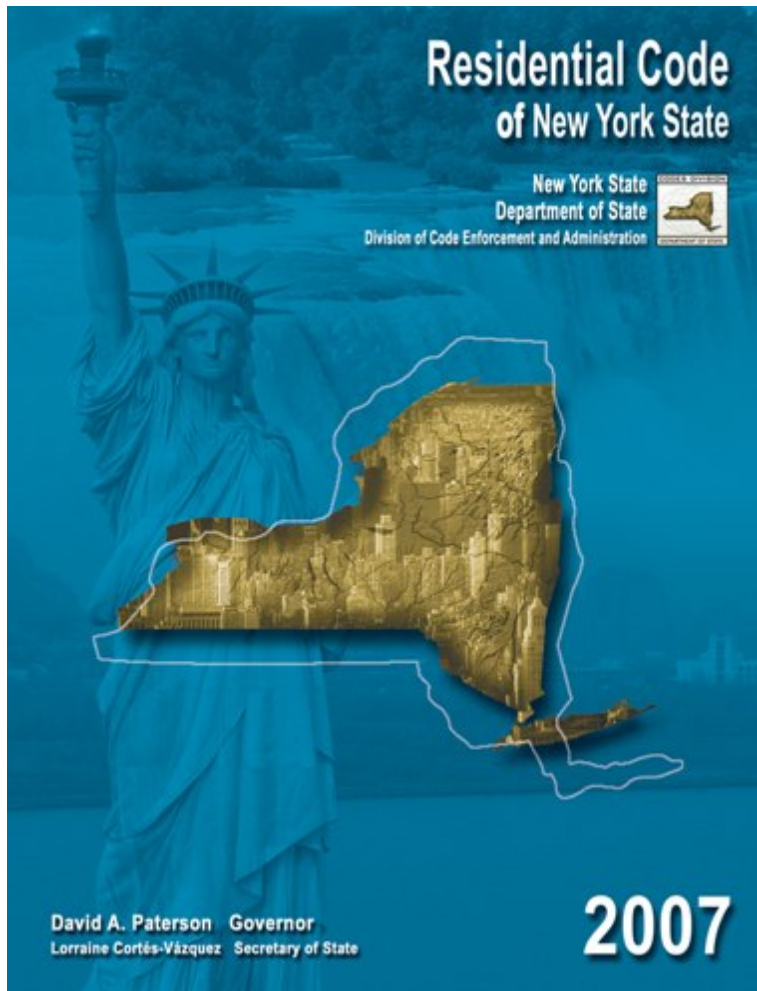


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Part III — Building Planning and Construction

CHAPTER 3 BUILDING PLANNING

SECTION R323 FLOOD-RESISTANT CONSTRUCTION

R323.1 General.

R323.2 Flood hazard areas (including A Zones)

R323.3 Coastal high-hazard areas (including V Zones)

R323.1 General. Buildings and structures constructed in flood hazard areas (including A or V Zones) as established in Table [R301.2 \(1\)](#) shall be designed and constructed in accordance with the provisions contained in this section.

Exception: All buildings and structures in identified floodways as established in Table [R301.2 \(1\)](#) shall be designed and constructed as stipulated in the *Building Code of New York State*.

R323.1.1 Structural systems. All structural systems of all buildings and structures shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood elevation.

R323.1.2 Flood-resistant construction. All buildings and structures erected in areas prone to flooding shall be constructed by methods and practices that minimize flood damage.

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R323.1.3.1 Acceptance of alternative methods establishing the design flood elevation. In areas prone to flooding as identified in Table [R301.2\(1\)](#) where a base flood elevation has not been determined, the code enforcement official may accept the use of other sources to establish the design flood elevation, including, but not limited to, New York State, the U.S. Army Corps of Engineers, the Natural Resources Conservation Service or another authoritative source, such as historical data.

R323.1.3.2 Lack of design flood elevation. In areas prone to flooding as identified in Table [R301.2\(1\)](#) where it is not possible to obtain a design flood elevation from the FIRM or from any method established above, the design flood elevation shall be three feet above the highest adjacent grade. Highest adjacent grade is the highest natural ground elevation within the perimeter of the proposed building prior to construction.

R323.1.3.3 Freeboard. A freeboard of two feet shall be added where the design flood elevation or other elevation requirements are specified.

Exception: A freeboard shall not be required where it is not possible to obtain a design flood elevation from the FIRM or from any method established above and the design flood elevation is three feet above the highest adjacent grade.

R323.1.4 Lowest floor. The lowest floor shall be the floor of the lowest enclosed area, including basement, but excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the building or structure in violation of this section.

R323.1.5 Protection of mechanical and electrical systems. Electrical systems, equipment and components, and heating, ventilating, air conditioning and plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall be located at or above the design flood elevation plus freeboard as specified in Section [R323.1.3.3](#). If replaced as part of a substantial improvement, electrical systems, equipment and components, and heating, ventilating, air conditioning, and plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

Exception: Electrical systems, equipment and components, and heating, ventilating, air conditioning and plumbing appliances, plumbing fixtures, duct systems, and other service equipment are 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 the *Building Code of New York State*. Electrical wiring systems are permitted to be located below the design flood elevation provided they conform to the provisions of the electrical part of this code for wet locations.

R323.1.6 Protection of water supply and sanitary sewage systems. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems in accordance with the plumbing provisions of this code. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters in accordance with the plumbing provisions of this code.

