Sci Fri - Sept 1, 2017

Guest: Simon Koster
Principal - JDS Developers
Project in NYC
1st Ave (626 1st Ave Copper Building)
@ time of H. Sandy
Modified plans to build for "Resiliancy"
Elec. Utilities/Systems all went to 2nd Fl. location
Modification of NYC Building Code "Appendix G"
(Glass & (Marble?) Floor in Lobby)

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Comments to Olympia Planning Commission on Draft DTS: Some Thoughts on Sea Level Rise Response Planning

Dear Commissioners and Participants:

1. Introduction

First and foremost I wish to convey my sincere appreciation to the City of Olympia Community Planning and Development Department staff (Lead: Amy Buckler, CPD), to MAKERS Architecture and Urban Design (Consulting Group, John Owen, Rachel Miller et al), to Andy Haupt (Lead: Public Works [PW]) and all partners and participants for the sheer volume of work involved in undertaking an effort of such great complexity, for an urban design project of a relatively compact downtown core.

Although I had some doubts, even mistrust, at the outset of the (public) planning process, the efforts at engaging the challenges of both physical geography on the one hand, and the desire to incorporate a fully inclusive balance of distinct social and cultural groupings, has been evident and praiseworthy. At the same time there is a recognizable tacit acknowledgment of the overarching imperative to ensure the longevity of a municipality that continues to thrive in it's social, cultural, environmental and economic health and well-being.

It is my hope, without having great knowledge of such matters as urban planning, architectural construction design, provision of infrastructure, and Engineering Design and Development Standards (EDDS), that my comments in a particularly circumscribed area (Sea Level Rise Response) may be taken in a spirit of intended hopeful contribution.

2. Clarifying and Synchronizing Disparate Planning Horizons and Scenarios in Time

Issue: Currently, there are two distinct and disparate time-frame horizons evident in the DTS planning documents that do not correspond to each other in their impact outcomes, as relates to Sea Level Rise Response Planning.

2.A) The DTS proper; "Summary: Volume 1", along with other "Elements: Volume 2" chapters delineate an implied time horizon of 20 years for the relevant planning and design and (re)development actions of the construction projects under consideration in its text, and by verbal communication through the public planning process. The population growth and modeling projections of 5000 new residents in the DT Core are also based on this planning horizon.

An implied base reference year is 2015 followed by a 6 year implementation of updated design guidance and updated zoning and development standards, with marketing and full realization of the cohort of projects over a 20 year period, from 2015 – 2035.

2.B) The Sea Level Rise Response Plan (SLR, LU-1), however, although presumably integrated into the DTS at an appropriate and opportune time early in the process, is, in public presentations and discussion (Feb 8, 2017 and earlier presentations to City Council), indicating a preferred **planning horizon**, based on rational and accepted local sea level rise projections (by accepted authorities) in a 50 year **horizon**, this being down-selected from an even more severe 100 year **impact** and **planning horizon**.

2.C) Implications for scenario development:

2.C.1) If planned developments proceed as described in the planning documents (Land Use Element chapter, and Design Element chapter) north of Legion Avenue out to the Port Peninsula (the tidal flooding affected area), with "mixed use", with 4 story, 5 story, 6 story and 7 story structures; and with mixed public/private mitigation measures being employed in design guidelines for such development (raised grade elevations and flood walls/automatic flood gates for developers; elevated walking pathway berms/levees and automatic tidal flood gates to prevent back-flow for surface and stormwater incursion into outfall pipes at waterfront for public works projects), then pursuing the 50 year **Horizon (to that design criteria)**, the Sea Level Rise Response plan would be advantageous for longevity of the built structures and infrastructure of those "character areas" affected (including "Tech/Artisanal" area in NE section) because Sea Level Rise Response planning would be to design for more stringent requirements – a 50 year flood mitigation design rather than a 20 year design criteria, because in 50 years Sea Level Rise is expected to be more severe than in 20 years time, and so is the corresponding potential for flooding.

2.C.2) If, on the other hand, another urban redevelopment planning effort ensues with an infusion of mixed investment funds and sources in the same area of the downtown core, in 25 – 30 years, at the end of the current 20 year cycle, – a scenario for which I have no idea of efficacy or likelihood, then it may be equivocal to plan currently at the 50 year design Horizon because the presumed knowledge of Sea Level Rise due to climate change, the specificity of its local impacts, the time and spatial resolution of its effects, would be presumed to be of greater reliability and experience. There would also likely be a more extensive configuration of mitigating, adaptive technologies to choose from, and a greater range of "materials" and methods to select in the design and construction of built structures and infrastructure to withstand the onslaught of saline marine incursion and inundation. **In this case a 50 year planning horizon would be obsolete.**

2.C.3) Sea Level Rise related tidal flooding in the affected area north of Legion Avenue will have a range of **variability** – in the frequency of flood events, in the severity or intensity of flood events, and in the duration of flood events. There would be typical expectations based on the scientific knowledge and understandings of the dynamics at work, even in the local case of our own community, and the typical expectations would tend to congregate around a central measure of how often the events occur, how severe or intense is the flood event, and the typical duration of an event. **But, there will be events that diverge from what is typical or expected.** The measure of dispersion or variability of these events remains to be observed, and experienced. Even if the Sea Level Rise Response Plan (SLR, LU-1) is adopted for the 50 year planning horizon, lending more stringent design criteria for flood mitigation, there would still be a chance for a severe departure from the expected (if the distribution is in fact Gaussian, [a Bell Shaped curve]). What if, by some slight chance, there is an event that exceeds the 100 year sea level rise expectation (this is a different metric than what we know as a 100 year flood in storm language). What if there is an event greater than 3 or 4 Standard Deviations from the mean in year 2027? Will the 50 year planning horizon design criteria be sufficient for a normal recovery with only minor inconveniences? I am not sure we have the knowledge and information base apropos to make reliable probability estimations with the corresponding temporal and spatial resolution necessary for design criteria precision (at this time). And if we did, at what probability level would it be appropriate to design for?

2.C.4) In the "Tech/Artisan" character area delineated in the NE of the Port Peninsula, which is without doubt an exciting planning area for its varied function and design characteristics, (which I believe would be inclusive of some level of Light Industrial activity), is it foreseeable that any of the productive activities would necessitate NPDES Permits, or, even if within the SEPA exemption zone, how would

technological/environmental risk be assessed? Would effluent discharge be monitored in the dilution zone of East Bay discharge outfall or in the confluence of East Bay/West Bay discharges, or would effluent discharge be directed to traverse through the LOTT facility (as I am sure would sanitary waste discharge)?

3. Residential Building Structures as Technological Systems: (EDDS)

Issue/Assertion: Building structures (as well as street-scape structures [and their underlying infrastructure]) are technological systems, with distinct internal and external functions. The subsystems, and the social organization, that constitute these whole systems are subject to the ways and limits of nature's provisioning and the configuration of their fit.

3.A) With reference specifically to the Sea Level Rise Response Plan (SLR, LU-1); in the event of an exceptional, out-lier occurrence of a failure mode of the planned public/private mitigating measures for sea level rise flooding, in the most vulnerable, prone areas: are there ways to incorporate design guidelines for the materials and configuration of the buildings themselves to remain resilient to inundation and/or incursion?

3.A.1) In the **site plan** of a development project, are there ways to protect electrical power distribution, or on-site electrical power generation, and the provisioning of domestic, potable water, and relevant on-site HVAC pumps, condensers, machinery from the corrosive effects of saline, marine water that comes in contact with these facilities. If there are ways to configure these facilities for protection, in the case of contact, what are the likely marginal costs for such direct protection; would it be feasible? Or is prevention of direct contact really the only way to mitigate flood events in the physical geography of the affected areas?

