, correctional facilities, and detention facilities; healthcare facilities not having surgery or emergency treatment capabilities; care facilities where residents have limited mobility or ability, including nursing homes but not including care facilities for five or fewer persons; preschool and child care facilities not located in one- and two-family dwellings; buildings and structures associated with power generating stations, water and sewage treatment plants, telecommunication facilities, and other utilities which, if their operations were interrupted by a flood, would cause significant disruption in day-to-day life or significant economic losses in a community; and buildings and other structures not included in Flood Design Class 4 (including but not limited to facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, hazardous waste, or explosives) containing toxic or explosive substances where the quantity of the material exceeds a threshold quantity 	3

USE OF OCCUPANCY OF BUILDINGS AND STRUCTURES	FLOOD DESIGN CLASS
established by the authority having jurisdiction and is sufficient to pose a threat to the public if released. ^b	
Buildings and structures that contain essential facilities and services necessary for emergency response and recovery, or that pose a substantial risk to the community at large in the event of failure, disruption of function, or damage by flooding. Flood Design Class 4 includes: <ol style="list-style-type: none"> group I-2 occupancies having surgery or emergency treatment facilities; fire, rescue, ambulance, and police stations and emergency vehicle garages; designated emergency shelters; designated emergency preparedness, communication, and operation centers and other facilities required for emergency response; power generating stations and other public utility facilities required in emergencies; structures containing highly toxic materials as defined by Section 307 where the quantity of the material exceeds the maximum allowable quantities of Table 307.1(2); critical aviation facilities such as control towers, air traffic control centers, and hangars for aircraft used in emergency response; ancillary structures such as communication towers, electrical substations, fuel or water storage tanks, or other structures necessary to allow continued functioning of a Flood Design Class 4 facility during and after an emergency; buildings and other structures having critical national defense functions; and water storage facilities and pump structures required to maintain water pressure for fire suppression. 	4

- Increase in the degree of noncompliance:
 - Change in use, occupancy or how such space is used in a building to a **more restrictive flood design class** per ASCE 24

NO INCREASE TO DEGREE OF NON-COMPLIANCE

- 10.2. Work that **does not increase the degree of noncompliance**. The following work to pre-FIRM construction, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:

PLUMBING FIXTURE INSTALLATION

- 10.2. Work that **does not increase the degree of noncompliance**. The following work to pre-FIRM construction, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:
 - 10.2.1. Plumbing fixtures:
 - 10.2.1.1. The in-kind replacement of plumbing fixtures below the design flood elevation; and
 - 10.2.1.2. The **installation of new plumbing fixtures** in a space within the structure where **similar plumbing fixtures already exist**, provided that the number of plumbing fixtures is not increased and provided any required backflow prevention and/or sewage ejection **is provided** in accordance with this appendix.

PLUMBING FIXTURE INSTALLATION

- **NOT an increase in the degree of noncompliance:**
 - In-kind replacement of plumbing fixtures below DFE and new fixtures in spaces with similar fixtures with backflow prevention

Figure 1.2.1D:
The result of
sewage back-up
through a toilet
during a riverine
flooding event



Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems
November 1999

EQUIPMENT INSTALLATION IN SIMILAR EXISTING SPACES

- **10.2.** Work that **does not increase the degree of noncompliance.** The following work to pre-FIRM construction, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:
 - ...
 - **10.2.2. Components,** materials, finishes, equipment, fire protection systems and equipment, and appliances, **other than plumbing fixtures:**
 - **10.2.2.1.** The **in-kind replacement of components,** materials, finishes, equipment, fire protection systems and equipment, and appliances;
 - **10.2.2.2.** The **installation of new components,** materials, finishes, equipment, fire protection systems and equipment, and appliances, in a space within the structure where similar pre-FIRM items already exist;

EQUIPMENT INSTALLATION IN SIMILAR EXISTING SPACES



Figure 5-10:
The basement of PS43
was inundated with
approximately 5 feet of water
(Queens, NY)

- NOT an increase in the degree of noncompliance:
 - In-kind replacement of components, materials, finishes, equipment, fire protection systems and equipment, and appliances or new installation in a space within the structure where similar pre-FIRM items already exist

NEW EQUIPMENT

- 10.2. Work that **does not increase the degree of noncompliance**. The following work to pre-FIRM construction, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:
...
 - 10.2.2.3. Within existing nonresidential portions of a nonresidential (for flood zone purposes) building, the **installation of new components**, materials, finishes, equipment, fire protection systems and equipment, and appliances **which serve only the space(s) being altered below the design flood elevation**, provided such items, as well as any associated electrical wiring, are **designed** and/or isolated so as **not to affect the operation of building components**, systems and wiring of other parts of the building **if submerged**. This item shall not include increases to the number of plumbing fixtures or the installation of building systems which support other areas of the building.

NEW EQUIPMENT



- NOT an increase in the degree of noncompliance:

...

- 10.2.2.3. Within existing nonresidential portions of a nonresidential (for flood zone purposes) building, the **installation of new components**, materials, finishes, equipment, fire protection systems and equipment, and appliances which **serve only the space(s) being altered below the design flood elevation**, provided such items, as well as any associated electrical wiring, are designed and/or **isolated so as not to affect the operation of building components, systems and wiring of other parts of the building if submerged**. This item shall not include increases to the number of plumbing fixtures or the installation of building systems which support other areas of the building.

CHANGE IN USE, OCCUPANCY OR HOW A SPACE IS USED

- 10.2. Work that **does not increase the degree of noncompliance**. The following work to pre-FIRM construction, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:
...
 - 10.2.3. **Change in use**, occupancy or how such space is used. Alteration consisting of a change in use, occupancy or how such space is used in a nonresidential building (for flood zone purposes), or portion thereof, that does not result in a more restrictive flood design class per ASCE 24, is **not a conversion from nonhabitable space into habitable space**, and is not otherwise required by Item 10.1.4 to comply with this appendix. Such alteration shall also comply with the provisions of Item 10.2.2; and
 - 10.2.4. Pits. **The lowering of the elevation of a floor** or a portion thereof located **below the design flood elevation for pits to accommodate** sump pumps, house traps, valve access, cleanouts, ejector pumps and elevators.

CHANGE IN USE, OCCUPANCY OR HOW A SPACE IS USED

NOT an increase in the degree of noncompliance:

- Change in use, occupancy or how such space is used



"Type A" corridors like Sheepshead Bay Road in South Brooklyn offer a wide variety of retail options that are very accessible to pedestrians, some of whom may live directly above.