R323.1.7 Flood-resistant materials. Building materials used below the design flood elevation shall comply with the following:

1. All wood, including floor sheathing, shall be pressure preservatively treated in accordance with AWPA C1, C2, C3, C4, C9, C15, C18, C22, C23, C24, C28, P1, P2 and P3 or decay-resistant heartwood or redwood, black locust, or cedars.
2. Materials and installation methods used for flooring and interior and exterior walls and wall coverings shall conform to the provisions of FEMA/FIA-TB-2.

R323.1.8 Manufactured housing. New or replacement manufactured housing shall be elevated in accordance with Section [R323.2](#) and the anchor and tie-down requirements of Sections [AE604](#) and [AE605](#) of Appendix [E](#) shall apply. The foundation and anchorage of manufactured housing to be located in identified flood ways as established in Table [R301.2\(1\)](#) shall be designed and constructed in accordance with the applicable provisions in the *Building Code of New York State*.

R323.1.9 As-built elevation certifications. A licensed land surveyor or registered design professional shall certify that the building or structure is in compliance with the elevation requirements of Section [R323.2](#) or [R323.3](#).

R323.2 Flood hazard areas (including A Zones). All areas that have been determined to be prone to flooding but not subject to high velocity wave action shall be designated as flood hazard areas. All buildings and structures erected in flood hazard areas shall be designed and constructed in accordance with Sections [R323.2.1](#) through [R323.2.3](#).

R323.2.1 Elevation requirements.

1. Buildings and structures shall have the lowest floors elevated to or above the design flood elevation plus freeboard as specified in Section [R323.1.3.3](#).
2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet (mm) on the FIRM, or at least 2 feet (610 mm) if a depth number is not specified.
3. Basement floors that are below grade on all sides shall be elevated to or above the design flood elevation plus freeboard as specified in Section [R323.1.3.3](#).

Exception: Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section [R323.2.2](#).

R323.2.2 Enclosed area below design flood elevation. Enclosed areas, including crawl spaces, that are below the design flood elevation shall:

1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings which shall meet the following criteria:
 - 2.1. There shall be a minimum of two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.
 - 2.2. The total net area of all openings shall be at least 1 square inch for each square foot (275 mm for each square meter) of enclosed area.
 - 2.3. The bottom of each opening shall be 1 foot (305 mm) or less above the adjacent ground-level.
 - 2.4. Openings shall be at least 3 inches (76 mm) in diameter.
 - 2.5. Any louvers, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the enclosed area.
 - 2.6. Openings installed in doors and windows, that meet requirements 2.1 through 2.5, are acceptable; however, doors and windows without installed openings do not meet the requirements of this section.

R323.2.3 Foundation design and construction. Foundation walls for all buildings and structures erected in flood hazard areas shall meet the requirements of Chapter [4](#).

Exception: Unless designed in accordance with Section [404](#):

1. The unsupported height of 6 inches (152 mm) plain masonry walls shall be no greater than 3 feet (914 mm).
2. The unsupported height of 8 inches (203 mm) plain masonry walls shall be no greater than 4 feet (1219 mm).
3. The unsupported height of 8 inches (203 mm) reinforced masonry walls shall be no greater than 8 feet (2438 mm).

For the purpose of this exception, unsupported height is the distance from the finished grade of the under-floor space and the top of the wall.

R323.3 Coastal high-hazard areas (including V Zones). Areas that have been determined to be subject to wave heights in excess of 3 feet (914 mm) or subject to high velocity wave action or wave-induced erosion shall be designated as coastal high-hazard areas. All buildings and

structures erected in coastal high-hazard areas shall be designed and constructed in accordance with Sections [R323.3.1](#) through [R323.3.6](#).

R323.3.1 Location and site preparation.

1. Buildings and structures shall be located landward of the reach of mean high tide.
2. For any alteration of sand dunes and mangrove stands the code enforcement official shall require submission of an engineering analysis which demonstrates that the proposed alteration will not increase the potential for flood damage.

R323.3.2 Elevation requirements.

1. All buildings and structures erected within coastal high hazard areas shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of mat or raft foundations, piling, pile caps, columns, grade beams and bracing, is located at or above the design flood elevation plus freeboard as specified in Section [R323.1.3.3](#).
2. Basement floors that are below grade on all sides are prohibited.
3. The use of fill for structural support is prohibited.
4. The placement of fill beneath buildings and structures is prohibited.

Exception: Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections [R323.3.4](#) and [R323.3.5](#).

R323.3.3 Foundations. All buildings and structures erected in coastal high hazard areas shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. Piling shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with Section [R323.3.6](#). Mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with Section [R401.4](#) indicate that soil material under the mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions.

R323.3.4 Walls below design flood elevation. Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and:

1. Electrical, mechanical, and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads, and
2. Are constructed with insect screening or open lattice, or;
3. Are designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than 10 (0.48 kN/m²) and no more than 20 pounds per square foot (0.96 kN/m²); or
4. Where wind loading values of this code exceed 20 pounds per square foot (0.96 kN/m²), the construction documents shall include documentation prepared and sealed by a registered design professional that:
 - 4.1. The walls and partitions below the design flood elevation have been designed to collapse from a water load less than that which would occur during the design flood.
 - 4.2. The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code.

R323.3.5 Enclosed areas below design flood elevation. Enclosed areas below the design flood elevation shall be used solely for parking of vehicles, building access or storage.

R323.3.6 Construction documents. The construction documents shall include documentation that is prepared and sealed by a registered design professional that the design and methods of construction to be used meet the applicable criteria of this section.

Excerpt from TABLE R301.2(1)
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA
FLOOD HAZARDS - h

h. The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction's entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the currently effective FIRM and FBFM, or other flood hazard map adopted by the community, as may be amended.