3.A.2) Similarly, in the design guidelines for **building construction(s)** proper are there ways to design the structure for internal, resilient protection of the fore-mentioned subsystems in the case of marine water incursion, internally in the building? Are there "materials" to use in the subterranean and ground floor segments of the construction which would be resistant and impervious to flood waters at a moderate incursion for a limited time period? Or, if not, is it possible (and feasible) to design pass-through systems where incursion water passes through the structure and exits one of the other sides of the structure in appropriate timing and flows?

3.A.3) Is it feasible to locate **all** of the technological subsystems; power distribution and control, domestic water distribution (pumps, etc.) and control, and HVAC systems and control, in an upper story (perhaps a 2nd floor story would be sufficient) in a multistory, multi-unit structure, and still maintain sufficient insulation and isolation from the expected noise pollution?

3.A.4) If there is any reasonable response in the affirmative to these speculations, is it feasible to have them translated to an updated "Engineering Design and Development Standards" code which is in the City of Olympia purview, as a set of minimum performance codes for the affected area(s), and then to elaborate as an updated "design guidelines" with greater flexibility in accomplishing the implied functional design goals?

End

Thank you very much for the opportunity to participate and share my thoughts on the Sea Level Rise issue in this complex endeavor.

With appreciation and homage to Lewis Mumford and Jane Jacobs.

Lon Freeman

NYC Building Code - Appendix G

2014 Update

APPENDIX G

(Page 9 = Definitions)*

FLOOD-RESISTANT CONSTRUCTION

Post Hurricane Sandy

Re: Simon Koster
Principal: JDS Developers

CHAPTER G1
GENERAL PROVISIONS

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 flood plains, stream channels and shorelines;
3. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential;
4. Prevent or regulate the construction of flood barriers which will divert floodwaters or which can increase flood hazards;
5. Contribute to improved construction techniques in the flood plain; 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 areas of special flood hazard;
6. Minimize damage to public facilities and utilities such as water, electricity, telephone and sewer lines, and streets and bridges located in areas of special flood hazard;
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 areas of special flood hazard.

G101.3 Reserved.

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 areas of special flood hazard 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;

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, 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, 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 alterations or repairs to pre-FIRM buildings and structures, including installation of new components, materials, finishes and equipment, that increase the degree of noncompliance with this appendix. The following alterations or repairs, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:

    10.1. Where the alteration or repair comprises the replacement of pre-FIRM components, materials, finishes or equipment;

    10.2. Where the alteration or repair comprises the installation of new components, materials, finishes or equipment in a space within the structure where similar pre-FIRM components, materials, finishes or equipment already exist; and

    10.3. Where such alteration is a change in use, occupancy or how such space is used, provided that such change would not increase the degree of noncompliance with requirements of this appendix. The conversion of any space below the design flood elevation from nonhabitable space into habitable space shall be deemed an increase in the degree of noncompliance.

11. **Retroactive requirements.** This appendix shall apply to retroactive requirements as provided for in Section G311.

G102.2 Establishment of areas of special flood hazard. 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 May 1, 2014, 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 PFRIMs 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 areas of special flood hazard as delineated on FEMA FIRMs 360497 shall be deemed to refer to the area of special flood hazard as delineated on FEMA PFIRMs 360497 except that, where a

structure is located in an area of special flood hazard as delineated on FEMA PFIRMs 360497 and in a more restrictive area of special flood hazard as delineated on FEMA FIRMs 360497, such structure shall be deemed to be located in the more restrictive area of special flood hazard as delineated on FEMA FIRMs 360497.

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 area of special flood hazard, 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 area of special flood hazard 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 area of special flood hazard.

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 May 1, 2014, the commissioner shall not deem issuance of a LOMA by FEMA as removing such structure or tax lot from the area of special flood hazard 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 area of special flood hazard, 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 area of special flood hazard 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 area of special flood hazard. 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 May 1, 2014, the commissioner shall not deem issuance of a LOMR-F as removing such structure or tax lot from the area of special flood hazard 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 flood plain 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 base flood elevations. Where the proposed development is within an area of special flood hazard 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.

G103.3.1 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, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood. However, a floodway encroachment that increases the level of the base flood may be authorized if the applicant has:

1. Applied for a conditional Letter of Map Revision; and
2. 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 an area of special flood hazard, 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 Sand dune alterations in V-Zones. Prior to issuing a permit for any alteration of sand dunes in a V-Zone, the commissioner shall require submission of an engineering analysis 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 areas of special flood hazard;
2. Permits issued in areas of special flood hazard;
3. Inspection reports;
4. Certifications required in this appendix; and
5. Certificate of occupancy where applicable.

"ASCE 24"

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

SECTION BC G104
PERMITS

G104.1 Permit required. Any person, owner or authorized agent who intends to conduct any development, as applicable pursuant to Section G102.1, within an area of special flood hazard, shall first apply 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 Permit application requirements. 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 Section G104 and all other provisions of this appendix.

G104.3 Site plan. The permit application shall include a site plan. The site plan shall include plans and drawings, shall be sealed by a registered design professional and shall include the following information and any other data as may be required by the department:

1. A delineation of the flood hazard areas, including identification of the base and design flood and elevations;
2. If applicable, the location of the regulatory floodway;
3. 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;
4. Proposed locations of water supply, sanitary sewer, and utilities;
5. Drainage patterns and facilities; and
6. Foundation design details, including but not limited to:
   - 6.1. Proposed elevation of the lowest floor including basement (for flood zone purposes) of all structures;
   - 6.2. 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;
   - 6.3. 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; and
   - 6.4. Any proposed fill and excavation details.

Exception: Applications for subdivisions shall comply with Section G302.

G104.4 Water course alteration. The permit application shall include, if applicable, a description of the extent to which any watercourse will be altered or relocated as a result of proposed development, and any documentation required by Section G103.6.

G104.5 Certifications. The permit application shall include the applicable certifications in accordance with Sections G104.5.1 through G104.5.3.

G104.5.1 A-Zones. For construction in A-Zones, the permit application shall include the following certifications, as applicable:

1. **Wet floodproofing certification.** For wet floodproofed enclosures below the design flood elevation, construction documents shall include a certification by the applicant that the design provides for the automatic entry and exit of floodwaters for equalization of hydrostatic flood forces in accordance with Section 2.6.2, ASCE 24.
2. **Dry floodproofing certification for nonresidential buildings.** For dry floodproofed buildings and structures that are nonresidential (for flood zone purposes), construction documents shall include a certification by the applicant that the dry floodproofing is designed 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, construction documents 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."

G104.5.2 V-Zones and coastal A-Zones. For construction in V-Zones and coastal A-Zones the permit application shall include the following certifications, as applicable:

1. **Structural design certification.** Construction documents 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, construction documents 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, construction documents 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."

G104.5.3 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.

G104.6 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 which is in violation of this appendix or other provisions of this code.

G104.7 Permit expiration. A permit shall become invalid if the proposed development:

1. Is not commenced within 180 days after its issuance; or
2. If the work authorized is suspended or abandoned for a period of 180 days after the work commences.

G104.8 Permit reinstatement. Permit reinstatements for a permit that has expired pursuant to Section G104.7 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 *New York City Administrative Code*.

G104.9 Permit 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.

SECTION BC G105
PROGRESS AND SPECIAL INSPECTION REQUIREMENTS

G105.1 General. 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 G105.2 through G105.4.

G105.2 All work applications other than new buildings and substantial improvements. All work applications other than new buildings 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."