VARIANCES

- **G105.1 General.** The Board of Standards and Appeals shall hear and decide requests for variances from the requirements of this appendix. The Board of Standards and Appeals shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix.

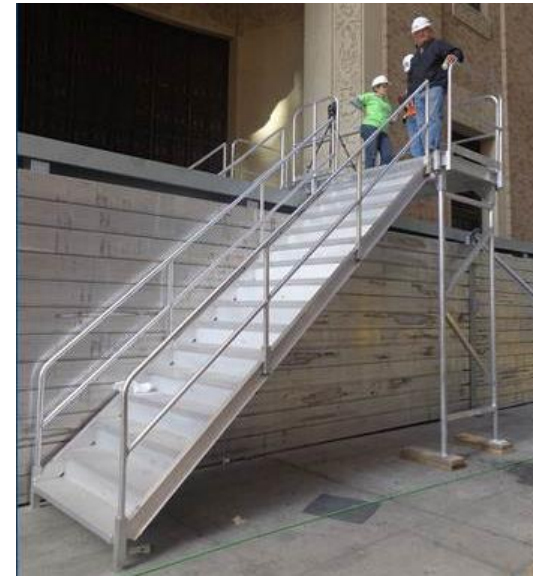
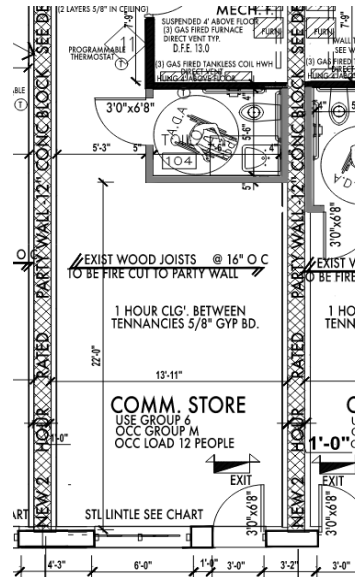
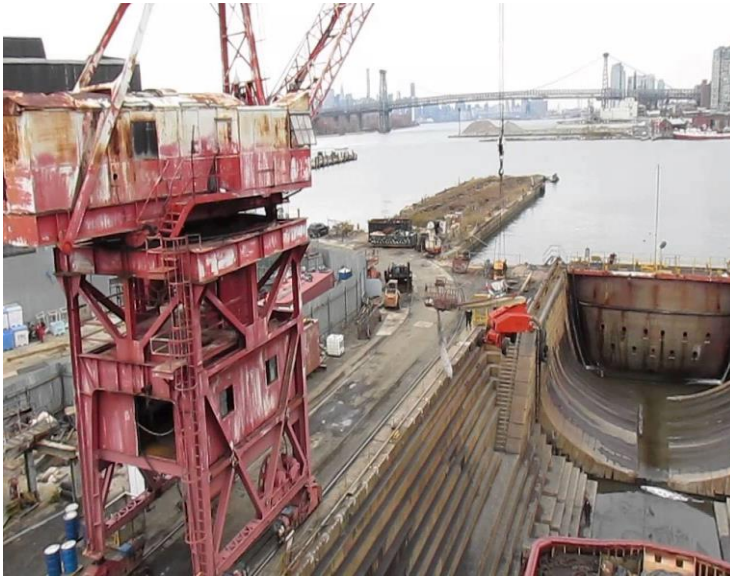
EXCEPTION: In specific cases, provided that noncompliance with the requirements of the 44 CFR section 60.3 is not created, the commissioner shall be authorized to vary the standards prescribed in this appendix under and pursuant to the provisions of Section 28-103.3 of the Administrative Code and Section 645(b)(2) of the New York City Charter, including but not limited to:

1. **Increases to the number of plumbing fixtures** on an existing non-dry floodproofed story located below DFE including to accommodate compliance with the New York City Plumbing Code or Chapter 11 of this code for accessibility for persons with disabilities, or both; and
2. **Modifications to the egress provisions of ASCE 24, Section 6.2.2.**

PLUMBING FIXTURES & EGRESS

EXCEPTIONS to BSA Variance

1. Increasing the number of plumbing fixtures
2. Modifications to the egress provisions of ASCE 24, Section 6.2.2.



CERTIFICATE OF OCCUPANCY

- G106.2 Enclosed areas subject to flooding in A-Zones. The certificate of occupancy shall describe all enclosed areas below the design flood elevation that are subject to flooding and that meet the requirements of this appendix for wet floodproofing as "wet floodproofed, subject to flooding". The certificate of occupancy shall indicate the use of wet floodproofed spaces as either parking, storage, building access or crawl spaces. The certificate of occupancy shall be issued with the following restriction: "Levels subject to flooding shall not be used for any other use except as stated on this certificate."
- G106.3 Enclosed areas subject to flooding in coastal high-hazard areas and coastal A-Zones. The certificate of occupancy shall describe all enclosed areas below the design flood elevation that are not dry floodproofed as "subject to flooding". The certificate of occupancy shall indicate the use of spaces enclosed by open lattice breakaway walls below the design flood elevation as either unconditioned parking, unconditioned storage, or unconditioned building access. The certificate of occupancy shall be issued with the following restriction: "Levels subject to flooding shall not be used for any other use except as stated on this certificate."

