

¶¶¶ Appendix G was amended by [Local Law 77 of 2023](#). This law has an effective date of June 10, 2023.

APPENDIX G

FLOOD-RESISTANT CONSTRUCTION

SECTION BC G101 PURPOSE AND OBJECTIVES

G101.1 Purpose. The purpose of this appendix is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas designed to:

1. Prevent unnecessary disruption of commerce, access and public service during times of flooding;
2. Manage the alteration of natural floodplains, stream channels and shorelines;
3. Manage filling, grading, dredging and other development that may increase flood damage or erosion potential;
4. Prevent or regulate the construction of flood barriers that will divert floodwaters or that can increase flood hazards;
5. Contribute to improved construction techniques in the floodplains; and
6. Comply with and exceed the minimum standards of the National Flood Insurance Program as administered by the Federal Emergency Management Agency (FEMA).

G101.2 Objectives. The objectives of this appendix are to:

1. Protect human life;
2. Minimize the expenditure of public money for flood control projects;
3. Minimize the need for rescue and relief efforts associated with flooding;
4. Minimize prolonged business interruption;
5. Minimize damage to structures located in flood hazard areas;
6. Minimize damage to public facilities and utilities such as water, electricity, telephone and sewer lines, and streets and bridges located in flood hazard areas;
7. Help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
8. Ensure that potential owners and occupants are notified that property is within flood hazard areas.

G101.3 Referenced standards. Where this code makes reference to the nationally recognized standard ASCE 24, such standard shall be as modified for New York City in accordance with Section G501 of this appendix.

G101.4 Reserved.

SECTION BC G102 APPLICABILITY

G102.1 General. This appendix, in conjunction with the *New York City Construction Codes*, provides minimum requirements for development located, in whole or in part, in special flood hazard areas and shaded X-Zones within the jurisdiction of New York City, including:

1. **Subdivisions.** This appendix shall apply to the subdivision of land;
2. **Utilities.** This appendix shall apply to the installation of utilities;
3. **Group U buildings and structures.** This appendix shall apply to placement and replacement of Group U buildings as defined in Section 312;

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

4. **Site improvements.** This appendix shall apply to site improvements, including but not limited to, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities;
5. **Prefabricated buildings and manufactured homes.** This appendix shall apply to placement and replacement of prefabricated buildings and manufactured homes;
6. **Post-FIRM construction.** This appendix shall apply to post-FIRM construction;
7. **Alterations to post-FIRM construction.** This appendix shall apply to repair, alteration, reconstruction, rehabilitation or additions to post-FIRM construction;
8. **Substantial improvement of pre-FIRM construction.** This appendix shall apply to substantial improvement of pre-FIRM buildings and structures, including restoration after damage, as if hereafter erected;
9. **Horizontal enlargements of pre-FIRM construction.** This appendix shall apply to horizontal enlargements of pre-FIRM buildings and structures to the extent of such horizontal enlargement, including but not limited to additions (whether above or below grade), decks, carports, or similar appendages. The existing portions of the structure shall not be required to comply, unless otherwise required because the alteration is deemed a substantial improvement; and
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.
 - 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;
 - 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;
 - 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 R-1, 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;
 - 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.
 - 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.

- 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; and
 - 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.
- 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.

11. **Retroactive requirements.** This appendix shall apply to retroactive requirements as provided for in Section G312.

G102.2 Establishment of flood hazard areas. The following flood hazard map and supporting data are adopted as referenced standards and declared to be a part of this appendix.

1. FEMA FIS 360497.
2. FEMA FIRMs 360497.

G102.2.1 Preliminary flood insurance study and rate maps. Until such time that the department by rule adopts revised FEMA FIS 360497 and FEMA FIRMs 360497 with a final effective date later than April 18, 2018, the following flood hazard maps and supporting data are also adopted as a referenced standard and declared a part of this appendix.

1. FEMA PFIS 360497.
2. FEMA PFIRMs 360497.

G102.2.2 Effect of preliminary flood insurance study and rate maps. Notwithstanding any other provision in this appendix to the contrary:

1. All references in this appendix to elevations in FEMA FIS 360497 and FEMA FIRMs 360497 shall be deemed to refer to the greater of (i) the elevations identified in the FEMA FIS 360497/FEMA FIRMs 360497 or (ii) the elevations identified in the FEMA PFIS 360497/FEMA PFIRMs 360497. In comparing elevations, the elevations identified in FEMA FIS 360497 and FEMA FIRMs 360497 that are expressed in relation to the National Geodetic Vertical Datum (NGVD) shall be converted to the North American Vertical Datum (NAVD).
2. All references in this appendix to flood hazard areas as delineated on FEMA FIRMs 360497 shall be deemed to refer to the flood hazard areas as delineated on FEMA PFIRMs 360497 except that, where a structure is located in a flood hazard area as delineated on FEMA PFIRMs 360497 and in a more restrictive flood hazard area as delineated on FEMA FIRMs 360497, such structure shall be deemed to be located in the more restrictive flood hazard area as delineated on FEMA FIRMs 360497.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

G102.3 Letters of map change. Map changes to FEMA FIRMs 360497 shall be administered in compliance with Sections G102.3.1 through G102.3.3.

G102.3.1 Letters of map amendment (LOMA). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated special flood hazard area, but the pre-FIRM ground elevations adjacent to the structure or throughout the tax lot are at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the special flood hazard area and shall not approve plans except in compliance with this appendix, unless a letter of map amendment (LOMA) is issued by FEMA removing such structure or tax lot from the special flood hazard area.

G102.3.1.1 Letters of map amendment (LOMAs) during pendency of PFIRMs. Until such time that the department by rule adopts revised FEMA FIS 360497 and FEMA FIRMs 360497 with a final effective date later than April 18, 2018, the commissioner shall not deem issuance of a LOMA by FEMA as removing such structure or tax lot from the special flood hazard area unless the elevations specified in the LOMA equal or exceed the applicable corresponding elevations on the FEMA PFIS 360497/FEMA PFIRMs 360497.

G102.3.2 Letter of map revision based on fill (LOMR-F). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated special flood hazard area, but post-FIRM compacted fill is proposed to be added adjacent to the structure or throughout the tax lot to an elevation at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the special flood hazard area and shall not approve plans except in compliance with this appendix, unless a conditional or final letter of map revision based on fill (LOMR-F) is issued by FEMA removing such structure or tax lot from the special flood hazard area. Buildings constructed with basements below the Base Flood Elevation on filled land shall maintain a minimum setback distance of 20 feet (6096 mm), at or above the Base Flood Elevation, from the edge of the special flood hazard area to the nearest wall of the basement, regardless of the design approach used. The commissioner shall promulgate rules establishing procedures for processing letters of map revision based on fill (LOMR-F).

G102.3.2.1 Letters of map revision based on fill (LOMR-Fs) during pendency of PFIRMs. Until such time that the department by rule adopts revised FEMA FIS 360497 and FEMA FIRMs 360497 with a final effective date later than April 18, 2018, the commissioner shall not deem issuance of a LOMR-F as removing such structure or tax lot from the special flood hazard area unless the elevations specified in the LOMR-F equal or exceed the applicable corresponding elevations on the FEMA PFIS 360497/FEMA PFIRMs 360497.

G102.3.3 Certificates of occupancy. Certificates of occupancy shall indicate that the structure or tax lot is subject to a letter of map amendment (LOMA) or letter of map revision based on fill (LOMR-F) as per Section G106.5.

SECTION BC G103 ADMINISTRATION

G103.1 Permit applications. The commissioner is hereby designated as the floodplain administrator for the City of New York and shall review permit applications to determine that:

1. Proposed development sites will be reasonably safe from flooding;
2. All site development activities, including grading, filling, utility installation and drainage modification, and all new construction and substantial improvements (including the placement of prefabricated buildings and manufactured homes) are designed and constructed with methods, practices and materials that minimize flood damage and that are in accordance with this code and ASCE 24; and
3. All other required state and federal permits have been obtained.

G103.2 Reserved.

G103.3 Determination of flood elevations. Flood elevations shall be determined in accordance with Sections G103.3.1 through G103.3.2.

G103.3.1 Determination of base flood elevations. Where the proposed development is within a special flood hazard area but the base flood elevations are not specified in the FEMA FIRMs 360497, the commissioner shall require the applicant to request base flood elevation data from the New York State Department of Environmental Conservation (DEC); and

1. Submit to the commissioner either:

- 1.1. A letter from DEC making such a determination of base flood elevation; or
- 1.2. A letter from the DEC indicating that the data are not available. When such a letter from DEC indicates that the data are not available, the base flood elevation shall be equal to 3 feet (914 mm) above the highest adjacent pre-FIRM grade.

Exception: Large lots. Where the base flood elevation is not specified, the applicant shall submit a detailed engineering study establishing the base flood elevation, performed by an engineer in accordance with accepted hydrologic and hydraulic engineering techniques, in sufficient detail to allow review by the commissioner for any of the following conditions:

1. For a development which is located on a tax lot greater than 5 acres (2.02 hectares), or is located on property that was part of a tax lot that was greater than 5 acres (2.02 hectares) at the time of the adoption of the FIRM (October 1, 1984), or at any subsequent applicable map change thereto; or
2. For subdivisions resulting in 50 or more tax lots, including all tax lots previously subdivided from the same tax lot since the adoption of the FIRM (October 1, 1984), or since any subsequent applicable map changes thereto.

G103.3.2 Determination of 500-year flood elevations. Where 500-year flood elevations are not specified in the FEMA FIRMs 360497 or FEMA FIS 360497, such elevations shall be determined by a registered design professional using modeling based on generally accepted engineering methods or a review of available data from city, state and federal agencies.

G103.4 Reserved.

G103.5 Floodway encroachment. Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the commissioner shall require submission of a certification, prepared by a registered design professional, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood.

G103.5.1 Floodway revisions. A floodway encroachment that increases the level of the base flood is authorized if the applicant has applied for a conditional Flood Insurance Rate Map (FIRM) revision and has received the approval of the Federal Emergency Management Agency (FEMA).