G105.3 New buildings and substantial improvements. All applications for new buildings or substantial improvements shall be subject to the following inspections:

"ASCE 24"

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 an engineer 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 an engineer.

G105.4 Flood shield inspection. Where floodshields 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.

G105.5 Reserved.

G105.6 Reserved.

G105.7 Reserved.

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 wet floodproofed enclosed areas below the design flood elevation as "subject to flooding". Such wet floodproofed enclosed areas shall be usable solely for parking, storage, building access or crawl spaces.

G106.3 Enclosed areas subject to flooding in V-Zones and coastal A-Zones. The certificate of occupancy shall describe all enclosed areas below the design flood elevation as "subject to flooding". Such enclosed areas shall be usable solely for parking, storage and building access.

G106.4 Dry floodproofed spaces. The certificate of occupancy shall describe any dry floodproofed spaces as "dry floodproofed." For such buildings containing 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 2.2.5. Where flood shields or other flood control devices are installed, the certificate of occupancy shall also provide notations describing these features.

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

SECTION BC G107
VARIANCES

G107.1 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.

G107.2 Conditions for variance.

G107.2.1 Historic structures. The Board of Standards and Appeals is authorized to issue a variance for the repair or rehabilitation of a historic structure provided that:

1. The application has received approval from the Landmark Preservation Commission and/or the New York State Historical Preservation Office, as applicable;
2. The proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure; and
3. The variance is the minimum necessary to preserve the historic character and design of the structure.

G107.2.2 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.

G107.2.3 General conditions for variance. Except for historic structures as provided for in Section G107.2.1, the Board of Standards and Appeals is authorized to issue a variance only upon:

1. 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 1/2 acre (0.2 hectare) in size. However, where the tax lot has been determined to be larger than 1/2 acre (0.2 hectare), the technical justification required for issuing the variance increases with the lot size;
2. Showing of good and sufficient cause;
3. Determination that failure to grant the variance would result in exceptional hardship to the applicant;
4. Determination that the granting of a variance will not result in:
    a. Increased flood heights;
    b. Additional threats to public safety;
    c. Extraordinary public expense;
    d. Nuisances;
    e. Fraud on or victimization of the public; or
    f. Conflict with existing local laws or ordinances; and
5. Determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

G107.2.4 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 that:

1. The criteria for Sections G107.2.1 through G107.2.3 are met; and
2. All methods and materials utilized minimize flood damage during the base flood and create no additional threats to public safety.

G107.3 Standards for variance. 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 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 relationship of the proposed development to the comprehensive plan and flood plain management program for that area;
7. The safety of access to the property in times of flood for ordinary and emergency vehicles;
8. 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; and
9. 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.

G107.4 Notification of risks. Upon issuance of a variance, the Executive Director of the Boards of Standards and Appeals shall provide written notice to the owner and the applicant that:

1. 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 twenty-five dollars for each one hundred dollars of insurance coverage; and
2. That such construction below the base flood level increases risks to life and property.

G107.5 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).

CHAPTER G2
DEFINITIONS

SECTION BC G201
DEFINITIONS

G201.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.

G201.2 Definitions.

(1) **500-YEAR FLOOD ELEVATION.** The elevation of the flood having a 0.2-percent chance of being equaled or exceeded in any given year, as specified on FEMA FIRM 360497 or FEMA FIS 360497.

(2) **A-ZONE.** An area of special flood hazard without high velocity wave action. When not shown on the FIRMs, the water surface elevation may be determined from available data by the registered design professional of record in accordance with Section G103.3. See also "Area of special flood hazard."

AREA OF SPECIAL FLOOD HAZARD. The land in the flood plain delineated as subject to a 1-percent or greater chance of flooding in any given year. Such areas are designated on the Flood Insurance Rate Map (FIRM) as A-Zones, Limit of Moderate Wave Action (Coastal A-Zones), or V-Zones. Such areas are also known as the base flood plain or 100 year floodplain. Areas designated as X-Zones shall not be deemed areas of special flood hazard for the purposes of this Appendix.

BASE FLOOD. The flood having a 1-percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION. The elevation of the base flood, including wave height, as specified on FEMA FIRMs 360497 or as determined in accordance with Section G103.3. In areas designated as ZONE AO, the base flood elevation shall be the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map.

BASEMENT (FOR FLOOD ZONE PURPOSES). The portion of a building having its floor subgrade (below ground level) on all sides.

BREAKAWAY WALL. An open lattice wall that is not part of the structural support of the building to which it is attached and that is intended through its design and construction to collapse under specific later loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

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COASTAL A-ZONE. An area within a special flood hazard area, shown on FEMA FIRMs 360497 as an area bounded by a "Limit of Moderate Wave Action," landward of a V-Zone or landward of an open coast without mapped V-Zones. In a Coastal A-Zone, the principal source of flooding must be astronomical tides, storm surges, seiches, or tsunamis, and not riverine flooding. During the base flood conditions, the potential for breaking wave heights must be greater than or equal to 1 foot, 6 inches (457 mm). In no case shall an area of special flood hazard be deemed a coastal A-Zone unless and until it has been identified as such on the adopted FEMA FIRMs 360497.

DESIGN FLOOD ELEVATION. The applicable elevation specified in ASCE 24, Tables 2-1, 4-1, 5-1, 6-1, or 7-1, depending on the structural occupancy category designated in ASCE 24, Table 1-1.

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, operations and other land disturbing activities.

EXISTING CONSTRUCTION. See "Pre-FIRM development."

EXISTING STRUCTURE. See "Pre-FIRM development."

FLOOD or FLOODING. A general and temporary condition of partial or complete inundation of normally dry land from:

1. The overflow of inland or tidal waters.
2. The unusual and rapid accumulation or runoff of surface waters from any source.

FLOOD-DAMAGE-RESISTANT MATERIALS. Any construction material, including finishes, capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.

FLOOD INSURANCE RATE MAP (FIRM). The flood official map on which the Federal Emergency Management Agency (FEMA) has delineated areas of special flood hazard, base flood elevations, and the flood boundary and floodways.

FLOOD INSURANCE STUDY (FIS). The official report provided by the Federal Emergency Management Agency (FEMA) containing the Flood Insurance Rate Map (FIRM), the water surface elevation of the base flood and supporting technical data.

FLOODPROOFING, DRY. For buildings and structures that are nonresidential (for flood zone purposes), a combination of design modifications that results in the building's or structure's being water tight to the design flood elevation, including the attendant utility and sanitary facilities, with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.

FLOODPROOFING, WET. A floodproofing method designed to permit parts of the structure below the design flood elevation that are used for parking, storage, building access, or crawl space to intentionally flood, by equalizing hydrostatic pressures and by relying on the use of flood damage-resistant materials and construction techniques.

FLOODWAY. The channel of the river, creek or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Floodways are mapped only in the Boroughs of the Bronx and Staten Island.

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, such as a docking or port facility necessary for the loading or unloading of cargo or passengers, shipbuilding or ship repair. The term does not include long-term storage, manufacture, sales or service facilities.

HISTORIC STRUCTURE. A pre-FIRM building or structure:

1. Designated as a landmark or located within an historic district designated by the New York City Landmarks Preservation Commission;
2. Listed or preliminarily determined to be eligible for listing in the National or State Register of Historic Places; or
3. Determined by the Secretary of the U.S. Department of the Interior or the New York State Department of Parks and Recreation as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.

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 areas of special flood

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hazard, 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 areas of special flood hazard, 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 areas of special flood hazard, 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.

LOWEST FLOOR. The lowest floor of the lowest enclosed area, including crawl spaces and basements (for flood zone purposes).