CERTIFICATE OF OCCUPANCY

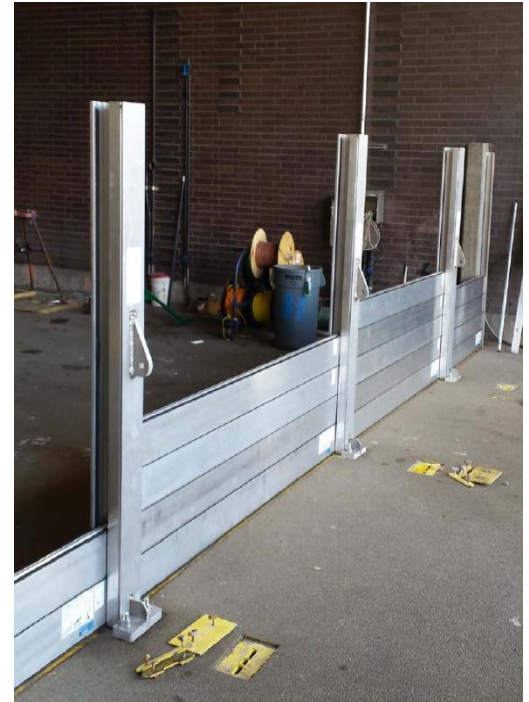
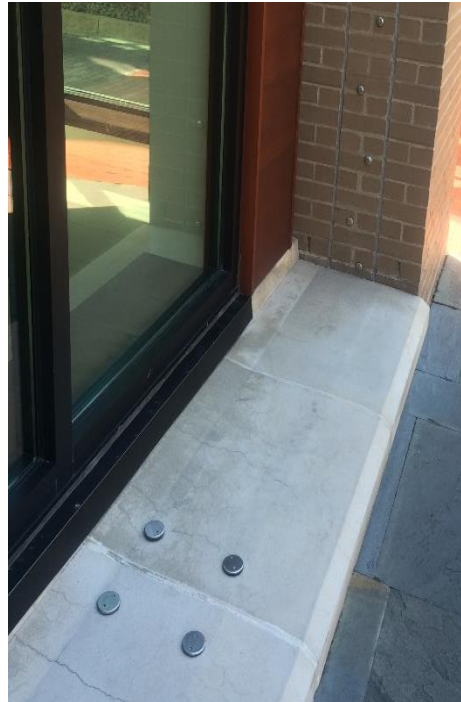
- G106.4 Dry floodproofed spaces. The certificate of occupancy shall describe any dry floodproofed spaces as "dry floodproofed." Where flood shields or other flood control devices are installed, the certificate of occupancy shall also provide notations describing these features. For evacuated buildings or evacuated portions of buildings utilizing the temporary stair or ramp provisions of Section G308.10.1, the certificate of occupancy shall note "In portions of this building planned to be evacuated during flood conditions, occupancy shall be prohibited except for maintenance or emergency personnel."
- G106.4.1 Restrictive declaration. Where dry floodproofed buildings contain dwelling units, patient care areas (for flood zone purposes) or spaces intended to be used by persons for sleeping purposes, the certificate of occupancy shall also provide notations as required by Section G304.1.2, Item 2.2.

DRY FLOODPROOFING INSPECTION

- **G107.5 Periodic inspections of dry floodproofing systems.** Covered buildings, as described in Section 28- 324 of the Administrative Code, shall be subject to periodic inspections for dry floodproofing systems in accordance with Sections G107.5.1 and G107.5.2.
- **G107.5.1 Annual inspection of dry floodproofing system.** An inspection of the dry floodproofing system shall be conducted annually in accordance with Section 28-324.2 of the Administrative Code.
- **G107.5.2 Triennial full scale deployment inspection.** A full-scale deployment inspection shall be conducted every three years in accordance with Section 28-324.3 of the Administrative Code.

DRY FLOODPROOFING INSPECTION

- Inspections of dry floodproofing systems and triennial deployment



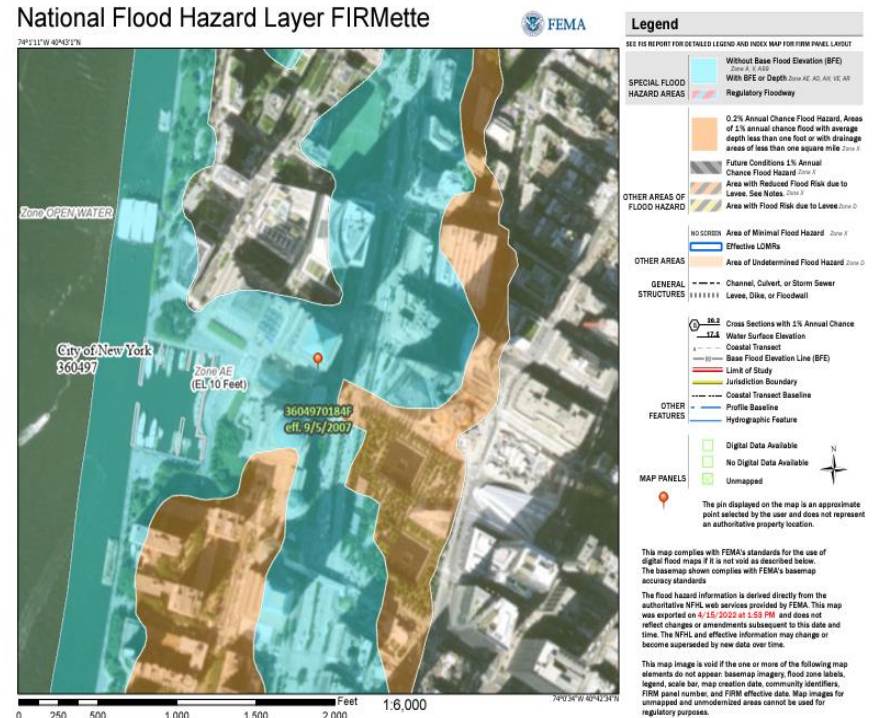
FLOOR HAZARD AREA

- **FLOOD HAZARD AREA.** The following two areas:
 1. The area within a flood plain subject to a **1-percent or greater chance of flooding** in any year. Also defined as the “special flood hazard area.”
 2. Where buildings are classified as Flood Design Class 4, the **area within a flood plain delineated as shaded X-Zones.**

FLOOR HAZARD AREA

- FLOOD HAZARD AREA. The following two areas:
- Flood Design Class 4, the area within a flood plain delineated as shaded X-Zones

USE OF OCCUPANCY OF BUILDINGS AND STRUCTURES	FLOOD DESIGN CLASS
<p>established by the authority having jurisdiction and is sufficient to pose a threat to the public if released.⁹</p>	
<p>Buildings and structures that contain essential facilities and services necessary for emergency response and recovery, or that pose a substantial risk to the community at large in the event of failure, disruption of function, or damage by flooding. Flood Design Class 4 includes:</p> <ol style="list-style-type: none"> group 1-2 occupancies having surgery or emergency treatment facilities; fire, rescue, ambulance, and police stations and emergency vehicle garages; designated emergency shelters; designated emergency preparedness, communication, and operation centers and other facilities required for emergency response; power generating stations and other public utility facilities required in emergencies; structures containing highly toxic materials as defined by Section 307 where the quantity of the material exceeds the maximum allowable quantities of Table 307.1(2); critical aviation facilities such as control towers, air traffic control centers, and hangars for aircraft used in emergency response; ancillary structures such as communication towers, electrical substations, fuel or water storage tanks, or other structures necessary to allow continued functioning of a Flood Design Class 4 facility during and after an emergency; buildings and other structures having critical national defense functions; and water storage facilities and pump structures required to maintain water pressure for fire suppression. 	4



ENCLOSURES BELOW DFE

- G304.1.1 Residential. For buildings or structures that are residential (for flood zone purposes), all post-FIRM new buildings, horizontal enlargements and substantial improvements shall comply with the applicable requirements of this appendix and ASCE 24, and shall be elevated as follows:
 - ...
 - 2. Enclosures below the design flood elevation. Enclosed spaces below the design flood elevation specified in ASCE 24, Table 2-1, shall be useable solely for parking of vehicles, building access, storage, or crawlspace, and shall be wet floodproofed in accordance with ASCE 24. Breakaway walls are not required in A-Zones;
 - 2.1. A restrictive declaration noting the above restriction shall be filed with the City Register or County Clerk, and the City Register File Number (CRFN) shall be identified in the permit application and on the certificate of occupancy.