G103.6 Watercourse alteration. Prior to issuing a permit for any alteration or relocation of any watercourse within a special flood hazard area, the commissioner shall require the applicant to:

1. Notify any affected adjacent municipalities or government jurisdictions;
2. Notify the DEC;
3. Submit evidence of such notifications to the commissioner and the Regional Director, Region II, the Federal Emergency Management Agency (FEMA);
4. Submit to the commissioner evidence of all such notifications;
5. Submit an engineering analysis demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased; and
6. Submit evidence that such watercourses will be maintained in a manner which preserves the channel's flood-carrying capacity.

G103.7 Alterations in coastal areas. Prior to issuing a permit for any alteration of sand dunes in coastal high-hazard areas and coastal A- zones, the commissioner shall require submission of an engineering analysis, prepared by a registered design professional, demonstrating that the proposed alteration will not increase the potential for flood damage.

G103.8 Records. The commissioner shall maintain records of the following:

1. Applications and supporting documents for development in flood hazard areas;
2. Permits issued in flood hazard areas;
3. Inspection reports;
4. Certifications required in this appendix; and

5. Certificate of occupancy where applicable.

G103.9 Violations. See Chapter 2 of Title 28 of the *Administrative Code*.

SECTION BC G104 PERMITS

G104.1 Required. Any person, owner or owner's authorized agent who intends to conduct any development, as applicable pursuant to Section G102.1, within a flood hazard area, shall first make application to the commissioner and shall obtain the required permit in accordance with Section 28-105.1 of the *Administrative Code*, notwithstanding any exemption pursuant to Section 28-105.4 of the *Administrative Code*.

G104.2 Application for permit. The applicant shall file an application in writing on a form furnished by the commissioner. The commissioner shall not approve such application unless the applicant submits all plans, details, data and documents demonstrating that the development complies with Sections G104.2.1 through G104.2.3 and all other provisions of this appendix.

G104.2.1 Flood zone compliance plans. The permit application shall include flood zone compliance plans. Such plans shall include plans and drawings, shall be sealed by a registered design professional and shall include a site plan and the following information and any other data as may be required by the department:

1. Flood design class assigned according to ASCE 24;
2. A delineation of the flood hazard areas, including identification of the base flood elevation(s), design flood elevations and stillwater flood depth;
3. If applicable, the location of the regulatory floodway;
4. For all proposed structures, spot ground elevations at building corners and in 20-foot (6096 mm) or smaller intervals along the foundation footprint, or 1-foot (305 mm) contour elevations throughout the building site;
5. Proposed locations of water supply, sanitary sewer, and utilities;
6. Drainage patterns and facilities;
7. Foundation design details, including but not limited to:
 - 7.1. Proposed elevation of the lowest floor including basement (for flood zone purposes) of all structures;
 - 7.2. For crawl spaces and enclosed parking, storage and building access that are wet floodproofed below the design flood elevation, location and total net area of foundation openings in accordance with ASCE 24;
 - 7.3. For dry floodproofed spaces in buildings or structures that are nonresidential (for flood zone purposes), the proposed elevation to which the enclosure will be dry floodproofed in accordance with ASCE 24;
 - 7.4. Any proposed fill and excavation details; and
 - 7.5. In coastal high-hazard areas and coastal A-zones, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor; and
8. For structures in coastal high-hazard areas or coastal A-zones, and for dry-floodproofed structures: flood loading and parameters including average velocity of water (V), debris impact load (F_i), scour depths, and wave loads (F_t or F_D).

Exception: Applications for subdivisions shall comply with Section G302.

G104.2.2 Watercourse alteration. The permit application shall include documentation required by Section G103.6 and, if applicable, a description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

G104.2.3 Certifications. The permit application shall include the applicable certifications in accordance with Sections G104.2.3.1 through G104.2.3.3.

G104.2.3.1 A-Zones. For construction in A-Zones, the permit application shall include the following certifications, as applicable:

1. **Wet floodproofing certification.** For applications involving wet floodproofed enclosures below the design flood elevation, flood zone compliance plans shall include a certification by the applicant, as applicable to the scope of work proposed, that “in accordance with ASCE 24, the use of the enclosure is limited to the parking of vehicles, building access, or storage, and that the design incorporates openings to allow for the automatic entry and exit of floodwaters for equalization of hydrostatic flood forces and flood damage-resistant materials and techniques that minimize damage to a structure by floodwater.”
2. **Dry floodproofing certification for nonresidential buildings.** For applications involving dry floodproofed buildings and structures that are nonresidential (for flood zone purposes), flood zone compliance plans shall include a certification by the applicant that “the structure is designed to be dry floodproofed with walls that are substantially impermeable to the passage of water and that all walls, floors, and flood shields are designed 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 in accordance with ASCE 24.”
3. **Utility certifications.** For all applications involving utility or mechanical work, including applications where such work is to be filed in a separate, related application, flood zone compliance plans shall include a certification by the applicant that “all heating, ventilation, air conditioning, plumbing, electrical and other services facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24.”

G104.2.3.2 Coastal high-hazard areas and coastal A-Zones. For construction in coastal high-hazard areas and coastal A-Zones, the permit application shall include the following certifications, as applicable:

1. **Structural design certification.** Flood zone compliance plans shall include a certification by the applicant that the “entire structure is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 of the *New York City Building Code*.”
2. **Breakaway wall certification.** Where breakaway walls are provided, flood zone compliance plans shall include a certification by applicant that “the breakaway walls meet the load requirements of Section 5.3.3 of ASCE 7, are designed in accordance with ASCE 24, and are of an open lattice-type construction only.”
3. **Utility certifications.** For all applications involving utility or mechanical work, including applications where such work is to be filed in a separate, related application, flood zone compliance plans shall include a certification by the applicant that “all heating, ventilation, air conditioning, plumbing, electrical and other services, facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the components during conditions of flooding, in accordance with ASCE 24.”

G104.2.3.3 Floodway encroachment certification. For any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the applicant shall submit a certification, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood in accordance with the requirements of Section G103.5.

G104.3 Validity of permit. The issuance of a permit under this appendix shall not be construed to be a permit for, or approval of, any violation of this appendix or any other provision of this code. The issuance of a permit based on submitted documents and information shall not prevent the commissioner from requiring the correction of errors. The commissioner is authorized to prevent occupancy or use of a structure or site that is in violation of this appendix or other provisions of this code.

G104.4 Expiration. A permit shall become invalid if the proposed development is not commenced within 180 days after its issuance, or if the work authorized is suspended or abandoned for a period of 180 days after the work commences.

G104.5 Suspension or revocation. The commissioner is authorized to suspend or revoke a permit issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of this code, in accordance with Section 28-105 of the *Administrative Code*.

G104.6 Reinstatement. Permit reinstatements for a permit that has expired pursuant to Section G104.4 shall be requested in writing. The commissioner is authorized to grant such reinstatement, provided that the work shall comply with all of the requirements of this appendix, including any revised FEMA FIRMs 360497 in effect at the time the application for reinstatement is made, and provided further that the applicant shall pay all reinstatement fees as required in Article 112 of Title 28 of the *Administrative Code*.

SECTION BC G105 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.

G105.2 Records. The Board of Standards and Appeals shall:

1. Maintain a record of all variance actions, including justification for their issuance; and
2. Report such variances issued in its biennial report submitted to the Federal Emergency Management Agency (FEMA).

G105.3 Historic structures. A variance is authorized to be issued by the Board of Standards and Appeals for the repair or rehabilitation of a historic structure upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.

G105.4 Functionally dependent facilities. The Board of Standards and Appeals is authorized to issue a variance for the construction or substantial improvement of a functionally dependent facility provided the criteria in Sections G105.3, G105.5 and G105.7 are met and the variance is the minimum necessary to allow the construction or substantial improvement, and that all due consideration has been given to methods and materials that minimize flood damages during the base flood and create no additional threats to public safety.

G105.5 Floodway restrictions. The Board of Standards and Appeals shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the base flood discharge.

G105.6 Conditions. In reviewing applications for variances, the Board of Standards and Appeals shall consider all technical evaluations, all relevant factors, all other portions of this appendix and the following:

1. The danger that materials and debris may be swept onto other lands resulting in further injury or damage.
2. The danger to life and property due to flooding or erosion damage.
3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners.
4. The importance of the services provided by the proposed development to the community.
5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion.
6. The compatibility of the proposed development with existing and anticipated development.
7. The relationship of the proposed development to the comprehensive plan and floodplain management program for that area.

8. The safety of access to the property in times of flood for ordinary and emergency vehicles.
9. The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
10. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

G105.7 Conditions for issuance. Except for historic structures as provided for in Section G105.3, the Board of Standards and Appeals is authorized to issue a variance where all of the following criteria are met:

1. A technical showing of good and sufficient cause that the characteristics of the size, configuration or topography of the site renders the standards inappropriate;
2. A determination that failure to grant the variance would result in exceptional hardship to the applicant for the variance;
3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances;
4. A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief;
5. Notification to the applicant in writing over the signature of the Executive Director of the Board of Standards and Appeals that the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage, and that such construction below the base flood level increases risks to life and property; and
6. A determination that the new construction, substantial improvement, or other proposed development is located on a tax lot that, on November 16, 1983, was no more than $\frac{1}{2}$ acre (0.2 hectare) in size. However, where the tax lot has been determined to be larger than $\frac{1}{2}$ acre (0.2 hectare), the technical justification required for issuing the variance increases with the lot size.

SECTION BC G106 CERTIFICATES OF OCCUPANCY

G106.1 Applicability. This section shall apply to post-FIRM construction and substantial improvements where the work results in the issuance of a new or amended 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.”

††† **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.

G106.5 Letters of map change. Where applicable, the certificate of occupancy shall indicate that “the structure is exempted from the special flood hazard area pursuant to FEMA Letter of Map Amendment (LOMA) # (____),” or that “the structure is exempted from the special flood hazard area pursuant to FEMA Letter of Map Revision Based on Fill (LOMR-F) # (____),” or that “the structure is exempted from the special flood hazard area pursuant to FEMA Letter of Map Revision (LOMR) # (____).”

SECTION BC G107 PERIODIC, PROGRESS AND SPECIAL INSPECTION REQUIREMENTS

G107.1 General. Periodic, progress and special inspections shall be performed in accordance with this section. All work applications, regardless of the scope of work, shall be subject to the progress and special inspection requirements of Sections G107.2 through G107.4.