Exception: The lowest floor shall not include any wet floodproofed spaces usable solely for vehicle parking, building access, storage or crawl space, provided that such enclosure is not built so as to render the structure in violation of this appendix, including that:

1. Such enclosure shall allow for the automatic entry and exit of floodwaters;
2. Such enclosure shall be constructed solely of flood- resistant materials and finishes;
3. Such enclosure shall have a floor elevation equal to or higher than the outside adjacent grade on at least one side; and
4. Such outside adjacent grade shall slope down, towards the source of flooding, providing positive drainage by gravity, thus preventing accumulations of water under or in the structure after the floodwaters recede without the use of pumps, pipes or drains.

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.

NATIONAL GEODETIC VERTICAL DATUM (NGVD). The national vertical datum standard established in 1929; used as a reference for establishing elevations within a flood plain.

NEW CONSTRUCTION. See "Post-FIRM development."

NONRESIDENTIAL (FOR FLOOD ZONE PURPOSES).

A building or structure that either:

1. Contains no space classified in Group I-1, R- 1, R-2, or R-3, and contains no space that is accessory, as such term is defined in the *New York City Zoning Resolution*, to any Group I-1, R-1, R-2, or R-3 occupancy; or
2. Contains such space(s), but also contains space on the lowest floor that is not accessory, as such term is defined in the *New York City Zoning Resolution*, to a Group I-1, R-1, R-2, or R-3 occupancy.

NORTH AMERICAN VERTICAL DATUM (NAVD). The national vertical datum standard established in 1988, used as a reference for establishing elevations within a flood plain.

PATIENT CARE AREA (FOR FLOOD ZONE PURPOSES). Any space meeting the following conditions:

1. The space is located within a building or structure, or portion thereof, that is classified in Group I-2; and
2. The space is primarily used for the provision of medical services to persons, including, but not limited to, consultation,

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evaluation, monitoring and treatment services.

Exceptions: The following spaces shall not be considered patient care areas (for flood zone purposes):

1. "Emergency rooms or departments" as defined in 10 NYCRR 700.2(a)(2) and
2. Spaces primarily used for the provision of medical services identified in 10 NYCRR 703.6(c)(2)(i).

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 an area of special flood hazard at the start of construction; and

   3.2. Is now located within an area of special flood hazard as a result of a subsequent change to the FIRM.

PRE-FIRM STRUCTURE. See "Pre-FIRM development."

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

POST-FIRM STRUCTURE. See "Post-FIRM development."

RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m^2) 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.

RESIDENTIAL (FOR FLOOD ZONE PURPOSES). A building or structure containing any space that is either:

1. Classified in Group I-1, R-1, R-2, or R-3; or
2. Accessory, as such term is defined in the *New York City Zoning Resolution*, to any Group I-1, R-1, R-2, or R-3 occupancy.

Exception: Such a building or structure shall be considered nonresidential (for flood zone purposes) when also containing space on the lowest floor that is not accessory, as such term is defined in the *New York City Zoning Resolution*, to a Group I-1, R-1, R-2, or R-3 occupancy.

SAND DUNES. Naturally occurring accumulations of sand in ridges or mounds landward of a beach.

SHADED X-ZONE. The land in the floodplain delineated as subject to a 0.2-percent or greater chance of flooding, but less than one percent chance of flooding, in any given year. Such areas are designated on the Flood Insurance Rate Map (FIRM) as shaded X-Zones.

SPECIAL FLOOD HAZARD AREA. See "Area of special flood hazard."

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 an area of special flood hazard but that, prior to completion, were within an area of special flood hazard 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 abasement (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.

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SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT. Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct pre-FIRM health, sanitary or safety code violations identified by the commissioner, the Fire Commissioner, the Commissioner of Housing Preservation and Development, or the Commissioner of Health and Mental Hygiene, and that are the minimum necessary to assure safe living conditions; or
2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

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

V-ZONE. An area of special flood hazard subject to high-velocity wave action.

CHAPTER G3
CONSTRUCTION STANDARDS

SECTION BC G301
GENERAL

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 area of special flood hazard shall apply to the entire structure.

G301.2 Design requirements and load combinations. Any construction within the scope of Section G102.1, located in a special flood hazard area, 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 an area of special flood hazard shall demonstrate that:

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; and
3. Adequate drainage is provided to reduce exposure to flood hazards.

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

1. The area of special flood hazard, including floodways and V-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; and
4. The design criteria for any utilities and facilities, as set forth in this appendix and appropriate *New York City Construction Codes*, shall be met.

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SECTION BC G303
SITE IMPROVEMENT

G303.1 Development in floodways. Development or land disturbing activity is prohibited in floodways unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in the level of the base flood, in accordance with Section G103.5.

G303.2 Sewer facilities. All new and 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.

G303.3 Water facilities. All new and 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.

G303.4 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.

G303.5 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 .7.

G303.6 Retaining walls and driveways. Retaining walls and driveways shall meet the requirements of Section G303.7.

G303.7 Grading and fill. In areas of special flood hazard 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.
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 V-Zones, 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 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 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 and substantial improvements shall comply with the applicable requirements in Chapter G3 of this code 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 at 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;
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 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 system or equipment or

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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 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. 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.

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 G105.

G304.1.2 Nonresidential. For buildings or structures that are nonresidential (for flood zone purposes), all post-FIRM new buildings and substantial improvements shall comply with the applicable requirements in Chapter G3 of this code 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

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2. **Dry floodproofing option.** The structure shall comply with the following:

2.1. Elevation of dry floodproofing. The structure shall be dry floodproofed to at 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 page number and liber number 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. The structure shall comply with Items 5.1 through 5.4 of Section G304.1.1.

2.4. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and

2.5. Special inspections. Special inspections shall be as required by Section G105.

✳ **G304.2 V-Zone construction standards.** In addition to the requirements of ASCE 24, the following standards shall apply to post-FIRM construction and substantial improvements located within V-Zones.

1. **Foundation.** The lowest floor shall be elevated on adequately anchored pilings or columns and securely anchored to such piles or columns to prevent floatation, 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

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 V-Zones:

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.

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7. **Certifications.** Applications shall contain applicable certifications in accordance with Section G104.5; and

8. **Special inspections.** Special inspections shall be as required by Section G105.

G304.3 Coastal A-Zone construction standards. In addition to the requirements of ASCE 24, all post-FIRM new buildings and substantial improvements in a Coastal A-Zone shall comply with the V-Zone 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 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 provided the structure is dry floodproofed to at or above the design flood elevation specified in ASCE 24, Table 6-1. For buildings or structures utilizing this exception, construction documents 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 Section 1.6, to at or above the design flood elevation specified in ASCE 24, Table 4-1.

G304.4 Construction standards for shaded X-Zones. In shaded X-Zones, buildings that include I-2 occupancies that are hospitals shall comply with the requirements of this chapter and the applicable provisions of ASCE 24 for A-Zone construction.

G304.5 Additional construction standards with respect to connections for temporary external generators, boilers and chillers. In addition to the other requirements of this chapter, 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 308.2.1 or 308.2.2, 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

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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.

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.

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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 General. Manufactured homes shall be prohibited in V-Zones. Within A-Zones, all new, replaced or substantially improved manufactured homes shall be:

1. Installed using methods and practices that minimize flood damage;
2. Elevated to or above the design flood elevation specified in ASCE 24, Table 2-1;
3. Placed on a permanent, reinforced foundation that is designed in accordance with ASCE 24; and
4. Securely anchored to a foundation system designed 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.