SPACES BELOW DFE

FLOOD ZONE RESTRICTIVE DECLARATION

DECLARATION, made this ____ day of _____, 200__, by _____, hereinafter referred to as the "Declarant," having an office/residing at _____.

WHEREAS, the Declarant is the fee owner of certain land located in the City and State of New York, Borough of _____, designated as Block _____ Lot _____ on the Tax Map of the City of New York, hereinafter referred to as Parcel A, more particularly described by a metes and bounds description on Schedule A annexed hereto and by this reference made a part hereof; and

WHEREAS, the Declarant has requested the New York City Department of Buildings (the "Department of Buildings") to act upon Application No. _____ to construct/alter a building or structure that is nonresidential (for flood zone purposes) and is either a post-FIRM new building or substantial improvement that contains dwelling units utilizing the dry floodproofing option set forth in Section BC G304.1.2(2) of the 2014 Building Code on Parcel A (the "Building").

NOW, THEREFORE, in consideration of the issuance by the Department of Buildings of a building permit for the Building, the Declarant does hereby declare the following:

1. All rooms and spaces within dwelling units, patient care areas (for flood zone purposes) and all spaces intended to be used by persons for sleeping purposes shall be located at or above the design flood elevation;
2. Failure to comply with the terms of this declaration may result in the revocation of a building permit or certificate of occupancy;
3. This declaration may not be modified, amended or terminated without prior written consent of the Department of Buildings;
4. The covenants set forth herein shall run with the land and be binding upon and inure to the benefit of the parties hereto and their respective heirs, legal representatives, successors and assigns; and

- Restrictive declaration for spaces below DFE in residential buildings

CLASS 4 BUILDINGS ALTERATIONS

- G304.4 Construction standards for shaded X-Zones. In shaded X-Zones, flood design class 4 buildings, as defined in ASCE 24, Table 1-1, shall comply with the requirements of this appendix and the applicable provisions of ASCE 24 for A-Zone construction.
- G304.4.1 Alterations to certain flood design class 4 buildings. Where **existing emergency vehicle garages and fire, rescue, ambulance, and police stations located within shaded X-Zones are undergoing either a substantial improvement** or an increase in the degree of noncompliance as such term is described in Item 10 of Section G102.1, they shall **comply with this appendix to the maximum extent practicable** as described in Sections G304.4.1.1 through G304.4.1.4.

EMERGENCY EQUIPMENT PLACEMENT

- G304.4.1.1 Existing emergency vehicle garages and fire, rescue, ambulance, and police stations to remain. **Where an existing emergency vehicle garage or fire, rescue, ambulance, or police station building is undergoing substantial improvement or an increase in the degree of noncompliance, such existing emergency vehicle storage area shall be permitted to be located below the design flood elevation, provided such space is wet floodproofed in accordance with ASCE 24 and an emergency action plan is filed with the department in accordance with ASCE 24, Section 6.2.3. Such emergency action plan shall include actionable directives for the relocation of such emergency vehicles in advance of a flood event.**
- G304.4.1.2 Equipment within existing emergency vehicle garages and fire, rescue, ambulance, and police stations. **Where an existing emergency vehicle garage or fire, rescue, ambulance, or police station building is undergoing substantial improvement or an increase in the degree of noncompliance, equipment necessary to support operations of such facilities may be located below the design flood elevation where elevation of such equipment to the design flood elevation is physically unfeasible. Such equipment shall be elevated to the maximum extent practicable.**

EMERGENCY VEHICLE SPACE

- G304.4.1.3 Conversion of space below the design flood elevation. Conversion of existing non-occupiable space to occupiable space without such space being in full compliance with this appendix shall be prohibited.
- G304.4.1.4 Subgrade spaces to remain. Where an **existing emergency vehicle garage or fire, rescue, ambulance, or police station building is undergoing substantial improvement** or an increase in the degree of noncompliance, **the existing subgrade space shall be provided with a sump pump system**, designed to be fully submerged and remain operational post-flood-event to remove flood waters after a storm surge has receded. Such pump system shall be designed with the **pump controller located above the design flood elevation** and **all electrical wiring below the design flood elevation** shall be listed and marked for use with a submersible pump. The pump system shall be connected to a standby power source, which shall be elevated above the design flood elevation.

EMERGENCY VEHICLE SPACE



FDNY Engine 268/Ladder 137

Alterations to emergency vehicle garages and fire, rescue, ambulance, and police stations within shaded X-Zones

DRY FLOODPROOFING LIMITATIONS

- Section 6.2.1. (Dry Floodproofing Limitations) is amended to add the following **exceptions**:

EXCEPTIONS:

1. Upon special application to the commissioner, the department may **authorize dry floodproofing for designs that demonstrate resistance to flood velocities** exceeding 5 ft/s while meeting the other limitations of this standard.
2. **Dry floodproofing shall be permitted** in Coastal A-Zones, provided:
 - 2.1 such dry **floodproofing complies with the requirements** of Appendix G of the New York City Building Code; and
 - 2.2 where **flood velocities adjacent to the structure exceed 5 ft/s,**

DRY FLOODPROOFING REQUIREMENTS

- Section 6.2.2. Item 1 of Section 6.2.2 (Dry Floodproofing Requirements) is amended to read as follows:
 - 1. Be designed and constructed so that any area below the applicable elevation specified in Table 6-1, together with attendant utilities, equipment, and sanitary facilities, is flood resistant with walls that are substantially impermeable to the passage of water. Where acceptable to the commissioner, **fixed flood-resistant glazing systems may be used when tested and designed to be within walls substantially impermeable to water.** Walls, floors, and flood shields shall be designed and constructed to resist hydrostatic, hydrodynamic, and other flood-related loads, including the effects of buoyancy resulting from flooding to the elevation listed in Table 6-1;