G107.2 All work applications other than new buildings, horizontal enlargements and substantial improvements. All work applications other than new buildings, horizontal enlargements and substantial improvements, shall be subject to the following special inspection:

1. **Flood zone compliance special inspection.** Prior to sign-off of work, a special inspector or special inspection agency shall inspect during the course of construction and certify that: “the structure was constructed” or “alterations were performed,” “with methods and practices that minimize flood damage and that are in accordance with approved plans, and with any applicable provisions of Appendix G of the *New York City Building Code* and ASCE 24.”

G107.3 New buildings, horizontal enlargements and substantial improvements. All applications for new buildings, horizontal enlargements or substantial improvements shall be subject to the following inspections:

1. **Elevation progress inspection.** Upon placement of the lowest floor, including the basement (for flood zone purposes), an engineer or licensed professional surveyor shall inspect the site and verify the elevation of such lowest floor. The inspection report verifying the elevation shall be submitted to the department prior to further vertical construction. The commissioner shall be permitted to issue a stop work order if such inspection report is not submitted.
2. **Flood zone compliance special inspection.** Prior to sign-off of work, a special inspector or special inspection agency shall inspect during the course of construction and certify that: “the structure was constructed” or “alterations were performed,” “with methods and practices that minimize flood damage and that are in accordance with approved plans, and with any applicable provisions of Appendix G of the *New York City Building Code* and ASCE 24.”
3. **Final elevation required items.** Prior to the sign-off of the flood zone compliance special inspection, the special inspector or special inspection agency shall verify that the following required items have been submitted to the department, as applicable:
 - 3.1. **Elevation certificate.** The elevation certificate shall be made utilizing FEMA Form 086-0-33 titled, “Elevation Certificate,” and shall be signed by a registered design professional or surveyor.
 - 3.2. **Dry floodproofing certificate.** The dry floodproofing certificate shall be made utilizing FEMA Form 086-0-34 titled, “Floodproofing Certificate,” and shall be signed by a registered design professional.

G107.4 Flood shield inspection. Where flood shields or other flood control devices are installed as part of a dry floodproofing system in buildings and structures that are nonresidential (for flood zone purposes), the special inspector or special inspection agency responsible for the flood zone compliance special inspection shall inspect the shields or devices in their stored positions or locations, witness their activation or transportation to their installed positions, and witness their deactivation or transportation back to their stored locations. The special inspector or special inspection agency shall also confirm the installation of signage required by ASCE 24, Section 6.2.3, Item 3.

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*.

SECTION BC G201 DEFINITIONS

G201.1 Definitions. This section contains terms defined elsewhere in this code, and terms with definitions that are specific to this appendix.

G201.1.1 Terms defined elsewhere in this code. The following terms are defined in Chapter 2:

500-YEAR FLOOD ELEVATION.

A-ZONE.

BASE FLOOD.

BASE FLOOD ELEVATION.

BASEMENT (FOR FLOOD ZONE PURPOSES).

BREAKAWAY WALL.

COASTAL A-ZONE.

COASTAL HIGH-HAZARD AREA.

DESIGN FLOOD ELEVATION.

FLOOD or FLOODING.

FLOOD-DAMAGE-RESISTANT MATERIALS.

FLOOD HAZARD AREA.

FLOOD INSURANCE RATE MAP (FIRM).

FLOOD INSURANCE STUDY (FIS).

FLOODPROOFING, DRY.

FLOODPROOFING, WET.

FLOODWAY.

LOWEST FLOOR.

**NATIONAL GEODETIC VERTICAL
DATUM (NGVD).**

**NONRESIDENTIAL (FOR FLOOD ZONE
PURPOSES).**

**NORTH AMERICAN VERTICAL
DATUM (NAVD).**

**PATIENT CARE AREA (FOR FLOOD ZONE
PURPOSES).**

RESIDENTIAL (FOR FLOOD ZONE PURPOSES).

SAND DUNES.

SHADED X-ZONE.

SPECIAL FLOOD HAZARD AREA.

SUBSTANTIAL DAMAGE.

SUBSTANTIAL IMPROVEMENT.

V-ZONE.

G201.1.2 Definitions specific to this appendix. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein:

DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, temporary structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations or drilling operations and other land-disturbing activities.

EXISTING CONSTRUCTION. See “Pre-FIRM development.”

EXISTING STRUCTURE. See “Pre-FIRM development.”

FLOOD DESIGN CLASS. A classification of buildings and other structures for determination of flood loads and conditions, and determination of minimum elevation requirements on the basis of risk associated with unacceptable performance.

FUNCTIONALLY DEPENDENT FACILITY. A facility that cannot be used for its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for loading and unloading of cargo or passengers and shipbuilding and ship repair facilities, but does not include long-term storage or related manufacturing, sales or service facilities.

HISTORIC STRUCTURE. Any structure that meets one of the following criteria:

1. Listed individually in the National Register of Historic Places;
2. Certified by the Secretary of the U.S. Department of the Interior as meeting the requirements for individual listing in the National Register;
3. Certified or preliminarily determined by the Secretary of the U.S. Department of the Interior to be contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary of the U.S. Department of the Interior to qualify as a registered historic district;
4. Individually listed or preliminarily determined to be eligible for listing in the New York State Register of Historic Places; or
5. Individually listed as a landmark by the NYC Landmarks Preservation Commission. Location within a historic district does not alone qualify as being an individually listed landmark.

LETTER OF MAP AMENDMENT (LOMA). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots or portions of tax lots from special flood hazard areas, resulting from a demonstration that the pre-FIRM ground elevations are at or above the base flood elevation.

LETTER OF MAP REVISION BASED ON FILL (LOMR-F). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots or portions of tax lots from special flood hazard areas, resulting from the post-FIRM placement of compacted fill, such that the new ground elevation is at or above the base flood elevation.

LETTER OF MAP REVISION (LOMR). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing or adding structures or tax lots or portions of tax lots from special flood hazard areas, which generally results from physical measures implemented that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective base flood elevations, or the special flood hazard area.

MANUFACTURED HOME. A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile Home Construction and Safety Standards and rules and regulations promulgated by the U.S.

Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers and similar transportable structures that are placed on a site for 180 consecutive days or longer.

MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

MARKET VALUE OF STRUCTURE. The price that a buyer is willing, but is not under any duty, to pay for a particular structure to an owner who is willing, but not obligated, to sell, exclusive of the value of the land, or of other buildings or structures on the same tax lot. The market value of a structure shall be determined in accordance with rules promulgated by the commissioner.

NEW CONSTRUCTION. See “Post-FIRM development.”

POST-FIRM DEVELOPMENT. Any development that is not pre-FIRM development.

POST-FIRM STRUCTURE. See “Post-FIRM development.”

PRE-FIRM DEVELOPMENT. Any development:

1. Completed prior to November 16, 1983;
2. Under construction on November 16, 1983, provided that the start of construction was prior to said date; or
3. Completed on or after November 16, 1983, but that:
 - 3.1. Was not located within a special flood hazard area at the start of construction; and
 - 3.2. Is now located within a special flood hazard area as a result of a subsequent change to the FIRM.

PRE-FIRM STRUCTURE. See “Pre-FIRM development.”

RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m²) or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect-type utilities and security devices and has no permanently attached additions.

START OF CONSTRUCTION. The date of permit issuance for: (i) post-FIRM developments; (ii) substantial improvements to pre-FIRM structures; and (iii) those pre-FIRM developments that, at the time of permit issuance, were not within a special flood hazard area but that, prior to completion, were within a special flood hazard area as a result of map change; provided the actual commencement of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of permit issuance and such construction activity is not thereafter suspended or abandoned for 180 days or more. For the purposes of this definition:

1. The actual commencement of construction means the first placement of permanent construction of a building (including a manufactured home or prefabricated building) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns.
2. Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement (for flood zone purposes), footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building.
3. For a substantial improvement, the actual commencement of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, regardless of whether that alteration affects the external dimensions of the building.

VARIANCE. A grant of relief from the requirements of this appendix, which permits construction in a manner otherwise prohibited by this appendix.

SECTION BC G301 CONSTRUCTION STANDARDS

G301.1 All developments. To the extent required by Section G102.1, all developments, including but not limited to utility installation, site improvements, placement of prefabricated buildings and manufactured homes, new building construction, alterations and repairs, shall be designed and constructed to resist the effects of flood hazards and flood loads in accordance with this appendix and ASCE 24.

G301.1.1 Multiple flood zones. For a structure that is located in more than one zone (for instance both an A-Zone and an X-Zone, or both an A-Zone and a V-Zone), the provisions associated with the most restrictive zone shall apply to the entire structure.

G301.2 Design requirements and load combinations. Any construction subject to the requirements of Section G102.1 shall be designed and constructed to resist the loads and load combinations specified in Chapter 16.

SECTION BC G302 SUBDIVISIONS

G302.1 General. Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development within a special flood hazard area shall be reviewed to verify all of the following:

1. All such proposals are consistent with the need to minimize flood damage.
2. All public utilities and facilities, such as sewer, gas, electric and water systems, are located and constructed to minimize or eliminate flood damage.
3. Adequate drainage is provided to reduce exposure to flood hazards.

G302.2 Subdivision requirements. The following requirements shall apply in the case of any proposed subdivision, including proposals for manufactured home parks and subdivisions, any portion of which lies within a special flood hazard area:

1. The special flood hazard area, including floodways, coastal high-hazard areas and coastal A-Zones, as appropriate, shall be delineated on tentative and final subdivision plats.
2. Base flood elevations shall be shown on tentative and final subdivision plats.
3. Building lots shall be provided with adequate buildable area, in accordance with the *New York City Zoning Resolution*, outside the floodway.
4. The design criteria for utilities and facilities set forth in this appendix and appropriate *New York City Construction Codes* shall be met.

SECTION BC G303 SITE IMPROVEMENT

G303.1 Development in floodways. Development or land-disturbing activity shall not be authorized in the floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice, and prepared by a registered design professional, that the proposed encroachment will not result in any increase in the base flood level, in accordance with Section G103.5.

G303.2 Coastal high-hazard areas and coastal A-Zones. In coastal high-hazard areas and coastal A-Zones:

1. New buildings, not including substantial improvements, shall only be authorized landward of the reach of mean high tide.
2. The use of fill for structural support of buildings is prohibited.