SECTION BC G306
RECREATIONAL VEHICLES

G306.1 General. The following shall apply to placement of all recreational vehicles within areas of special flood hazard:

1. Placement in V-Zones and floodways prohibited. The placement of recreational vehicles is prohibited in V-Zones and floodways.
2. Temporary placement in A-Zones. Within A-Zones, recreational vehicles shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days.
3. Permanent placement in A-Zones. Within A-Zones, recreational vehicles 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 areas of special flood hazard 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 areas of special flood hazard 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 areas of special flood hazard, 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 fitted with covers 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
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 areas of special flood hazard and shaded X-Zones shall comply with the following:

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1. In areas of special flood hazard, 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 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 critical facilities. The following tanks and containers shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, unless such tanks and containers serve buildings that include I-2 occupancies that are hospitals, in which case such tanks and containers shall be located at or above the greater of (i) the design flood elevation specified in ASCE 24, Table 7-1, or (ii) the 500-year flood elevation. Such tanks and containers must be designed to maintain service to such structure during flood conditions and shall comply with section 9.6 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 Detached accessory structures. Detached accessory structures shall be 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. Enclosed accessory structures usable solely for parking or storage shall be wet floodproofed and shall have flood openings to allow for the automatic entry and exit of flood waters designed in accordance with ASCE 24.

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 areas of special flood hazard 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 Section G303.7.

G308.5 Prefabricated swimming pools in floodways. Prefabricated swimming pools in floodways shall meet the requirements of Section G103.5.

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G308.6 Temporary flood shields. Temporary flood shields shall be permitted in accordance with Section 6.2.3 of ASCE 24.

G308.7 Temporary stairs and ramps. Temporary stairs and ramps shall comply with the requirements of Sections G308.7.1 and G308.7.2.

G308.7.1 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.

G308.7.2 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.

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 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.

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 BUILDINGS AND OTHER SIMILAR STRUCTURES

G310.1 Utility and miscellaneous Group U buildings and other similar structures. Section G310 shall govern utility and miscellaneous Group U buildings that are identified in Section 312 and other similar structures, including, but not limited to, agricultural buildings, aircraft hangars (accessory to a one- or two-family residence), barns, grain silos (accessory to a residential occupancy), greenhouses, livestock shelters, sheds, stables, and towers.

G310.2 Flood loads. Utility and miscellaneous Group U buildings and similar 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 similar structures, including substantial improvement of such buildings and structures, shall be elevated such that the lowest floor, including basement, is at or above the design flood elevation specified in ASCE 24.

G310.4 Enclosures below design flood elevation. Fully enclosed areas below the design flood elevation shall comply 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: The following shall be permitted to be located below the design flood elevation provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in compliance with the flood-resistant construction requirements of this code:

1. Electrical systems, equipment and components;
2. Heating, ventilating, air conditioning, and plumbing appliances;

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3. Plumbing fixtures;

4. Duct systems; and

5. Other service equipment.

(?) * 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*.

SECTION BC G311
RETROACTIVE REQUIREMENTS

G311.1 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.

G311.2 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 G311.2.2 by such date:

1. Buildings whose main use or dominant occupancy is Group I-1 and that are located in an area of special flood hazard;
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 308.2.1 or 308.2.2 and that are located in an area of special flood hazard;
3. Buildings whose main use or dominant occupancy is Group I-2 hospital and that are located in an area of special flood hazard or shaded X-Zone;
4. Buildings whose main use or dominant occupancy is Group I-2 nursing home and that are located in an area of special flood hazard; and
5. Buildings whose main use or dominant occupancy is Group I-2, other than hospitals and nursing homes, and that are located in an area of special flood hazard.

G311.2.1 Modification to the area of special flood hazard or shaded X-Zone. Where the area of special flood hazard or shaded X-Zone is modified on or after the effective date of this section, any building identified in Section G311.2 and newly identified as being within such modified area of special flood hazard or shaded X-Zone shall, no later than 20 years following the adoption of such modification, comply with the retroactive requirements of Section G311.2. 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 G311.2.2.

G311.2.2 Report of compliance. The owner of a building required to comply with the provisions of Section G311.2 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 G311.2 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.

G311.2.3 Filing. The department may promulgate rules establishing filing fees for the review and examination of such reports.

G311.3 Connections for temporary external boilers and chillers. Buildings whose main use or dominant occupancy is Group I-2 hospital that are located in an area of special flood hazard or shaded X-Zone 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 G311.3.2 by such date.

G311.3.1 Modification to the area of special flood hazard or shaded X-Zone. Where the area of special flood hazard 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 area of special flood hazard or shaded X-Zone shall comply with the retroactive requirements of Section G311.3 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 G311.3.2 no later than 20 years following the adoption of such modification.

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G311.3.2 Report of compliance. The owner of a building required to comply with the provisions of Section G311.3 shall file with the department, by January 1, 2033, a report prepared by a registered design professional (i) certifying that the requirements of Section G311.3 have been satisfied and detailing how much 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.

G311.3.3 Filing. The department may promulgate rules establishing filing fees for the review and examination of such reports.

CHAPTER G4
REFERENCED STANDARDS

SECTION BC G401
GENERAL

G401.1 General. This chapter 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.

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 102.4.

G401.4 Reserved.

G401.5 Reserved.

G401.6 Reserved.

SECTION BC G402
STANDARDS

ASCE 7-05	Minimum Design Loads for Buildings and Other Structures	G104.5.2, G201.2, G304.2
ASCE 24-05*	Flood-Resistant Design and Construction	G103.1, G104.3, G104.5.1, G104.5.2, G105.2, G105.3.1, G201.2, G301.1, G303.2, G304.1.2, G304.2, G305.1, G307.1, G307.2, G307.3, G308.1. G308.3

*As modified in Chapter G5.

FEMA FIS 360497	Flood Insurance Study, Community Number 360497, Revised September 5, 2007; Federal Emergency Management Agency	G102.2
FEMA PFIS 360497	Preliminary Flood Insurance Study, Community Number 360497, Federal Emergency Management Agency	G102.2.1, G102.2.2, G102.3.1.1, G102.3.2.2
FEMA FIRMs 360497	Flood Insurance Rate Map, Community Number 360497, Panel Numbers 1 through 0457, Revised September 5, 2007;	G102.2, G102.3, G102.3.1, G102.3.2,

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	Federal Emergency Management Agency, *with the following Letter of Map Revision:*	G103.3, G201.2
	Letter of Map Revision effective September 29, 2008, FEMA case # 08-02-0948P, revising FIRM panel 0111.	
FEMA FIRMs 360497	Preliminary Flood Insurance Rate Map, Community Number 360497, 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	G105.3
FEMA FORM 086-0-33	Elevation Certificate; Federal Emergency Management Agency	G105.3
HUD 24 CFR Part 3280-94	Manufactured Home Construction and Safety Standards, 1994	G201.2

CHAPTER G5
MODIFICATIONS TO REFERENCED STANDARDS

SECTION BC G501
MODIFICATIONS

The following amendments are hereby made to the referenced standards listed in Section G401.

G501.1 Amendments to ASCE 24-05. The following amendments are hereby made to the applicable sections of ASCE 24-05. 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 Items 1 through 4, and by adding the following paragraph to read as follows:

The scope of this standard is as provided for in Section G102.1 of the *New York City Building Code*, Appendix G.

Section 1.1.2. A new Section 1.1.2 is added to read as follows:

1.1.2 High-risk flood hazard areas. Notwithstanding any other provision in this standard, no special flood hazard 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: "Definitions"

Design flood elevation—The applicable elevation specified in Table 2-1, 4-1, 5-1, 6-1, or 7-1, depending on the structural occupancy category 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—As defined in Section G201 of the *New York City Building Code*, Appendix G.