DRY FLOODPROOFING REQUIREMENTS

- Fixed flood-resistant glazing systems



Source: www.fenex.com

DRY FLOODPROOFING REQUIREMENTS: EGRESS

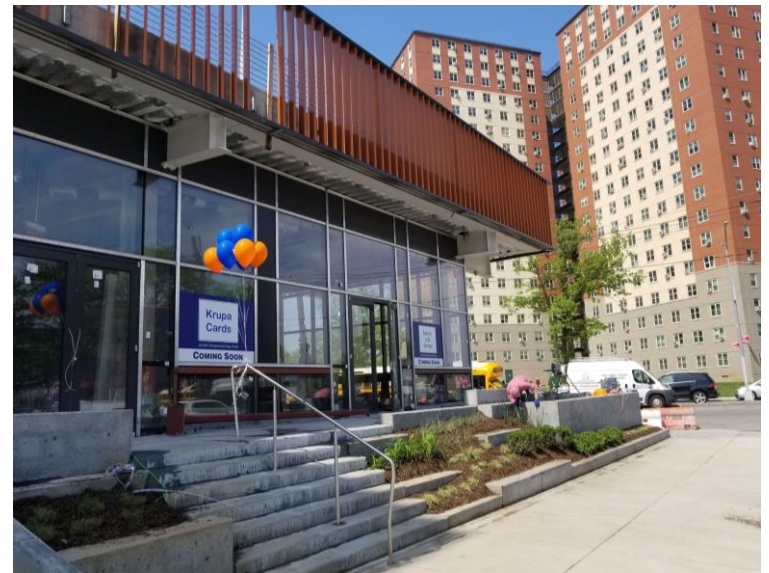
- Section 6.2.2. Item 3 of Section 6.2.2 (Dry Floodproofing Requirements) is amended to read as follows:
- **3. Provide egress and ingress**, where a means of egress is required by Chapter 10 of the New York City Building Code, **to such dry floodproofed areas of structures** in accordance with Item 3.1, 3.2 or 3.3, or a combination thereof, where permitted, as follows:
 - **3.1 Egress and ingress not blocked by shields. Means of egress shall be elevated to or above the applicable DFE** specified in Table 6-1, **capable of providing human ingress and egress** during the design flood **between the dry floodproofed area to the exterior**, without being blocked by flood shields or flood control devices; or

DRY FLOODPROOFING REQUIREMENTS: EGRESS

- Means of egress elevated to or above the applicable DFE



Source: www.shorefrontnews.com



Source: www.bklyner.com

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL

- Section 6.2.2. Item 3 of Section 6.2.2 (Dry Floodproofing Requirements) is amended to read as follows:
...
 - 3.2 Egress and ingress blocked by shields not serving dwelling units. Where a **means of egress** required by Chapter 10 of the New York City Building Code **that does not serve a dwelling unit is to be blocked by flood shields** or flood control devices, **an alternate means of egress shall be provided** capable of providing human **ingress and egress** during the design flood **between the dry floodproofed area to the exterior**. The **alternate means of egress** shall comprise of: (i) **a door providing ingress and egress** opening **directly to the exterior** at or **above the DFE**, and such door shall be permitted to be accessed by steps or ramps; ...

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL

- Door opening directly to the exterior at or above the DFE and accessed by steps or ramps



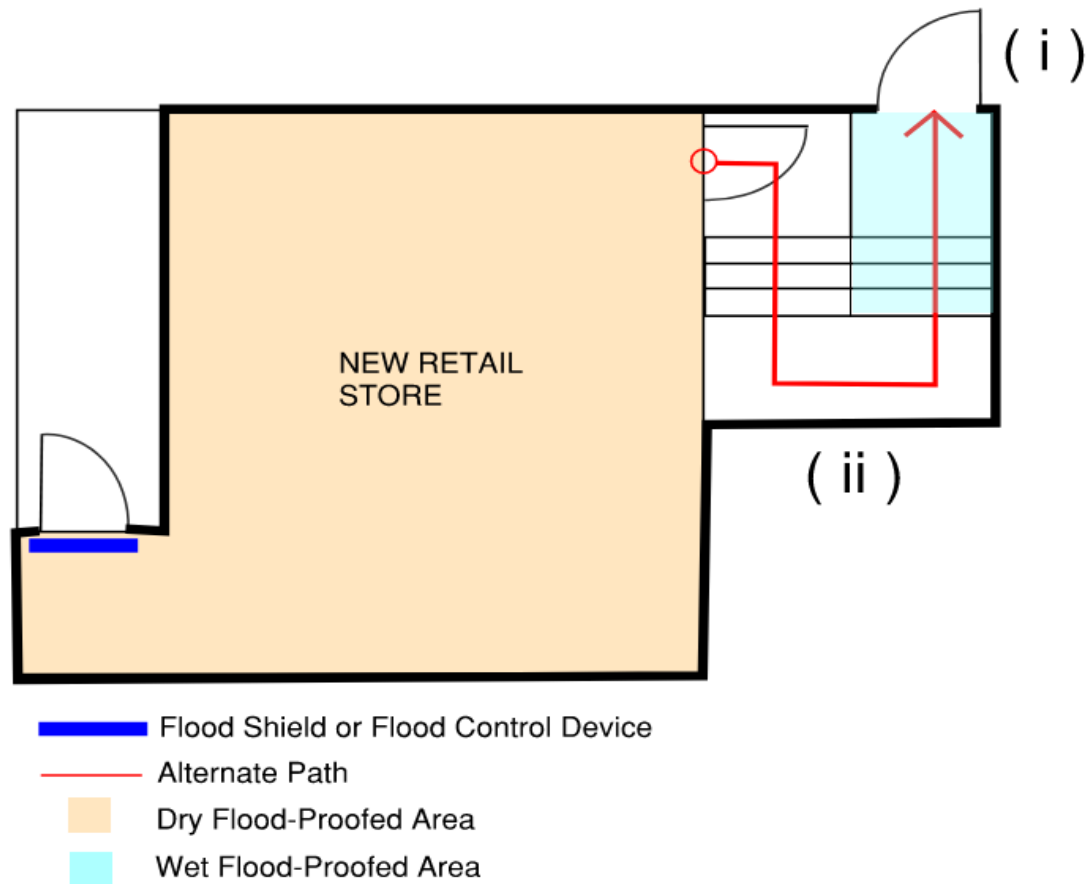
ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL

- Section 6.2.2. Item 3 of Section 6.2.2 (Dry Floodproofing Requirements) is amended to read as follows:

...