G303.3 Sewer facilities. All new or replaced sanitary sewer facilities, private sewage treatment plants (including all pumping stations and collector systems) and on-site waste disposal systems shall be designed in accordance with Chapter 7, ASCE 24, to minimize or eliminate infiltration of floodwaters into the facilities and discharge from the facilities into floodwaters, or impairment of the facilities and systems.

G303.4 Water facilities. All new or replacement water facilities shall be designed in accordance with the provisions of Chapter 7, ASCE 24, to minimize or eliminate infiltration of floodwaters into the systems.

G303.5 Storm drainage. Storm drainage shall be designed to convey the flow of surface waters to minimize or eliminate damage to persons or property and shall meet the requirements of ASCE 24.

G303.6 Streets and sidewalks. Streets and sidewalks shall be designed to minimize potential for increasing or aggravating flood levels and shall meet the requirements of Section G303.8.

G303.7 Retaining walls and driveways. Retaining walls shall be designed in accordance with Section 1807. Retaining walls and driveways shall meet the requirements of Section G303.8.

G303.8 Grading and fill. In flood hazard areas, grading and/or fill shall not be approved:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of flood water and, as applicable, wave action, in accordance with ASCE 24 and Section 1804 of this code.
2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by an engineer in accordance with standard engineering practice that the proposed grading or fill, or both will not result in any increase in the flood levels during the occurrence of the design flood, in accordance with Section G103.5.
3. In coastal A-Zones and coastal high-hazard areas, unless such fill is conducted and or placed to avoid diversion of water and waves towards any building or structure.

SECTION BC G304 POST-FIRM CONSTRUCTION, HORIZONTAL ENLARGEMENTS AND SUBSTANTIAL IMPROVEMENTS

G304.1 A-Zone construction standards. In addition to the requirements of ASCE 24, the following standards shall apply to post-FIRM construction, horizontal enlargements and substantial improvements located within A-Zones, other than Coastal A-Zones.

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:

1. **Lowest floor.** The lowest floor, including the basement (for flood zone purposes), shall be elevated to or above the design flood elevation specified in ASCE 24, Table 2-1;
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.
3. **Under-floor spaces.** The finished ground level of an under-floor space, such as a crawl space, shall be equal to or higher than the outside finished ground level on at least one side;
4. **Materials.** Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;
5. **Utilities and equipment.** Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or with the exception of the items below, shall be constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24.
 - 5.1. Fire protection systems and equipment. The following fire protection systems and equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, except that where the

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

system or equipment or portion thereof serves only spaces located below such design flood elevation, the system or equipment or portion thereof may be located below such design flood elevation:

- 5.1.1. Sprinkler control valves that are not outside stem and yoke valves;
 - 5.1.2. Fire standpipe control valves that are not outside stem and yoke valves;
 - 5.1.3. Sprinkler booster pumps and fire pumps;
 - 5.1.4. Dry pipe valve-related electrically operated alarm appurtenances;
 - 5.1.5. Alarm control panels for water and non-water fire extinguishing systems;
 - 5.1.6. Alarm control panels for sprinkler systems, pre-action sprinkler systems, deluge sprinkler systems, and combined dry pipe and pre-action sprinkler systems;
 - 5.1.7. Electrically operated waterflow detection devices serving sprinkler systems; and
 - 5.1.8. Air compressors serving sprinkler systems and pre-action sprinkler systems.
- 5.2. Fire alarm systems and components. Where a zoning indicator panel is provided at the main building entrance in accordance with Section 907.6.3.1 of this code and such panel is located at or below 5 feet (1524 mm) above the design flood elevation specified in ASCE 24, Table 7-1, at least one secondary zoning indicator panel complying with the following requirements shall be provided:
- 5.2.1. The secondary zoning indicator panel, associated controls, power supplies and means of transferring control shall be provided at least 5 feet (1524 mm) above the design flood elevation specified in ASCE 24, Table 7-1, in a location accessible to responding Fire Department personnel and approved by the department and the Fire Department; and
 - 5.2.2. Where the secondary zoning indicator panel or associated controls are only operable upon transfer of control from another zoning indicator panel, such transfer shall be by a means that is approved by the Fire Department.
- 5.3. Fuel-oil piping systems. The following requirements shall apply to fuel-oil piping systems, as defined by Section 202 of the *New York City Mechanical Code*:
- 5.3.1. Fill piping that does not terminate in a watertight terminal approved by the department shall terminate at least 3 feet (914 mm) above the design flood elevation specified in ASCE 24, Table 7-1; and
 - 5.3.2. Normal vent piping and emergency vent piping shall terminate at least 3 feet (914 mm) above the design flood elevation specified in ASCE 24, Table 7-1.
- 5.4. Plumbing systems and components. The structure shall comply with the following requirements:
- 5.4.1. Relief vents and fresh air intakes. Relief vents and fresh air intakes serving building traps in accordance with Section 1002.6 of the *New York City Plumbing Code* shall be carried above grade and shall terminate in a screened outlet that is located outside of the building and at or above the design flood elevation specified in ASCE 24, Table 7-1; and
 - 5.4.2. Reduced pressure zone backflow preventers.
 - 5.4.2.1. Primary reduced pressure principle backflow preventers complying with the requirements of the Department of Environmental Protection shall be located at or above the design flood elevation specified in ASCE 24, Table 7.1.
 - 5.4.2.2. Secondary reduced pressure principle backflow preventers complying with Section 608.13.2 of the *New York City Plumbing Code* and backflow preventers with intermediate atmospheric vents complying with Section 608.13.3 of the *New York City Plumbing Code* shall be located at or above the design flood elevation specified in ASCE 24, Table 7.1.
 - 5.4.3. Relief vents for gas service, equipment, and appliance pressure regulators. Relief vents for gas service, equipment, and appliance pressure regulators complying with the *New York City Fuel Gas Code* shall be located at or above the design flood elevation specified in ASCE 24, Table 7.1.
6. **Certifications.** Applications shall contain applicable certifications in accordance with Section G104.5; and
7. **Special inspections.** Special inspections shall be as required by Section G107.

G304.1.2 Nonresidential. For buildings or structures that are nonresidential (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 comply with either of the following:

1. **Elevation option.** The structure shall comply with Items 1 through 7 of Section G304.1.1; or
2. **Dry floodproofing option.** The structure shall comply with the following:
 - 2.1. Elevation of dry floodproofing. The structure shall be dry floodproofed to or above the design flood elevation specified in ASCE 24, Table 6-1;
 - 2.2. Dwelling units, patient care areas (for flood zone purposes) and sleeping areas. Where dwelling units, patient care areas (for flood zone purposes) or spaces intended to be used by persons for sleeping purposes are located in a building utilizing the dry floodproofing option, the following additional requirements shall be met:
 - 2.2.1. 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;
 - 2.2.2. 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.
 - 2.3. Utilities and equipment. Utilities and attendant equipment shall be located within the dry floodproofed enclosure, or may be located outside the dry floodproofed enclosure provided that they are located at or above the design flood elevation specified in ASCE 24, Table 7-1, or are constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24.
 - 2.3.1. Additional requirements. Notwithstanding the above, utilities and attendant equipment, listed in Items 5.1 through 5.4 of Section G304.1.1, shall not be located in dry floodproofed enclosures and shall be elevated in accordance with Section G304.1.1.
 - 2.4. Fire department connections. Dry floodproofing measures including temporary shields, stairs and ramps shall be located and arranged so as to allow hose lines to be attached to the inlets of fire department connections without interference in accordance with Section 6.4.5 of NFPA 14, as modified by Appendix Q of this code.
 - 2.5. Certifications. Applications shall contain applicable certifications in accordance with Section G104.2.3; and
 - 2.6. Special inspections. Special inspections shall be as required by Section G107.

G304.2 Coastal high-hazard area construction standards. In addition to the requirements of ASCE 24, the following standards shall apply to post-FIRM construction, horizontal enlargements and substantial improvements located within coastal high-hazard area.

1. **Foundation.** The lowest floor shall be elevated on adequately anchored pilings or columns and securely anchored to such piles or columns to prevent flotation, collapse and lateral movement resulting from wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 and this appendix.
2. **Lowest horizontal member.** The lowest portion of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) shall be at or above the design flood elevation specified in ASCE 24, Table 4-1.
3. **Below the lowest horizontal member.** Spaces below the lowest horizontal member shall be either:
 - 3.1. Free of obstructions; or
 - 3.2. Enclosed with breakaway walls providing unconditioned space useable solely for parking of vehicles, building access, storage or crawl space. Such breakaway walls shall:
 - 3.2.1. Be of an open lattice type construction only;
 - 3.2.2. Meet the load requirements of Section 5.3.3 of ASCE 7; and

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

3.2.3. Meet the additional requirements of ASCE 24.

4. **Materials.** Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;
5. **Utilities and equipment.** Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or shall be constructed so as to both resist the wave action and prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24;
 - 5.1. Additional requirements. The structure shall comply with Items 5.1 through 5.4 of Section G304.1.1.
6. **Prohibitions.** The following shall be prohibited in coastal high-hazard areas:
 - 6.1. Development, including land-disturbing activities, seaward of the reach of mean high tide;
 - 6.2. Use of fill for structural support of buildings; and
 - 6.3. Man-made alterations of sand dunes that would increase potential damage to buildings.
7. **Certifications.** Applications shall contain applicable certifications in accordance with Section G104.2.3; and
8. **Special inspections.** Special inspections shall be as required by Section G107.

†††† **G304.3 Coastal A-Zone construction standards.** In addition to the requirements of ASCE 24, all post-FIRM new buildings, horizontal enlargements and substantial improvements in a Coastal A-Zone shall comply with the coastal high-hazard area construction standards of Section G304.2.