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

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

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Structural Occupancy Categories for Flood-Resistant Design/Construction requirements

\\ TABLE 1-1 //

CLASSIFICATION OF STRUCTURES FOR FLOOD-RESISTANT DESIGN AND CONSTRUCTION

(CLASSIFICATION SAME AS *NEW YORK CITY BUILDING CODE* TABLE 1604.5)

STRUCTURAL OCCUPANCY/ CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: 1. Agricultural facilities. 2. Certain temporary facilities. 3. Minor storage facilities.
II	Buildings and other structures except those listed in Structural Occupancy Categories I, III and IV
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: 1. Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. 2. Buildings and other structures containing elementary school, secondary school or day care facilities with an occupant load greater than 250. 3. Buildings and other structures containing adult education facilities, such as colleges and universities with an occupant load greater than 500. 4. Group I-2 occupancies with an occupant load of 50 or more resident patients but not having surgery or emergency treatment facilities. 5. Group I-3 occupancies. 6. Any other occupancy with an occupant load greater than 5,000[a]. 7. Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not included in Structural Occupancy Category IV. 8. Buildings and other structures not included in Structural Occupancy Category IV containing sufficient quantities of toxic or explosive substances to be dangerous to the public if released.
IV	Buildings and other structures designated as essential facilities, including but not limited to: 1. Group I-2 occupancies having surgery or emergency treatment facilities. 2. Fire, rescue, ambulance and police stations and emergency vehicle garages. 3. Designated earthquake, hurricane or other emergency shelters. 4. Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. 5. Power-generating stations and other public utility facilities required as emergency backup facilities for Structural Occupancy Category IV structures. 6. 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). 7. Aviation control towers, air traffic control centers and emergency aircraft hangars. 8. Buildings and other structures having critical national defense functions. 9. Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.1 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

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Old Elevation Requirements

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 RELATIVE TO DESIGN FLOOD ELEVATION (DFE)—A-ZONES[a]

STRUCTURAL OCCUPANCY CATEGORY[b]	MINIMUM ELEVATION OF LOWEST FLOOR
I	DFE=BFE
II (1- and 2-family dwellings)	DFE=BFE+ 2 ft
II[c, d] (all others)	DFE=BFE+ 1 ft
III[c, d]	DFE=BFE+ 1 ft
IV[c, d]	DFE=BFE+ 2 ft

a. Minimum elevations shown in Table 2-1 do not apply to V Zones (see Table 4-1). Minimum elevations shown in Table 2-1 apply to A-Zones unless specific elevation requirements are given in Section 3 of this standard.
b. See Table 1-1 or Table 1604.5 of the *New York City Building Code*, for structural occupancy category descriptions.
c. 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.
d. Buildings that include I-2 occupancies that are hospitals shall use the greater of (i) the DFE for the applicable structural occupancy category as indicated in this table or (ii) the 500-year flood elevation.

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 RELATIVE TO DESIGN FLOOD ELEVATION (DFE)—V-ZONES AND COASTAL A-ZONES

New Elevation Requirements

STRUCTURAL OCCUPANCY CATEGORY[a]	MEMBER ORIENTATION RELATIVE TO THE DIRECTION OF WAVE APPROACH	
	Parallel[b]	Perpendicular[b]
I	DFE=BFE	DFE=BFE
II (1- and 2-family dwellings)	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft
II[c] (all others)	DFE=BFE	DFE=BFE+ 1 ft
III[c]	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft
IV[c]	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft

a. See Table 1-1, or Table 1604.5 of the *New York City Building Code*, for structural occupancy category descriptions.
b. Orientation of lowest horizontal structural member relative to the general direction of wave approach; parallel shall mean less than or equal to +20 degrees from the direction of approach; perpendicular shall mean greater than +20 degrees from the direction of approach.
c. Buildings that include I-2 occupancies that are hospitals shall use the greater of (i) the DFE for the applicable structural occupancy category as indicated in this table or (ii) the 500-year flood elevation.

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 V-Zones shall be open lattice, and not solid, with such enclosed spaces constructed as unconditioned per the *New York State Energy Conservation Construction Code*.

(27)

Flood-Damage-Resistant- Materials Use: Minimum Elevation for Must Use

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

TABLE 5-1
MINIMUM ELEVATION, RELATIVE TO DESIGN FLOOD ELEVATION (DFE), BELOW WHICH FLOOD-DAMAGE-RESISTANT MATERIALS SHALL BE USED

STRUCTURAL OCCUPANCY CATEGORY[a]	A-ZONE	Coastal High Hazard Areas and Coastal A-Zones	
		Orientation Parallel[b]	Orientation Perpendicular[b]
I	DFE=BFE	DFE=BFE	DFE=BFE
II (1- and 2-family dwellings)	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft
II[c] (all others)	DFE=BFE+ 1 ft	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft
III[c]	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft	DFE=BFE+ 3 ft
IV[c]	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft	DFE=BFE+ 3 ft

a. See Table 1-1, or Table 1604.5 of the *New York City Building Code*, for structural occupancy category descriptions.
b. Orientation of lowest horizontal structural member relative to the general direction of wave approach; parallel shall mean less than or equal to +20 degrees from the direction of approach; perpendicular shall mean greater than +20 degrees from the direction of approach.
c. Buildings that include I-2 occupancies that are hospitals shall use the greater of (i) the DFE for the applicable structural occupancy category as indicated in this table or (ii) the 500-year flood elevation.

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, RELATIVE TO DESIGN FLOOD ELEVATION (DFE)—A-ZONES

STRUCTURAL OCCUPANCY CATEGORY[a]	MINIMUM ELEVATION OF FLOODPROOFING[b]
I	DFE=BFE+ 1 ft
II[c, d]	DFE=BFE+ 1 ft
III[d]	DFE=BFE+ 1 ft
IV[d]	DFE=BFE+ 2 ft

a. See Table 1-1, or Table 1604.5 of the *New York City Building Code*, for structural occupancy category descriptions.
b. Wet or dry floodproofing shall extend to the same level.
c. Dry floodproofing of residential buildings and residential portions of mixed use buildings shall not be permitted.
d. Buildings that include I-2 occupancies that are hospitals shall use the greater of (i) the DFE for the applicable structural occupancy category as indicated in this table or (ii) the 500-year flood elevation.

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

3. Have either:

3.1. All required means of egress elevated to or above the applicable DFE specified in Table 6-1, capable of providing human ingress and egress during the design flood; or

3.2. At least one elevated door located in close proximity to each required means of egress to the exterior that is to be blocked by flood shields or flood control devices, such that the face of the elevated door itself, and not merely its directional signage, is clearly visible to a person approaching the blocked egress door(s). Such door(s) shall be elevated to at or above the applicable DFE specified in Table 6-1, capable of providing human ingress and egress during the design flood. Such door(s) 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, but shall not be required to comply with the occupant load calculations, unless the structure is intended for occupancy during the design flood. 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.

28

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 pending flood situation) shall be a minimum of 12 hours, 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;

   (a) time to notify person(s) responsible for installation of floodproofing measures, plus

   (b) time for responsible persons to travel to structure to be floodproofed, plus

   (c) time to install, activate, or implement floodproofing measures, plus

   (d) time 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; and

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 location(s) 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 permanently posted in at least two conspicuous locations within the structure.