- 3.2 ...or (ii) a means of egress leading to an exterior exit door not blocked by shields or which is constructed as a wet floodproofed enclosure where discharging below the DFE, and such means of egress shall be permitted to be accessed by stairs and ramps. In either case, such alternate means of egress shall also comply with Items 3.2.1 through 3.2.6:

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL

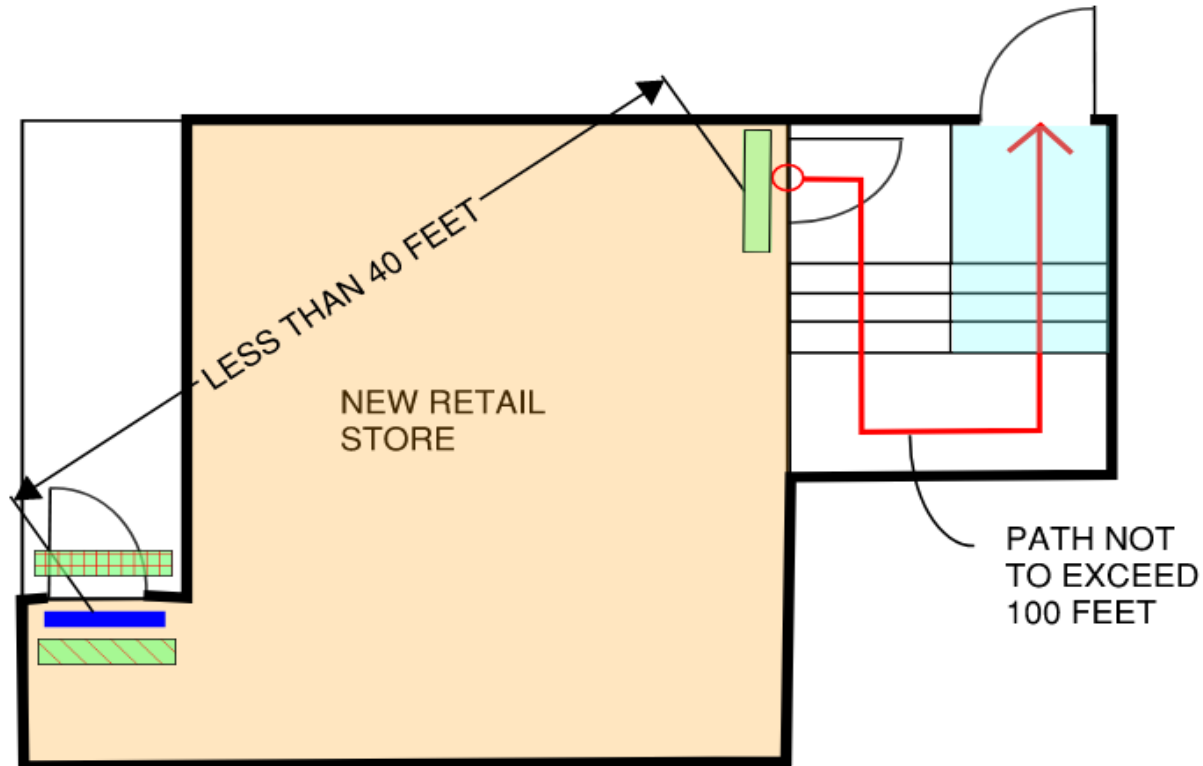





ALTERNATE MEANS OF EGRESS

NON-RESIDENTIAL: ENTRANCE CONDITIONS

- **3.2.1 Alternate Means of Egress Entrance.** The alternate means of egress entrance door, or **directional signage to such alternate means of egress entrance door shall be readily visible** and identifiable within a direct line of sight to a person approaching the blocked egress door(s). The path of travel from the blocked egress door to the alternate means of egress entrance shall be **unobstructed with a travel distance of not more than 40 ft** as measured from the blocked means of egress. **Directional signage to the alternate means of egress shall be installed on the exit door** blocked by flood shields prior to flood condition and removed during non-flood conditions.
- **3.2.2 Travel Distance.** The path of travel from the alternate means of egress entrance door leading to the **exterior of the building shall not exceed 100 ft.**

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL: ENTRANCE CONDITIONS



-  Alternate Path Signage
-  Alternate Path temporary signage or temporary direction signage
-  Signage for First Responders

ALTERNATE MEANS OF EGRESS

NON-RESIDENTIAL: TEMPORARY STAIRS

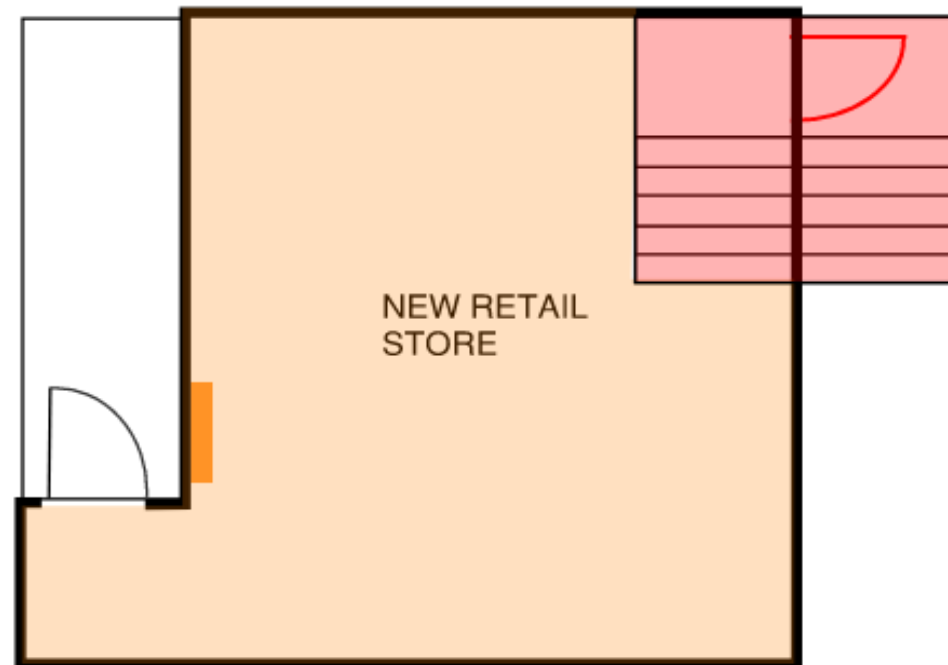
- **3.2.3 Temporary Stairs, Ramps and Platforms.** For buildings or portions of buildings that are planned to be evacuated during the design flood condition and pre-FIRM buildings, **temporary stairs and ramps shall be permitted to serve as an alternate means of egress** if their only purpose is to provide supplemental egress and ingress during conditions of flooding subject to the limitations of Section G308.10 of the New York City Building Code.
- **3.2.3.1 Doors.** Any door opening directly onto such temporary stairs or platforms shall be secured during non-flood conditions to prevent use when such temporary stairs and ramps are in storage.
- **3.2.3.2 Signage.** Directional signage to an egress utilizing temporary stairs, ramps or platforms shall be removed to prevent accidental operation during non-flood conditions.




ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL: TEMPORARY STAIRS



Source: NYC DCP Resilient Retail

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL: TEMPORARY STAIRS



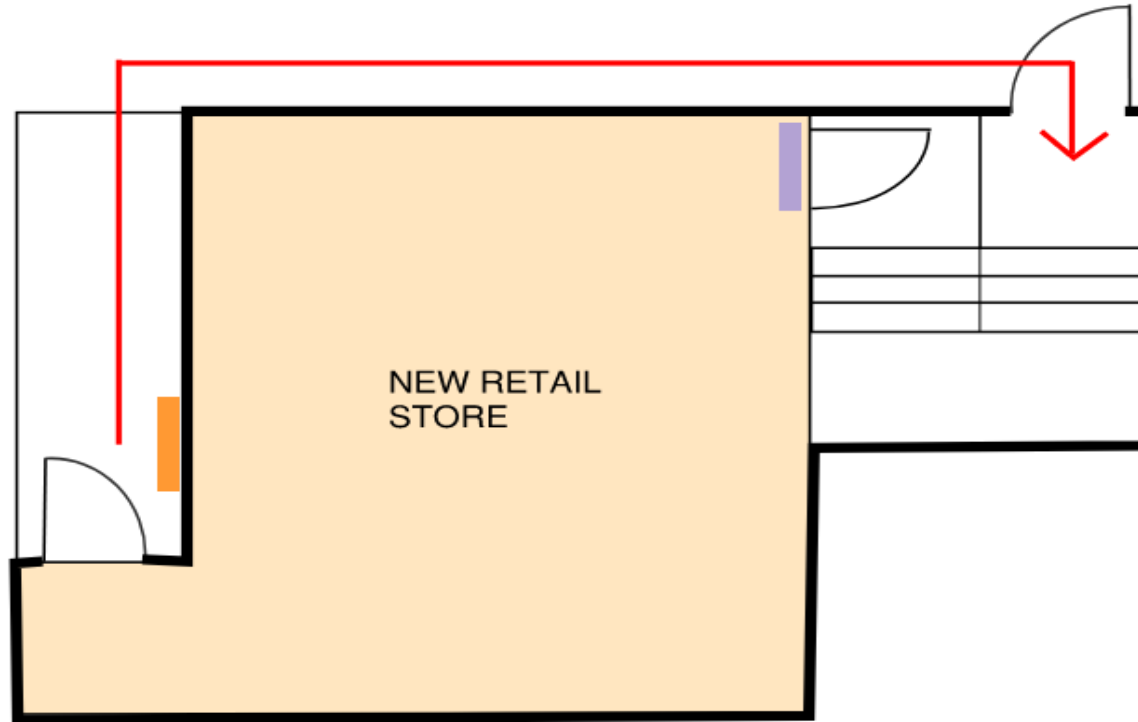
-  Temporary Stairs, Ramps and Platforms
-  Door Secured During Non-Flood Conditions
-  Signage Present **Only** During Flood Conditions




ALTERNATE MEANS OF EGRESS

NON-RESIDENTIAL: SIGNAGE VISIBILITY

- **3.2.4 Visibility from outside.** Permanent signage affixed to the outside of flood shields or flood control devices **that block the egress door shall provide directions to first responders** or other personnel seeking to locate the path into the space from the exterior.

ALTERNATE MEANS OF EGRESS NON-RESIDENTIAL: SIGNAGE VISIBILITY



-  Flood Shields or Flood Control Devices
-  Signage Indicating Directions to Path into Space from the Exterior for First Responders
-  Path to Wet Flood-Proofed Area Egress Space

ALTERNATE MEANS OF EGRESS

NON-RESIDENTIAL: EGRESS COMPLIANCE

- **3.2.5 Compliance with egress requirements.** Such alternate means of egress shall meet all requirements of Chapter 10 of the New York City Building Code for a required means of egress, including, travel distances, hardware and signage. **Where an alternate means of egress may be used as a means of egress at any time other than a flood event, temporary stairs and ramps shall not be permitted.** Exceptions for buildings or portions of buildings that are planned to be evacuated during the design flood conditions:
 1. Such **alternate means of egress** shall **not be required to comply with occupant load calculations** of the New York City Building Code if its only purpose is to provide supplemental egress and ingress during conditions of flooding.
 2. The **alternate means of egress** may serve more than one required exit provided that the **travel distances to and within the alternate means of egress comply with Item 3.2.1 and Item 3.2.2** from each required means of egress that is blocked by flood shields or flood control devices.

ALTERNATE MEANS OF EGRESS NO -RESIDENTIAL: ACCESSIBILITY

- **3.2.6 Accessibility.** The alternate means of egress shall not be required to comply with Chapter 11 of the New York City Building Code if its only purpose is to provide supplemental egress and ingress during conditions of flooding, unless the structure is intended for occupancy during the design flood.

ALTERNATE MEANS OF EGRESS RESIDENTIAL

- **3.3 Egress and ingress blocked by shields serving dwelling units.** For each means of egress required by Chapter 10 of the New York City Building Code that serves a dwelling unit and is to be blocked by flood shields or flood control devices, **at least one alternate means of egress shall be provided** capable of providing human ingress and egress during the design flood between the dry floodproofed area to the exterior. The **alternate means of egress shall comprise either an elevated door opening directly to the exterior of the building** arranged in accordance with Section 3.3.1 **or an enclosure that incorporates wet floodproofing** and is arranged in accordance with Section 3.3.2.

ALTERNATE MEANS OF EGRESS RESIDENTIAL: ELEVATED DOORS

- **3.3.1 Elevated door.** Where an elevated door is provided, such door shall be capable of providing human ingress and egress during the design flood. The elevated door shall open directly to the exterior of the building and shall be located in close proximity to the required means of egress to the exterior that is to be blocked by flood shields or flood control devices as follows:
 - **3.3.1.1 Face of door.** The face of the elevated door itself, and not merely its directional signage, shall be arranged so it is clearly visible to a person approaching the blocked egress door(s).
 - **3.3.1.2 Elevation of door.** Such door(s) shall be elevated to or above the applicable DFE specified in Table 6-1.