Exceptions: The following structural systems shall be permitted in a Coastal A-Zone:

1. **Wave-resisting stem wall foundation.** Stem walls supporting a floor system above, and backfilled with soil or gravel to the underside of the floor system, shall be permitted in Coastal A-Zones. The design and construction of the shallow foundation system shall comply with the following:
 - 1.1. The underside of such floor system shall be located at or above the design flood elevation specified in ASCE 24, Table 4-1.
 - 1.2. Stem walls enclosing areas below the design flood elevation shall not be permitted. Stem walls shall be designed to transfer all vertical and lateral forces to the slab above and to the foundation elements below;
 - 1.3. The design shall consider all forces resulting from flooding, including wave action, debris impact, erosion, and local scour;
 - 1.4. The design shall consider all forces resulting from soil pressure behind the walls, including the effect of hydrostatic loads, and all live and dead surcharge loads from the slab above;
 - 1.5. Flood openings shall not be required in stem walls constructed in accordance with this section;
 - 1.6. Where soils are susceptible to erosion and local scour, stem walls shall be supported by deep footings;
 - 1.7. Shallow foundations including spread footing, mat and raft foundations shall be designed to prevent sliding, uplift, or overturning when exposed to the combination of loads in ASCE 24, Section 1.6.2.
2. **Wave-resisting dry floodproofing wall and foundation system.** Buildings that are nonresidential (for flood zone purposes) and that are located in Coastal A-Zones shall be permitted to be dry floodproofed in accordance with Section G304.1.2. Such structure shall be dry floodproofed to or above the design flood elevation specified in ASCE 24, Table 6-1. Flood zone compliance plans shall include calculations demonstrating that the foundation and building, including flood shields if provided, will resist the wave action, including the combination of loads in ASCE 24, Section 1.6, to or above the design flood elevation.

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.

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.

G304.4.1.3 Conversion of space below the design flood elevation. Conversion of existing nonoccupiable 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.

G304.5 Additional construction standards with respect to connections for temporary external generators, boilers and chillers. In addition to the other requirements of this appendix, connections for temporary external generators, boilers and chillers shall be provided in accordance with Sections G304.5.1 through G304.5.4.

G304.5.1 Group I-1 and adult homes, enriched housing, community residences and intermediate care facilities.

An occupancy that is classified as Group I-1, or that is an adult home, enriched housing, community residence or intermediate care facility and classified as Group R pursuant to an exception to Section 308.3.1 or 308.3.2, shall comply with the following requirements:

1. **Connections for temporary external generators.** Electrical connections shall be provided allowing for the connection of temporary external generators capable of providing power for at least 72 hours for, at a minimum, the following systems:
 - 1.1. Exit signs and means of egress illumination required by Chapter 10 and serving such occupancy;
 - 1.2. Fire alarm systems serving such occupancy;
 - 1.3. For buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, at least one elevator that serves all floors; and
 - 1.4. Lighting in such occupancy, sufficient to maintain illumination in accordance with Section 1205.3, for (i) spaces primarily used for the provision of medical services to persons, including, but not limited to, consultation, evaluation, monitoring and treatment services and (ii) spaces intended to be used by persons for sleeping purposes.

Exception: Connections for temporary external generators shall not be required for buildings with emergency or standby power systems that are permanently installed above the design flood elevation specified in Table 7-1 of ASCE 24 and capable of providing power for at least 72 hours to the systems identified in Item 1 of Section G304.5.1. Natural gas shall be a permitted fuel supply.

2. **Flood protection for temporary external generator connections.** Electrical connections installed in accordance with Item 1 of Section G304.5.1 shall be located at or above the design flood elevation specified in Table 7-1 of ASCE 24.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

3. **Emergency connection plan.** Prior to sign-off of work by the department, a plan shall be submitted to the department that identifies how the temporary external generators will be connected and capable of providing power for the occupancy in accordance with Item 1 of Section G304.5.1 within 72 hours after failure of the normal power supply.

G304.5.2 Group I-2 hospitals. An occupancy that is a Group I-2 hospital shall comply with the following requirements:

1. **Connections for temporary external generators.** Electrical connections shall be provided allowing for the connection of temporary external generators capable of providing power for at least 72 hours for, at a minimum, the following systems:
 - 1.1. All electrical services serving such occupancy for which emergency or standby power must be provided in accordance with any other applicable local, state or federal law or rule; and
 - 1.2. Air conditioning and cooling systems serving such occupancy, sufficient to maintain temperature and humidity in accordance with Section 1204, for (i) spaces primarily used for the provision of medical services to persons, including, but not limited to, consultation, evaluation, monitoring and treatment services and (ii) spaces intended to be used by persons for sleeping purposes.

Exception: Connections for temporary external generators shall not be required for buildings that have emergency or standby power systems that are permanently installed above the design flood elevation specified in Table 7-1 of ASCE 24 and capable of providing power for at least 72 hours to the systems identified in Item 1 of Section G304.5.2. Natural gas shall be a permitted fuel supply.
2. **Connections for temporary external boilers and chillers.** Where boiler and chiller plants are located below the design flood elevation specified in Table 7-1 of ASCE 24 and serve (i) spaces primarily used for the provision of medical services to persons, including, but not limited to, consultation, evaluation, monitoring and treatment services or (ii) spaces intended to be used by persons for sleeping purposes, connections shall be provided to allow for the connection of temporary external boilers and chillers capable of maintaining temperature and humidity for such spaces in accordance with Section 1204 for at least 72 hours.
3. **Flood protection for temporary external generator, boiler and chiller connections.** Electrical connections installed in accordance with Item 1 of Section G304.5.2 and connections installed in accordance with Item 2 of Section G304.5.2 shall be located at or above the design flood elevation specified in Table 7-1 of ASCE 24.
4. **Emergency connection plan.** Prior to sign-off of work by the department, the following shall be submitted to the department:
 - 4.1. For an occupancy required to comply with Item 1 of Section G304.5.2, a plan that identifies how the temporary external generators will be connected and capable of providing power for the occupancy in accordance with such item within 72 hours after failure of the normal power supply; and
 - 4.2. For an occupancy required to comply with Item 2 of Section G304.5.2, a plan that identifies how the temporary external boilers and chillers will be connected and capable of maintaining temperature and humidity for specified spaces in accordance with Section 1204 within 72 hours after failure of the primary boiler and chiller plants.

G304.5.3 Group I-2 nursing homes. An occupancy that is a Group I-2 nursing home shall comply with Section G304.5.2.

Exception: Such occupancy is not required to comply with Items 1.2, 2 and 4.2 of Section G304.5.2.

G304.5.4 Group I-2 occupancies, other than hospitals and nursing homes. A Group I-2 occupancy, other than a hospital or a nursing home, shall comply with Section G304.5.1.

SECTION BC G305 MANUFACTURED HOMES

G305.1 Elevation. All new and replacement manufactured homes shall be prohibited in coastal high-hazard areas. Within A-Zones, all new, replaced or substantially improved manufactured homes shall be elevated such that the

lowest floor of the manufactured home is elevated to or above the design flood elevation as specified in ASCE 24, Table 2-1.

G305.2 Foundations. Within A-Zones, all new and replacement manufactured homes, including substantial improvement of existing manufactured homes, shall be placed on a permanent, reinforced foundation that is designed in accordance with ASCE 24.

G305.3 Anchoring. Manufactured homes shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. Methods of anchoring are authorized to include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.

G305.4 Protection of mechanical equipment and outside appliances. Mechanical equipment and outside appliances shall be elevated to or above the design flood elevation.

Exception: Where such equipment and appliances are designed and installed to prevent water from entering or accumulating within their components and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding up to the elevation required by ASCE 24, Table 2-1, the systems and equipment shall be permitted to be located below the elevation required by ASCE 24, Table 2-1. Electrical wiring systems shall be permitted below the design flood elevation provided they conform to the provisions of the *New York City Electrical Code*.

G305.5 Enclosures. Fully enclosed areas below elevated manufactured homes shall comply with the requirements of Section G304.1.1, Item 2.

SECTION BC G306 RECREATIONAL VEHICLES

G306.1 Placement prohibited. The placement of recreational vehicles shall not be authorized in coastal high-hazard areas or in floodways.

G306.2 Temporary placement in A-Zones. Recreational vehicles in A-Zones shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days.

G306.3 Permanent placement. Recreational vehicles in A-Zones that are not fully licensed and ready for highway use, or that are to be placed on a site for 180 or more consecutive days, shall meet the requirements of Section G305 for manufactured homes.

SECTION BC G307 TANKS

G307.1 Underground tanks. Underground tanks in special flood hazard areas shall be designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.2 Above-ground tanks. Above-ground tanks in special flood hazard areas shall be:

1. Elevated to or above the design flood elevation specified in ASCE 24, Table 7-1; or
2. Designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.3 Tank inlets and vents. In special flood hazard areas, tank inlets, fill openings, outlets and vents shall be:

1. Installed at or above the design flood elevation specified in ASCE 24, Table 7-1, or designed to prevent the inflow of floodwater and outflow of the contents of the tanks during conditions of flooding to the design flood elevation, in accordance with ASCE 24; and

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

2. Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.4 Additional fuel-oil storage capacity. Fuel-oil storage capacity in special flood hazard areas and shaded X-Zones shall comply with the following:

1. In special flood hazard areas, fuel oil on the lowest story having its floor above the applicable design flood elevation shall be limited to 3,000 gallons (11 356 L) and no storage tank may exceed the lesser of 1,500 gallons (5678 L) or the quantity of fuel-oil needed to operate the emergency or standby generator(s) served by such tank for 24 hours; and
2. In shaded X-Zones, fuel oil on the lowest story having its floor above the 500-year flood elevation shall be limited to 3,000 gallons (11 356 L) and no storage tank may exceed the lesser of 1,500 gallons (5678 L) or the quantity of fuel-oil needed to operate the emergency or standby generator(s) served by such tank for 24 hours.

G307.4.1 Additional requirements. Where fuel-oil storage capacity exceeds the quantity set forth in Section 1305.11.1.3 of the *New York City Mechanical Code*, the fuel-oil storage shall comply with Sections G307.4.1.1 and G307.4.1.2 in addition to Section 1305 of the *New York City Mechanical Code*.

††† **G307.4.1.1 Vault.** Each fuel-oil storage tank shall be separately enclosed in a vault complying with all of the following requirements:

1. The walls, floor, and top of such vault shall have a fire-resistance rating of not less than 3 hours;
2. The walls of such vault shall be bonded to the floor of such vault;
3. The top and walls of such vault shall be independent of the building structure;
4. An exterior building wall having a fire-resistance rating of not less than 3 hours shall be permitted to serve as a wall of such vault; and
5. The vault shall be located in a dedicated room or area of the building that is separated vertically and horizontally from other areas of the building by construction having a fire-resistance rating of not less than 2 hours.

G307.4.1.2 Extinguishing system. Fuel-oil storage shall be protected with an alternative automatic fire-extinguishing system complying with Section 904.