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

Utilities Elevations

TABLE 7-1
MINIMUM ELEVATION OF UTILITIES AND ATTENDANT EQUIPMENT RELATIVE TO DESIGN FLOOD ELEVATION (DFE)

	LOCATE UTILITIES AND ATTENDANT EQUIPMENT ABOVE[b]		
		Coastal High Hazard Area and Coastal A-Zones	
STRUCTURAL OCCUPANCY CATEGORY[a]	A-Zones	Orientation Parallel[c]	Orientation Perpendicular[c]
I	DFE=BFE	DFE=BFE	DFE=BFE
II (1- and 2-family dwellings)	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft
II[c, d] (all others)	DFE=BFE+ 1 ft	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft
III[d]	DFE=BFE+ 1 ft	DFE=BFE+ 2 ft	DFE=BFE+ 3 ft
IV[d]	DFE=BFE+ 2 ft	DFE=BFE+ 2 ft	DFE=BFE+ 3 ft

a. See Table 1-1, or Table 1604.5 of the *New York City Building Code*, for structural occupancy category descriptions.

b. Locate utilities and attendant equipment above elevations shown unless otherwise provided in the text.

c. Orientation of lowest horizontal structural member relative to the general direction of wave approach; parallel shall mean less than or equal to +20 degrees from the direction of approach; perpendicular shall mean greater than +20 degrees from the direction of approach.

d. Buildings that include I-2 occupancies that are hospitals shall use the greater of (i) the DFE for the applicable structural occupancy category as indicated in this table or (ii) the 500-year flood elevation.

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

7.2.4 Disconnect switches and circuit breakers. The main disconnect switch, all service disconnecting means, and all circuit breakers shall be located above and be accessible from the elevation specified in Table 7-1. 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.

(29)

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 7.5.1. A new section 7.5.1 is added to read as follows:

7.5.1 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 9.3.1. The second sentence of the first paragraph of Section 9.3.1 (Attached Garages and Carports) 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 or carport is at or above grade on at least one side, the garage or carport walls meet the opening requirements of Section 2.6, and the lowest level of the garage or carport is not classified as a "lowest floor" pursuant to Appendix G of the *New York City Building Code*.

Section 9.5. Section 9.5 (Pools) is amended by adding a new paragraph to read as follows:

Mechanical equipment for pools such as pumps and water heaters, and associated electrical wiring, shall comply with Section 7.2 and 7.4.

G501.2 Reserved.

G501.3 Reserved.

SECTION BC G601
RESERVED

SECTION BC G701
RESERVED

SECTION BC G702
RESERVED

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13 ACTIVE RENTALS IN THIS BUILDING

MURRAY HILL
626 First Avenue #W...
$2,975
Studio | 1

MURRAY HILL
626 First Avenue #W...
$3,675
Studio | 1

MURRAY HILL
626 First Avenue #W...
$4,025
Studio | 1

Building: American Copper Buildings

626 First Avenue, New York, NY, 10016

761 units | 48 stories | 2 buildings | Built in 2016

New Development

Rental Building in Murray Hill

SAVE SHARE

CONTACT US FOR AVAILABILITY

American Copper Buildings
+19179244974
Presented By JDS Development Group

Your email

Message (optional)

CONTACT

AMERICAN COPPER BUILDINGS DESCRIPTION

The future is coming. Sorry, it's not for sale.
At American Copper, two copper-clad towers are connected by a three-story skybridge, creating the ultimate vertical community.
Designed inside and out by SHoP Architects, each tower offers over 300 one-of-a-kind layouts with sweeping, enviable views of the Empire State Building, East River,
and the Manhattan skyline.

Two grand lobbies with soaring... [more]

AMERICAN COPPER BUILDINGS AMENITIES

Bike Room
Children's Playroom
Community Recreation Facilities
Gym
Live-in Super
Swimming Pool

OUTDOOR SPACE
Roof Deck

LOCATION
NYC Storm Zone 1

BUILDING FACTS

Facts	761 units | 48 stories | 2 buildings | Built in 2016
District	Community District 106 | City Council District 4 | Police Precinct 17
Floorplans	114 floorplans available
Documents and Permits	82 documents and permits
	1 previous sale ($1,044 per ft² avg, $710,000 avg price)
Rentals Listings	13 active rentals ($5,853 avg price) 97 previous rentals ($46 per ft² avg, $5,296 avg price)
Architect:	SHoP Architects
Developer:	JDS Development Group
Leasing and marketing:	Citi Habitats New Developments
Manager:	First Service Residential

UNITS

Filter this table

Unit	Price	Beds	Baths	ft²
#W34G - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$12,555 NO FEE	4 rooms, 2 beds	2 baths	
#W32C - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$8,570 NO FEE	4 rooms, 2 beds	2 baths	
#W9E - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$6,750 NO FEE	4 rooms, 2 beds	2 baths	
#W42A - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$6,590 NO FEE	3 rooms, 1 bed	1 bath	
#W34J - 626 First Avenue	$6,350 NO FEE	3 rooms, 1 bed	1 bath	
#W41E - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$5,550 NO FEE	3 rooms, 1 bed	1 bath	
#W9B - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$4,990 NO FEE	3 rooms, 1 bed	1 bath	

Unit	Price		Beds	Baths	ft²
#W40H - 626 First Avenue	$4,900	NO FEE	2 rooms, studio	1 bath	
#W10D - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$4,800	NO FEE	3 rooms, 1 bed	1 bath	
#W33E - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$4,360	NO FEE	2 rooms, studio	1 bath	
#W33D - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$4,025	NO FEE	2 rooms, studio	1 bath	
#W33K - 626 First Avenue Open House: Sat, Oct 21 (12:00 PM - 2:00 PM) ADD TO PLANNER	$3,675	NO FEE	2 rooms, studio	1 bath	
#W11H - 626 First Avenue	$2,975		2 rooms, studio	1 bath	

NEAR AMERICAN COPPER BUILDINGS

TRANSPORTATION

Subways and Ferries

Ferry at E 34th Street Ferry Landing **under 500 feet**

S 4 5 6 7 at 42 Street - Grand Central **0.48 miles**

6 at 33rd St **0.55 miles**

S 4 5 6 7 at Grand Central **0.55 miles**

6 at 28th St **0.65 miles**

View subway lines on Google Maps ▸

VIEW ON GOOGLE

SCHOOLS

District 2 - Schools zoned for this address:
J.H.S. 104 Simon Baruch (06,07,08,SE)
P.S. 116 Mary Lindley Murray (PK,0K,01,02,03,04,05,06,SE)
the River School (PK,0K,01,02,03,04,05,SE)

SIMILAR BUILDINGS

326 East 35th Street	210 East 35th Street	134 East 36th Street
Rental Building in Murray Hill	Rental Building in Murray Hill	Rental Building in Murray Hill
4 ACTIVE LISTINGS	**2 ACTIVE LISTINGS**	**1 ACTIVE LISTINGS**

Public Comment on:
Olympia Planning Commission's October 16, 2017 on the "Public Hearing on Downtown Urban Infill Area State Environmental Policy Act (SEPA) Ordinance."

I have two main concerns with this ordinance:

The first has to do with the claim that the SEPA regulations are duplicative with the city's existing development regulations. Assuming they are duplicative, I am concerned about whether or not they will remain that way into the future. For example, I understand that the climate change and sea level rise guidance in SEPA is currently under review. If SEPA regulations were to change in the future to become more protective would Olympia then have some requirement to also update the City's regulations? Similarly, I imagine it is somewhat easier to modify a city regulation than it is to modify one through the State. Would there be any mechanism to prevent Olympia from modifying their regulations to be less protective than SEPA in the future? I would like to see some language in this ordinance which would hold the city accountable in this way.