ALTERNATE MEANS OF EGRESS RESIDENTIAL: ELEVATED DOORS

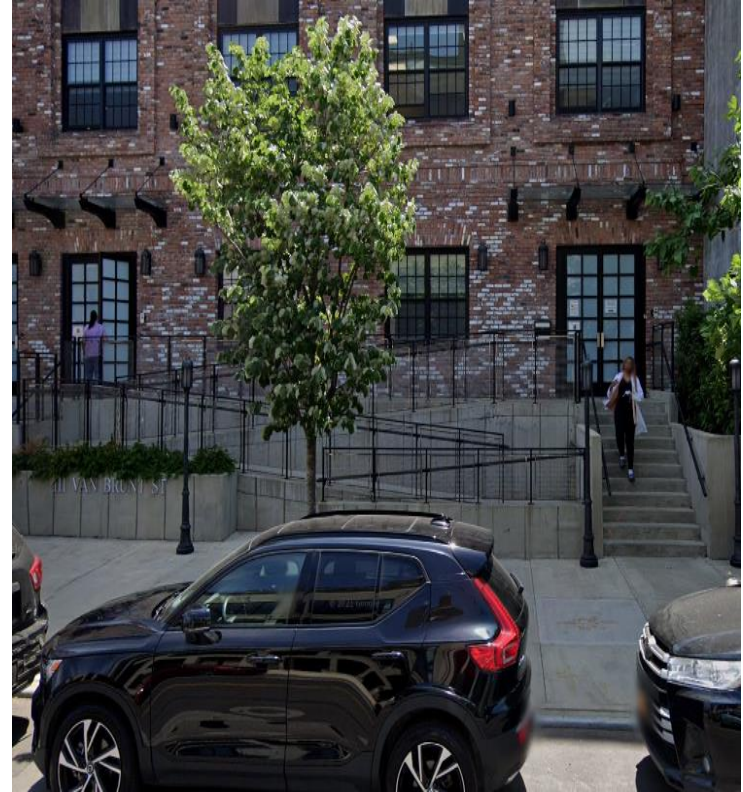
(continued)

- **3.3.1.3 Compliance with egress requirements.** Such door shall meet all New York City Building Code requirements for a required means of egress to the exterior of the structure including hardware and signage.
- **3.3.1.4 Accessibility.** Such door may be accessed by open steps and shall not be required to comply with Chapter 11 of the New York City Building Code if its only purpose is to provide supplemental egress and ingress during conditions of flooding and to provide emergency egress at other times.

ALTERNATE MEANS OF EGRESS RESIDENTIAL: ELEVATED DOORS



Source: www.lmdevpartners.com



Source: Google Streetview

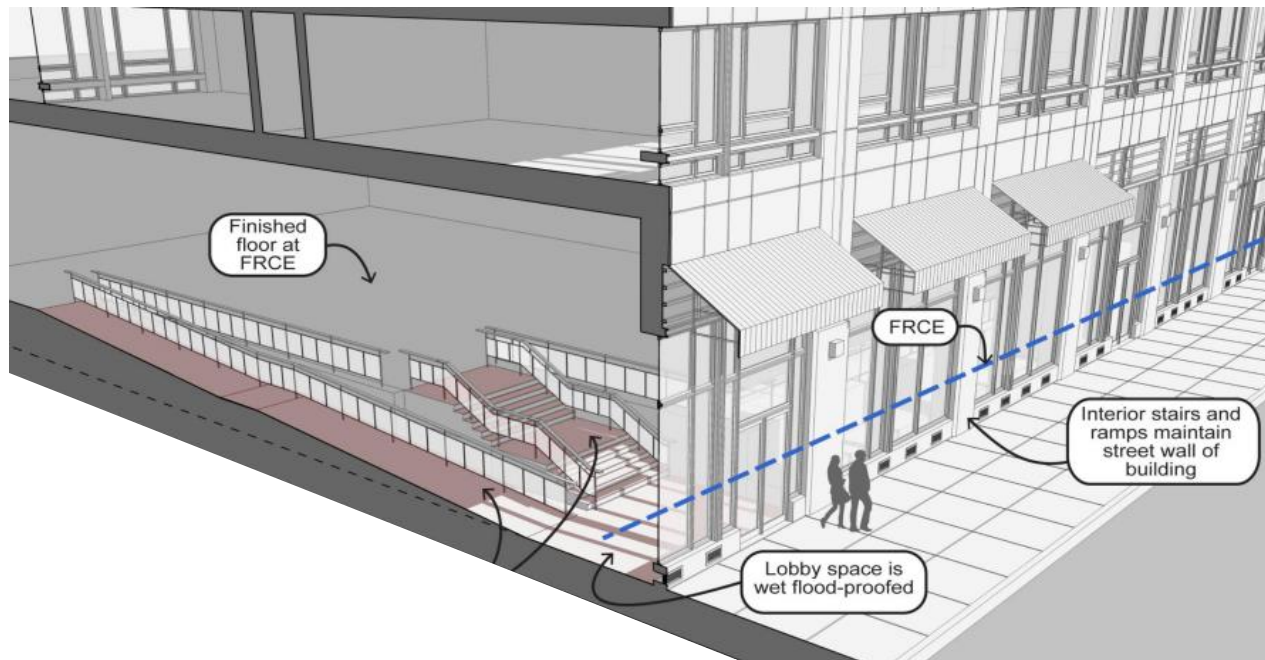
ALTERNATE MEANS OF EGRESS RESIDENTIAL: WET FLOOD-PROOFED ENCLOSURE

- 3.3.2 Enclosure that incorporates wet floodproofing. Where an enclosure which is partially wet floodproofed is used to provide alternate means of egress, such means of egress shall be capable of providing human ingress and egress during the design flood and shall be located in close proximity to the required means of egress to the exterior that is to be blocked by flood shields or flood control devices as follows:
 - 3.3.2.1 Face of door to enclosure. The face of the door to the enclosure, and not merely its directional signage, shall be arranged so it is clearly visible to a person approaching the blocked egress door(s).
 - 3.3.2.2 Wet floodproofing within an enclosure. Wet floodproofed portions of the enclosure shall be designed to comply with Section 6.3 and resist all flood related loads while prohibiting infiltration of floodwater to dry floodproofed spaces within the building.

ALTERNATE MEANS OF EGRESS RESIDENTIAL: WET FLOOD-PROOFED ENCLOSURE

- 3.3.2.3 Travel Distance. The path of travel from the alternate means of egress entrance door to the door leading to the exterior of the building shall not exceed 25 ft.
- 3.3.2.4 Compliance with egress requirements. The entrance and exit door shall meet all requirements of Chapter 10 of the New York City Building Code for a required means of egress to the exterior of the structure including hardware and signage.

ALTERNATE MEANS OF EGRESS RESIDENTIAL: WET FLOOD-PROOFED ENCLOSURE



Source: NYC DCP



nyc.gov/buildings

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