G307.5 Elevation of certain tanks and containers serving flood design class 4 buildings. The following tanks and containers shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, when serving flood design class 4 buildings. Such tanks and containers must be designed to maintain service to such structure during flood conditions and shall comply with Section 9.7 of ASCE 24:

1. Medical and compressed gas storage tanks, oxygen tanks, and other cryogenic system storage tanks;
2. Hazardous material storage tanks;
3. Stationary compressed gas containers;
4. Stationary cryogenic containers; and
5. Stationary flammable gas storage containers.

SECTION BC G308 OTHER BUILDING WORK

G308.1 Garages and accessory structures. Garages and accessory structures shall be designed and constructed in accordance with ASCE 24, Section 9.4.

G308.2 Fences. Fences in floodways that may block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the requirement of Section G103.5.

G308.3 Oil derricks. Oil derricks located in special flood hazard areas shall be designed in conformance with ASCE 24.

G308.4 Retaining walls, sidewalks and driveways. Retaining walls, sidewalks and driveways shall meet the requirements of Sections G303.6 and G303.7.

G308.5 Swimming pools. Swimming pools shall be designed and constructed in accordance with ASCE 24. Above-ground swimming pools, on-ground swimming pools and in-ground swimming pools that involve placement of fill in floodways shall also meet the requirements of Section G103.5.

G308.6 Decks, porches, and patios. Decks, porches and patios shall be designed and constructed in accordance with ASCE 24.

G308.7 Nonstructural concrete slabs in coastal high-hazard areas and coastal A-Zones. In coastal high-hazard areas and coastal A-Zones, nonstructural concrete slabs used as parking pads, enclosure floors, landings, decks, walkways, patios and similar nonstructural uses are permitted beneath or adjacent to buildings and structures provided that the concrete slabs shall be constructed in accordance with ASCE 24, Section 9.3.

G308.8 Roads and watercourse crossings in regulated floodways. Roads and watercourse crossings that encroach into regulated floodways, including roads, bridges, culverts, low-water crossings and similar means for vehicles or pedestrians to travel from one side of a watercourse to the other, shall meet the requirement of Section G103.5.

G308.9 Temporary flood shields. Temporary flood shields shall be permitted in accordance with Section 6.2.3 of ASCE 24. Temporary flood shields shall be located and arranged so as to allow hose lines to be attached to the inlets of fire department connections without interference in accordance with Section 6.4.5 of NFPA 14 as modified by Appendix Q. Where temporary flood shields extend beyond the property line, Section 3202 for permitted encroachments into the public right-of-way shall apply.

G308.10 Temporary stairs and ramps. Temporary stairs and ramps shall comply with the requirements of Sections G308.10.1 and G308.10.2. Temporary stairs and ramps shall be located and arranged so as to allow hose lines to be attached to the inlets of fire department connections without interference in accordance with Section 6.4.5 of NFPA 14, as modified by Appendix Q. Where temporary stairs and ramps extend beyond the property line, Section 3202 for permitted encroachments into the public right-of-way shall apply.

G308.10.1 Evacuated buildings. Temporary stairs and ramps shall be permitted to provide elevated ingress and egress in compliance with Item 3 of Section 6.2.2 of ASCE 24 for buildings or portions of buildings that are planned to be evacuated during design flood conditions, except for maintenance and emergency personnel, provided that such temporary stairs and ramps shall not be permitted to serve as a required means of egress for a dwelling unit or for any area described in Item 2.2.1 of Section G304.1.2 required to be located at or above the design flood elevation.

G308.10.2 Existing buildings. Temporary stairs and ramps for an existing building or portions thereof shall be permitted to provide elevated ingress and egress in compliance with Item 3 of Section 6.2.2 of ASCE 24, including as a required means of egress for dwelling units or for areas described in Item 2.2.1 of Section G304.1.2 required to be located at or above the design flood elevation, where such temporary stairs and ramps comply with Sections 1009 and 1010.

G308.11 Alterations to pre-FIRM buildings involving flood protective works. Where alterations to pre-FIRM buildings within the flood hazard area, other than substantial improvements or horizontal enlargements, include the installation of flood protective works, compliance with ASCE 24, Section 6.2.2 shall be required. Flood protective works shall be located and arranged so as to allow hose lines to be attached to the inlets of fire department connections without interference in accordance with Section 6.4.5 of NFPA 14, as modified by Appendix Q of this code.

SECTION BC G309 TEMPORARY STRUCTURES AND TEMPORARY STORAGE

G309.1 Temporary structures. Temporary structures shall be erected for a period of less than 180 days. Temporary structures shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of the base flood. Fully enclosed temporary structures shall have flood openings that are in accordance with ASCE 24 to allow for the automatic entry and exit of floodwaters.

G309.2 Temporary storage. Temporary storage includes storage of goods and materials for a period of fewer than 180 days. Stored materials shall not include hazardous materials.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

G309.3 Floodway encroachment. Temporary structures and temporary storage in floodways shall meet the requirements of Section G103.5.

SECTION BC G310 UTILITY AND MISCELLANEOUS GROUP U

G310.1 Utility and miscellaneous Group U. Section G310 shall govern utility and miscellaneous Group U, including buildings that are accessory in character and miscellaneous structures not classified in any specific occupancy in this code, including, but not limited to, agricultural buildings, aircraft hangars (accessory to a one- or two-family residence), barns, carports, fences more than 6 feet (1829 mm) high, grain silos (accessory to a residential occupancy), greenhouses, livestock shelters, private garages, retaining walls, sheds, stables and towers.

G310.2 Flood loads. Utility and miscellaneous Group U buildings and structures, including substantial improvement of such buildings and structures, shall be anchored to prevent flotation, collapse or lateral movement resulting from flood loads, including the effects of buoyancy, during conditions of the design flood.

G310.3 Elevation. Utility and miscellaneous Group U buildings and structures, including substantial improvement of such buildings and structures, shall be elevated such that the lowest floor, including basement, is elevated to or above the design flood elevation specified in ASCE 24, unless otherwise permitted to comply with requirements of Section 9.4 of ASCE 24.

G310.4 Enclosures below design flood elevation. Fully enclosed areas below the design flood elevation shall be constructed in accordance with Section G304.

G310.5 Flood-damage-resistant materials. Flood-damage-resistant materials shall be used below the design flood elevation.

G310.6 Protection of mechanical, plumbing and electrical systems. Mechanical, plumbing and electrical systems, including plumbing fixtures, 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 in compliance with Section G304.1.2, Item 2.3 and other applicable flood-resistant construction requirements of this code.

Electrical wiring systems shall be permitted to be located below the design flood elevation provided they conform to the provisions of the *New York City Electrical Code* and Section 7.2 of ASCE 24.

SECTION BC G311 HAZARDOUS SUBSTANCES

G311.1 Hazardous substances. Portable containers located in the flood hazard area that store hazardous substances, as defined in Section 41-03 of Title 15 of the *Rules of the City of New York*, shall comply with Section 41-14 of Title 15 of the *Rules of the City of New York*.

SECTION BC G312 RETROACTIVE REQUIREMENTS

G312.1 General. Notwithstanding any other provision of the *New York City Construction Codes*, the provisions of this section shall apply retroactively to all buildings and structures specified herein.

G312.2 Connections for temporary external generators. The following buildings shall be provided with connections for temporary external generators in accordance with Sections G304.5.1 through G304.5.4, as applicable, by January 1, 2033, and a report detailing compliance with such requirements shall be filed with the department in accordance with Section G312.2.2 by such date:

1. Buildings whose main use or dominant occupancy is Group I-1 and that are located in a special flood hazard area;
2. Buildings whose main use or dominant occupancy is an adult home, enriched housing, community residence or intermediate care facility that is classified as occupancy Group R pursuant to an exception to Section 308.3.1 or 308.3.2 and that are located in a special flood hazard area;
3. Buildings whose main use or dominant occupancy is Group I-2 hospital and that are located in a special flood hazard area or shaded X-Zone;
4. Buildings whose main use or dominant occupancy is Group I-2 nursing home and that are located in a special flood hazard area; and
5. Buildings whose main use or dominant occupancy is Group I-2, other than hospitals and nursing homes, and that are located in a special flood hazard area.

G312.2.1 Modification to the flood hazard area. Where the special flood hazard area or shaded X-Zone is modified on or after the effective date of this section, any building identified in Section G312.2 and newly identified as being within such modified special flood hazard area or shaded X-Zone shall, no later than 20 years following the adoption of such modification, comply with the retroactive requirements of Section G312.2. The owner of such building shall, no later than 20 years following the adoption of such modification, file with the department a report detailing compliance with such requirements in accordance with Section G312.2.2.

G312.2.2 Report of compliance. The owner of a building required to comply with the provisions of Section G312.2 shall file with the department, by January 1, 2033, a report prepared by a registered design professional or licensed master electrician (i) certifying that the requirements of Section G312.2 have been satisfied and detailing how such requirements were satisfied or (ii) certifying that the building met or was altered to meet the provisions of any applicable exception in Sections G304.5.1 or G304.5.2.

G312.2.3 Filing. The department may promulgate rules establishing filing fees for the review and examination of such reports.

G312.3 Connections for temporary external boilers and chillers. Buildings whose main use or dominant occupancy is Group I-2 hospital and that are located in a flood hazard area shall be provided with connections for temporary external boilers and chillers in accordance with Section G304.5.2 by January 1, 2033, and a report detailing compliance with such requirements shall be filed with the department in accordance with Section G312.3.2 by such date.

G312.3.1 Modification to the flood hazard area. Where the special flood hazard area or shaded X-Zone is modified on or after the effective date of this section, any building whose main use or dominant occupancy is Group I-2 hospital and that is newly identified as being within such modified special flood hazard area or shaded X-Zone shall comply with the retroactive requirements of Section G312.3 no later than 20 years following the adoption of such modification. The owner of such building shall file with the department a report detailing compliance with such requirements in accordance with Section 312.3.2 no later than 20 years following the adoption of such modification.

G312.3.2 Report of compliance. The owner of a building required to comply with the provisions of Section G312.3 shall file with the department, by January 1, 2033, a report prepared by a registered design professional (i) certifying that the requirements of Section G312.3 have been satisfied and detailing how such requirements were satisfied or (ii) certifying that any boiler and chiller plants that serve the spaces specified in Item 2 of Section G304.5.2 are located at or above the design flood elevation specified in Table 7-1 of ASCE 24.