My second concern has to do with limiting public involvement in planning and development. The background memo listed "Cultural Resources" as one of the three areas in which the city regulations are insufficient – relative to SEPA. The memo states that "tribal agencies tend to use SEPA notice as their trigger to comment on projects". I understand that SEPA notices often arrive late in the development process, and that by this point the public has already had chances to comment, but I think that the fact that tribal agencies – and others- so consistently use the SEPA notice as an access point is a big red flag. I think that it demonstrates that the public has a hard time keeping track of development process and timelines, and I think it demonstrates that a significant section of the public are unsatisfied by the City's level of responsiveness to them in the process. I feel that the SEPA exemption would act to further exclude people from the process.

Thank You,
Ryan DeWitt
2022 Dickinson Ave NW
Olympia, WA 98502

Judy Bardin's comments to the Olympia Planning Commission's October 16, 2017 on the "Public Hearing on Downtown Urban Infill Area State Environmental Policy Act (SEPA) Ordinance."

I am opposed to creating Downtown as a SEPA urban infill exemption area for the following reasons.

1) It will shut out the public from being able to comment on environmental impacts for commercial buildings less than 65,000 sq. ft. (excluding retail) and units with a density of or less than: 30-unit single-family homes or 60 units of apartments and condominiums. Current regulations exempt buildings of nine units or less from SEPA. This is a very large extension in the number and size of buildings exempt from SEPA. . Projects of this scope should be subject to SEPA scrutiny that is current and specific to their impact. The public has enough trouble tracking and commenting on land use decisions; this takes away another opportunity for the public to comment. It deprives the public of its right to be involved.

2) The City is relying on an EIS that was done for the Comprehensive Plan in 2014. The EIS at this point is somewhat outdated. A number of things have changed since the EIS was originally written, for example, sea level rise projections have worsened, development has revitalized, the Metropolitan Parks District measure has passed, and homelessness is a rising concern.

3) Do we really have a problem with density Downtown?

The perceived current need for a Downtown SEPA exemption area calls out (RCW 43.21C.229) – This provision of the statute is intended to encourage residential or mixed use development in urban areas where the density goals of the comprehensive plan are not being met. Has it been ascertained that the density goals for Downtown are not being met? Currently development in Downtown is booming; each month we hear of a new development scheduled or being planned Downtown. What is our density supposed to be and how far behind the curve are we? How much development has occurred or is in the pipeline? At what rate are we increasing density? How many new housing units and how much commercial/retail square footage have we added in a year? What's projected for the upcoming year?

The Comprehensive Plan supports measured increase in our urban density. It does not seem to stipulate that we have to rapidly meet this goal. The following paragraph from the Comprehensive Plan Land Use and Urban Design Chapter emphasizes this point.

This Plan envisions gradually increasing densities in Olympia accompanied by attractive streets and buildings arranged for the convenience of pedestrians. The location, mix and relationship of land uses to each other and to our streets will be crucial as will be the character of commercial and residential areas, parks, and open spaces. The Plan envisions new development that will reinforce the community's identity, urban design preferences, and historic form. Selected major

streets will gradually transform into attractive, higher density, mixed residential and commercial "urban corridors" with frequent transit

Downtown is in a High-Density Neighborhoods Overlay that calls for densities of at least 25 dwelling units per acre for residential uses that are not re-using or redeveloping existing structures. It emphasizes that it not include structures that are being reused or redeveloped so we are not forcing existing historical buildings to meet the 25 units per acre requirement. How far behind is the City in meeting this 25 unit per acre requirement? Has any data been provided? The Planning Commission initially set this density at 35 units per acre, but it was reduced by staff to 20 and then finally raised to 25 by Council. Should the density be higher?

4) A time frame for the SEPA exemption area has not been specified. RCW 43.21C.440 stipulates that a time period identified in the ordinance or resolution adopted be specified

5) The Gap Analysis does not seem to be adequate. The gap analysis identifies three areas: flood risks associated with sea level rise (SLR), off-site traffic impact mitigation and cultural resources.

<u>Flood risk associated with sea level rise</u>

The City's 2016 flood proofing standards are cited as filling this gap, especially the higher finished floor elevation. However, current regulations only require a one-foot increase in the finished floor elevation. The City Utility this year presented information on SLR. Currently the City is projecting 2 feet of SLR by 2050 with approximately 160 flooding events a year. By 2100, SLR is projected to increase to 4 feet with about 440 annual flooding events. Other agencies feel current projections are too low, because published scientific literature lags what is happening in nature. Before a scientific article is published, data must first be collected, then analyzed, written up, and peer reviewed. This process is lengthy. In 2016, Margaret Davidson, NOAA's senior advisor for coastal inundation and resilience science and services, and Michael Angelina, executive director of the Academy of Risk Management and Insurance, offered their take on climate change data in a conference session titled "Environmental Intelligence: Quantifying the Risks of Climate Change." They projected that we could have about 3 meters or around 10 feet of SLR by 2050-2060.

If we experience just a few feet of SLR, are we really willing to accept roadways, sidewalks, and parking lots that are periodically under water even if the buildings they serve are high enough to keep their lower floors dry? What happens to basements?

<u>Off-site traffic mitigation</u>

Staff states that the Downtown Strategy will likely determine a threshold for a traffic analysis but that threshold has not been set.

Cultural Resources

Presently tribal agencies tend to use SEPA notice as their trigger to comment on projects. Plans are being formulated to meet with tribal and State Department of Archaeology and Historic Preservation (DAHP) representatives to discuss the other available opportunities for comment such as at notice of application and potential code revisions, however it is not known at this point if these groups will support their inability to comment on SEPA. Additionally, what mechanisms will be established to ensure that tribes and DAHP will be automatically informed of applications for new projects and revisions to the codes without having to make periodic inquiries?

Judy Bardin
1517 Dickinson Ave NW
Olympia, WA 98502
judybardin@comcast.net
360-352-9564

Leonard Bauer

Subject: FW: Comments to City of the SEPA analysis issues; Meeting Tonight, Monday, Oct 16

From: northbeachcomm@cs.com [mailto:northbeachcomm@cs.com]
Sent: Monday, October 16, 2017 1:42 PM
To: cpdinfo <cpdinfo@ci.olympia.wa.us>
Cc: CityCouncil <citycouncil@ci.olympia.wa.us>
Subject: Comments to City of the SEPA analysis issues; Meeting Tonight, Monday, Oct 16

Oct 14, 2017
City of Olympia Staff;

The Comprehensive Plan (Comp Plan) for the City of Olympia is an important document, we all know that.
Currently it seems as if the City Planning Staff is trying to do an end run around SEPA.
This end run will be discussed tonight, at the Oly. City Planning meeting, Monday 16, 2017, 6:30 P.M.
The City planning staff, will then, not just cut out the public and our comments in general regarding development proposals,
but they will eliminating the requirement for individual project level SEPA EIS's at all!

This action will supplant current analyses of specific proposals with the SEPA analysis done on the Comp Plan.
This is not good. This will isolate both the public and the Council from major land use investigations.
We must have transparency with the public and the Planning within the City.
This action to be discussed Oct 16th, and will allow City of Olympia Planning Staff to be "in authority" by default.
This is wrong.

The City did a "gap analysis" (their term).
In this analysis they said that the only three City areas that needed to be addressed before establishing SEPA exemption areas were;
1) flood risk associated with sea level rise,
2) off site traffic impact mitigation,
3) cultural resources.

But this analysis , this decision is wrong.
We need a city SEPA analysis of city development proposals.
We do not need a "short cut".
We do not need the city to be "in authority". We need the SEPA analysis process, to stay in place.

Thank you,
L. Riner
2103 Harrison Ave
OLY., WA
98502
360-956-0254