G312.3.3 Filing. The department may promulgate rules establishing filing fees for the review and examination of such reports.

SECTION BC G401 REFERENCED STANDARDS

G401.1 General. This section lists the standards that are referenced in various sections of this appendix. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

G401.2 Subsequent additions, modifications or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the *Administrative Code*.

G401.3 Applicability. The application of the referenced standards shall be as specified in Section G105.1.

SECTION BC G402 STANDARDS

ASCE 7-16	Minimum Design Loads and Associated Criteria for Buildings and Other Structures	G104.2.3.2, G304.2
ASCE 24-14*	Flood Resistant Design and Construction	G101.3, G102.1, G103.1, G104.2.1, G104.2.3.1, G104.2.3.2, G107.2, G107.3, G107.4, G301.1, G303.3, G303.4, G303.5, G303.8, G304.1, G304.1.1, G304.1.2, G304.2, G304.3, G304.4, G304.4.1.1, G304.5.1, G305.1, G305.2, G305.4, G307.1, G307.2, G307.3, G307.5, G308.1, G308.3, G308.5, G308.6, G308.7, G308.9, G308.10.1, G308.10.2, G308.11, G309.1, G310.3, G310.6, G312.3.2

*As modified in Section G501.

FEMA FIS 360497	Flood Insurance Study, Community Number 360497, Revised September 5, 2007 Federal Emergency Management Agency	G102.2, G102.2.1, G102.2.2, G102.3.1.1, G103.3.2
FEMA PFIS 360497	Preliminary Flood Insurance Study, Issued December 5, 2013, Community Number 360497, Federal Emergency Management Agency	G102.2.1, G102.2.2, G102.3.1.1, G102.3.2
FEMA FIRMs 360497	Flood Insurance Rate Map, Community Number 360497, Panel Numbers 1 through 0457, Revised September 5, 2007, Federal Emergency Management Agency, with the following Letters of Map Revision: <i>Letter of Map Revision effective September 29, 2008, FEMA case # 08-02-0948P, revising FIRM panel 0111</i> and <i>Letter of Map Revision effective April 18, 2018, FEMA case # 17-02-1503P,</i>	G102.2, G102.2.2, G102.3, G102.3.1, G102.3.2, G103.3.1, G103.3.2

	<i>revising FIRM panels 0092F, 0094F, 0111F, and 0113F.</i>	
FEMA PFIRMs 360497	Preliminary Flood Insurance Rate Map, Community Number 360497, Issued December 5, 2013; Revised January 30, 2015, as applicable; Federal Emergency Management Agency	G102.2.1, G102.2.2, G102.3.1.1, G102.3.2.1
FEMA FORM 086-0-34	Floodproofing Certificate; Federal Emergency Management Agency	G107.3
FEMA FORM 086-0-33	Elevation Certificate; Federal Emergency Management Agency	G107.3
HUD 24 CFR Part 3280-08	Manufactured Home Construction and Safety Standards, 2008	G201.1.2
NFPA 14-16*	Standard for the Installation of Standpipe and Hose Systems	G304.1.2, G308.9, G308.10, G308.11

*As modified in Appendix Q.

SECTION BC G501 MODIFICATIONS TO REFERENCED STANDARDS

G501.1 Amendments to ASCE 24-14. The following amendments are hereby made to the applicable sections of ASCE 24-14. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to this standard in accordance with Section 28-103.19 of the *Administrative Code*.

Section 1.1. Section 1.1 (Scope) is amended by deleting the sentence “In addition to the requirements of this section (see Fig. 1-2):” and Items 1 through 4, and by adding the following paragraph to read as follows:

In addition to the requirements of this section, the applicability of this standard is as provided for in Section G102.1 of the *New York City Building Code*, Appendix G.

Section 1.1. Figure 1-2 (Application of Chapters) of Section 1.2. Delete.

Section 1.1.1. A new Section 1.1.1 is added to read as follows:

1.1.1 High-risk flood hazard areas. Notwithstanding any other provision in this standard, no special flood hazard area in New York City shall be classified as alluvial fan area, flash flood area, mudslide area, ice jam and debris area, erosion-prone area, high-velocity flow area.

Section 1.2. Section 1.2 (Definitions) is amended by modifying only the following definitions to read as follows:

Breakaway wall—As defined in Section G201 of the *New York City Building Code*, Appendix G.

Design flood elevation—The applicable elevation specified in Table 2-1, 4-1, 5-1, 6-1, or 7-1, depending on the flood design classification designated in Table 1-1.

High-risk flood hazard area—An area designated as a coastal high-hazard area, being those areas identified on the FIRM as a V-Zone or Coastal A-Zone.

Nonresidential—Defined as Nonresidential (for flood zone purposes) in Section G201 of the *New York City Building Code*, Appendix G.

Residential—Defined as Residential (for flood zone purposes) in Section G201 of the *New York City Building Code*, Appendix G.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

Section 1.4.3. Table 1-1 of Section 1.4.3 (Classification of Structures) is amended to read as follows:

**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: 1. certain temporary structures that are in place for less than 180 days, 2. accessory storage buildings and minor storage facilities, 3. small structures used for parking of vehicles, and 4. 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: 1. 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; 2. museums; 3. community centers and other recreational facilities; 4. athletic facilities with seating for spectators; 5. elementary schools, secondary schools, and buildings with college or adult education classrooms; 6. jails, correctional facilities, and detention facilities; 7. healthcare facilities not having surgery or emergency treatment capabilities; 8. care facilities where residents have limited mobility or ability, including nursing homes but not including care facilities for five or fewer persons; 9. preschool and child care facilities not located in one- and two-family dwellings; 10. 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 11. 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 established by the authority having jurisdiction and is sufficient to pose a threat to the public if released.^b	3

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:	
- 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

- a. Certain agricultural structures may be exempt from some of the provisions of this standard; see Section C1.4.3.
- b. Buildings and other structures containing toxic, highly toxic, or explosive substances shall be eligible for assignment to a lower Flood Design Class if it can be demonstrated to the satisfaction of the authority having jurisdiction by a hazard assessment as described in Section 1.5.3 of *Minimum Design Loads for Buildings and Other Structures* that a release of the substances is commensurate with the risk associated with that Flood Design Class.

Section 2.3. Table 2-1 of Section 2.3 (Elevation Requirements) is amended to read as follows:

TABLE 2-1
MINIMUM ELEVATION OF THE TOP OF LOWEST FLOOR FLOOD HAZARD AREAS OTHER THAN COASTAL
HIGH-HAZARD AREAS^a, COASTAL A-ZONES^a

FLOOD DESIGN CLASS ^b	MINIMUM ELEVATION, RELATIVE TO BASE FLOOD ELEVATION (BFE) OR DESIGN FLOOD ELEVATION (DFE)
1 ^c	DFE = BFE + 2 ft
2 ^d	DFE = BFE + 2 ft
3 ^d	DFE = BFE + 2 ft
4 ^d	DFE = BFE + 2 ft, or 500-year flood elevation, whichever is higher

- a. Minimum elevations shown in Table 2-1 do not apply to Coastal High-Hazard Areas and Coastal A-Zones (see Table 4-1). Minimum elevations shown in Table 2-1 apply to other high risk flood hazard areas unless specific elevation requirements are given in Section 3 of this standard.
- b. See Table 1-1 for Flood Design Class descriptions.
- c. Flood Design Class 1 structures shall be allowed below the minimum elevation where the structure is permitted to be wet floodproofed in accordance with the requirements of Section 6.3.1 and is wet floodproofed in accordance with Section 6.3.2.
- d. For nonresidential buildings and nonresidential portions of mixed-use buildings, the lowest floor shall be allowed below the minimum elevation if the structure meets the floodproofing requirements of Section 6.2.

Section 4.4. Table 4-1 of Section 4.4 (Elevation Requirements) is amended to read as follows:

TABLE 4-1
MINIMUM ELEVATION OF BOTTOM OF LOWEST SUPPORTING HORIZONTAL STRUCTURAL MEMBER OF LOWEST
FLOOR COASTAL HIGH-HAZARD AREAS AND COASTAL A-ZONES

FLOOD DESIGN CLASS ^a	MINIMUM ELEVATION, RELATIVE TO BASE FLOOD ELEVATION (BFE) OR DESIGN FLOOD ELEVATION (DFE)
---------------------------------	---

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

1	DFE = BFE + 2 ft
2	DFE = BFE + 2 ft
3	DFE = BFE + 2 ft
4	DFE = BFE + 2 ft, or 500-year flood elevation, whichever is higher

a. See Table 1-1 Flood Design Class descriptions.

Section 4.6.1. Section 4.6.1 (Breakaway Walls) is amended by adding the following sentence:

All breakaway walls enclosing spaces below the DFE in coastal high-hazard area shall be open lattice, and not solid, with such enclosed spaces constructed as unconditioned per the *New York State Energy Conservation Construction Code*.

Section 5.1. Table 5-1 of Section 5.1 (Materials, General) is amended to read as follows:

**TABLE 5-1
MINIMUM ELEVATION BELOW WHICH FLOOD-DAMAGE-RESISTANT MATERIALS SHALL BE USED**

FLOOD DESIGN CLASS ^a	MINIMUM ELEVATION IN FLOOD HAZARD AREAS, OTHER THAN COASTAL HIGH-HAZARD AREAS AND COASTAL A-ZONES, RELATIVE TO DESIGN FLOOD ELEVATION (DFE)	MINIMUM ELEVATION IN COASTAL HIGH-HAZARD AREAS AND COASTAL A-ZONES, RELATIVE TO DESIGN FLOOD ELEVATION (DFE)
1	DFE = BFE + 2 ft	DFE = BFE + 2 ft
2	DFE = BFE + 2 ft	DFE = BFE + 2 ft
3	DFE = BFE + 2 ft	DFE = BFE + 3 ft
4	DFE = BFE + 2 ft, or 500-year flood elevation, whichever is higher	DFE = BFE + 3 ft, or 500-year flood elevation, whichever is higher

a. See Table 1-1 Flood Design Class descriptions.

Section 5.2.6. Section 5.2.6 (Finishes) shall be amended to read as follows:

5.2.6 Finishes and other materials. Interior and exterior finishes, as well as any materials not otherwise provided for in Sections 5.2.1 through 5.2.5, shall be flood damage-resistant materials in accordance with FEMA Technical Bulletin 2/August 2008, Flood Damage-Resistant Materials Requirement for Buildings Located in special flood hazard areas, or shall be required to be approved by the authority having jurisdiction.

Section 6.2. Table 6-1 of Section 6.2 (Dry Floodproofing) is amended to read as follows:

**TABLE 6-1
MINIMUM ELEVATION OF FLOODPROOFING FLOOD HAZARD AREAS OTHER THAN COASTAL HIGH-HAZARD AREAS^a**

FLOOD DESIGN CLASS ^b	MINIMUM ELEVATION OF FLOODPROOFING ^c RELATIVE TO DESIGN FLOOD ELEVATION (DFE)
1	DFE = BFE + 2 ft
2 ^d	DFE = BFE + 2 ft
3	DFE = BFE + 2 ft

4	DFE = BFE + 2 ft, or 500-year flood elevation, whichever is higher
---	--

- a. Dry floodproofing is not allowed in Coastal High-Hazard Areas.
- b. See Table 1-1 for Flood Design Class descriptions.
- c. Wet or dry floodproofing shall extend to the same level.
- d. Dry floodproofing shall not be permitted (i) in buildings that are “residential for flood zone purposes”; (ii) for certain systems and equipment as provided for in Section G304.1.2, Item 2.3.1 of the *New York City Building Code*; and (iii) for dwelling units and spaces directly accessed from dwelling units in buildings that are “nonresidential for flood zone purposes”.

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, the commissioner has authorized the dry floodproofing in accordance with Exception 1.

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;

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
 - 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; 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:
 - 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.
- 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.
- 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.
- 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.
- 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.
- 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.
 - 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.

- 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.
- 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.
 - 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.

Section 6.2.3. Section 6.2.3 (Limits on Human Intervention) is amended to read as follows:

Section 6.2.3 Limits on human intervention. Dry floodproofing measures that require human intervention to activate or implement prior to or during a flood, including temporary stairs or ramps, shall be permitted only when all of the following conditions are satisfied:

1. The flood warning time (alerting potential flood victims of a pending flood situation) shall be a minimum of 12 h unless the community operates a flood warning system and implements an emergency plan to ensure safe evacuation of flood hazard areas, in which case human intervention is allowed only if the community can provide a minimum flood warning time equal to or longer than the cumulative time:
 - (a) to notify persons responsible for installation of floodproofing measures,
 - (b) for responsible persons to travel to structure to be floodproofed,
 - (c) to install, activate, or implement floodproofing measures, and
 - (d) to evacuate all occupants from the flood hazard area.
2. All removable shields or covers for openings such as windows, doors, and other openings in walls and temporary stairs or ramps shall be designed to resist flood loads specified in Section 1.6.
3. Where removable shields or temporary stairs or ramps are to be used, a flood emergency plan shall be approved by the authority having jurisdiction and shall specify, at a minimum, the following information: storage locations of the shields and temporary stairs and ramps; the method of installation and removal; conditions activating installation and removal; maintenance of shields and attachment devices and temporary stairs and ramps; periodic practice of installing and removing shields and temporary stairs and ramps; testing sump pumps and other drainage measures; and inspecting necessary material and equipment to activate or implement floodproofing. The flood emergency plan shall be posted permanently in at least two conspicuous locations within the structure.
4. Where removable shields or temporary stairs or ramps are to be used, they shall be stored on site within a building or within a secured, weather-resistant enclosure. Off-site storage shall be prohibited for buildings required to comply with Section G304.

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

5. Where removable shields or temporary stairs or ramps are proposed as per Section G304, periodic inspections, including a triennial full scale deployment, shall be conducted in accordance with Article 324 of the *Administrative Code*.

Section 7.1. Table 7-1 of Section 7.1 (General) is amended to read as follows (see Table 7-1 below):

TABLE 7-1
MINIMUM ELEVATION OF ATTENDANT UTILITIES AND EQUIPMENT

FLOOD DESIGN CLASS ^a	LOCATE ATTENDANT UTILITIES AND EQUIPMENT ABOVE ^b	
	MINIMUM ELEVATION IN FLOOD HAZARD AREAS, OTHER THAN COASTAL HIGH-HAZARD AREAS AND COASTAL A-ZONES, RELATIVE TO DESIGN FLOOD ELEVATION (DFE)	MINIMUM ELEVATION IN COASTAL HIGH-HAZARD AREAS AND COASTAL A-ZONES, RELATIVE TO DESIGN FLOOD ELEVATION (DFE)
1	DFE = BFE + 2 ft	DFE = BFE + 2 ft
2	DFE = BFE + 2 ft	DFE = BFE + 2 ft
3	DFE = BFE + 2 ft	DFE = BFE + 3 ft
4	DFE = BFE + 2 ft, or 500-year flood elevation, whichever is higher	DFE = BFE + 3 ft, or 500-year flood elevation, whichever is higher

a. See Table 1-1 for Flood Design Class descriptions.

b. Locate attendant utilities and equipment above elevations shown unless otherwise provided in Chapter 7 of ASCE 24.

Section 7.2.4. Section 7.2.4 (Panelboards, Disconnect Switches, and Circuit Breakers) is amended to read as follows:

7.2.4 Panelboards, Disconnect Switches, and Circuit Breakers. The panelboards, load centers, main disconnect switches, all service disconnecting means, and all circuit breakers shall be located above and be accessible from the elevation specified in Table 7-1, or within a dry floodproofed enclosure, except where prohibited by the *New York City Building Code*. Panelboards, load centers, main disconnect switches, all service disconnecting means, and circuit breakers shall be located no more than 6 feet 7 inches (2 m) above the floor, or a platform shall be installed to provide access.

Section 7.3.3. Section 7.3.3 is amended to read as follows:

7.3.3 Plumbing systems installed below minimum elevations. Plumbing systems and components, including plumbing fixtures, shall be elevated above the elevation specified in Table 7-1. Where plumbing systems and components have openings below the elevation specified in Table 7-1, the openings shall be protected with automatic backwater valves or other automatic backflow devices. Devices shall be installed in each line that extends below the DFE to prevent release of sewage into floodwaters and to prevent infiltration by floodwaters into the plumbing. Redundant devices requiring human intervention shall be permitted. Plumbing systems shall be provided with backwater valves in the building drain at its point of exit from the building and downstream of the building trap.

Section 7.3.4. Section 7.3.4 is amended to read as follows:

7.3.4 Sanitary systems. Sanitary systems shall be designed to minimize infiltration of flood waters into the systems and discharges from the systems into floodwaters. Vents and openings shall be above the elevation specified in Table 7-1. Sanitary system storage tanks shall be designed, constructed, installed, and anchored to resist at least 1.5 times the potential buoyant and other flood forces acting on an empty tank during design flood conditions. Tanks and piping shall be installed to resist local scour and erosion. Sanitary systems shall be provided with backwater valves at the point of exit from the building and downstream of the building trap. Sanitary systems that must remain operational during or immediately after the design flood or lesser floods shall be equipped with a sealed storage tank that is sized to store at least 150% of the anticipated sewage flow associated with occupancy during flood conditions and during subsequent periods of saturated soil when sewage will not percolate.

Section 7.5.2. A new section 7.5.2 is added to read as follows:

7.5.2 Elevator signage. Where there is potential for an elevator cab to descend below the elevation specified in Table 7-1 into a wet floodproofed space, the elevator shall be equipped with controls that will prevent the cab from descending into floodwaters. Permanent, durable, and washable signage shall be placed in the elevator cab and in the elevator lobby on any story subject to flooding, stating that “In the event of flooding, water sensors in the elevator shaft will prevent the elevator from descending to [description of story, e.g., ground floor, first floor, parking level, etc.] and will automatically cause the elevator to rise to [description of story, e.g., second floor, mezzanine, etc.].”

Section 8.1. Section 8.1 (General) is amended to read as follows:

8.1 General. Stairways and ramps, including stairs and ramps pursuant to Section G308.10 of the *New York City Building Code*, that are located below the elevations specified in Tables 2-1 and 4-1 shall be designed and constructed to:

1. Resist flood-related loads specified in Section 1.6 and minimize transfer of flood-related loads to the structure and structure foundation; or
2. Break away during design flood conditions without causing damage to the structure, including the foundation; or
3. Use materials that conform to Chapter 5 for those portions of stairways and ramps that are located below the elevations specified in Tables 2-1 and 4-1, including items such as gates and doors.

In flood hazard areas other than Coastal High-Hazard Areas and Coastal A-Zones, enclosures for stairways and ramps that extend below the elevations specified in Table 2-1 shall conform to the requirements for enclosures in Section 2.7. In Coastal High-Hazard Areas and Coastal A-Zones, enclosures for stairways and ramps that extend below the elevations specified in Table 4-1 shall conform to the requirements for enclosures in Section 4.6.

Elevators shall conform to the requirements of Section 7.5.

Section 9.4.1. The second sentence of the first paragraph of Section 9.4.1 (Attached Garages, Carports, and Accessory Storage Structures) is amended to read as follows:

Wet floodproofed garages and carports are permitted below elevations specified in Table 2-1 provided the lowest level of the garage, carport or accessory storage structure is at or above grade on at least one side, the garage, carport or accessory storage structure walls meet the opening requirements of Section 2.7, and the lowest level of the garage, carport or accessory storage structure is not classified as a “lowest floor” pursuant to Appendix G of the *New York City Building Code*.

Section 9.7. The first sentence of Section 9.7 (Tanks) is amended to read as follows:

Tanks and tank inlets, fill openings, outlets, and vents shall terminate in accordance with Section G307.3 of the *New York City Building Code* or where located below the design flood elevation, shall be designed, constructed, installed, and anchored to resist all flood-related and other loads, including the effects of buoyancy, during flooding up to and including the design flood and without release of contents into floodwaters or infiltration of floodwaters into the tanks.

**SECTION BC G601
RESERVED**

**SECTION BC G701
RESERVED**

**SECTION BC G801
RESERVED**

APPENDIX G—FLOOD-RESISTANT CONSTRUCTION

**SECTION BC G901
RESERVED**

**SECTION BC G1001
RESERVED**

**SECTION BC G1101
RESERVED**