



HURRICANE
SANDY
IN NEW JERSEY
AND NEW YORK

2
**Building Codes, Standards,
and Regulations**

The MAT performed research on existing codes and standards adopted by New Jersey, New York, and New York City.

The floodplain management regulations of the NFIP and the flood provisions of the family of model codes developed and maintained by the ICC are related. Since 1998, FEMA has participated in the code development process for the I-Codes. Every 3 years, the family of model codes is modified through a formal, public consensus process.

The flood provisions in the 2009 and 2012 I-Codes are consistent with NFIP requirements for buildings and structures, and the 2006 I-Codes are

THE I-CODES AND THE NFIP

FEMA compiled excerpts of the flood provisions of the 2009 and 2012 I-Codes and prepared additional documents that identify the differences between each edition. FEMA also prepared a checklist that compares the requirements of the NFIP to the flood provisions of the 2009 and 2012 editions of the I-Codes and ASCE 24-05 (a standard referenced by the I-Codes), and *Highlights of ASCE 24-05 Flood Resistant Design and Construction* (FEMA 2010c). These resources are accessible at <http://www.fema.gov/building-science/building-code-resources>.

essentially consistent. Consequently, as long as no flood provision has been modified to weaken the requirements, communities can rely on the I-Codes to fulfill the requirements for buildings and structures that they must enforce to participate in the NFIP.

Unless constrained by State requirements, communities that enforce building codes with NFIP-consistent provisions have two primary tools to regulate development in flood hazard areas: (1) building codes that govern the design and construction of buildings and structures and (2) either Appendix G of the International Building Code (IBC) or local floodplain management regulations. These tools are designed to work together to result in buildings, structures, and all other development that are resistant to flood loads and flood damage.

This chapter contains separate sections for New Jersey, New York State, and New York City to highlight each jurisdiction's programs and authorities related to floodplain management and building codes, including amendments to the I-Codes. An additional section summarizes guidelines and standards that are referenced by New Jersey and New York State for healthcare facilities.

The appendices for this report include additional pertinent information. Appendix F contains summaries of:

- + The NFIP, including the program's relationship with NFIP State Coordinating Agencies, the program's general performance requirements for buildings, the minimum requirements for buildings in Zone A and Zone V, and the NFIP Community Rating System
- + The flood provisions of the I-Codes that apply to buildings and structures
- + How the NFIP and the I-Codes treat historic structures
- + American Society of Civil Engineers (ASCE), *Flood Resistant Design and Construction* (ASCE 24), a design standard that is referenced by the I-Codes
- + The flood provisions of the Facility Guidelines Institute (FGI) *Guidelines for Design and Construction of Health Care Facilities* (FGI Guidelines)
- + The flood provisions of the National Fire Protection Association (NFPA) *Standard for Health Care Facilities* (NFPA 99)

BIGGERT-WATERS FLOOD INSURANCE REFORM ACT OF 2012 (BW-12)

As a requirement of BW-12, FEMA is tasked with assessing the impact, effectiveness, and feasibility of including nationally recognized building codes as part of the NFIP's floodplain management criteria. The results of the evaluation are summarized in the 2013 FEMA report titled, *Including Building Codes in the National Flood Insurance Program* (FEMA 2013e).

Overall, the study found there would be positive impacts that would help to reduce damage from floods. The most significant benefits would arise from the use of the elevation requirements of the codes, which exceed the NFIP minimum requirements.

Appendix G of this report contains summary descriptions of the floodplain management programs and buildings codes of New Jersey, New York State, and New York City. This appendix includes the background for jurisdiction-specific conclusions and recommendations in Section 7.3.

2.1 State of New Jersey

Two departments of the State of New Jersey have statutory authorities and programs that affect floodplain management at the local jurisdiction level: the NJDEP establishes flood elevation data and manages a State permit program, and the New Jersey Department of Community Affairs (NJDCOA) is charged with adopting and maintaining the State's building code, known as the New Jersey Uniform Construction Code (UCC) (N.J.A.C. 5:23).¹

Floodplain management has a long history in New Jersey. In 1929, the legislature authorized a State agency to regulate structures "within the natural and ordinary high water mark." In 1962, a second law was adopted authorizing the study and delineation of floodplain areas. In 1972, the legislature adopted a third statute to amend the 1962 Act to authorize the adoption of regulations for floodplain areas. The Act, as amended, is known as the Flood Hazard Area Control Act. Since the 1970s, many local jurisdictions have regulated flood hazard areas in order to participate in the NFIP.

New Jersey and many of its local jurisdictions also have long histories with building codes. Many communities had been enforcing codes for many years before the statutory authority for a statewide building code was enacted in 1975.

Appendix G, Section G.1, contains the following: (1) descriptions of the NJDEP's flood hazard area mapping and community assistance programs, model local flood damage prevention ordinance, and flood hazard area rules and permits; (2) a recommendation made by a commission appointed to address flooding in the Passaic River Basin; (3) descriptions of NJDCOA's programs for administering the State building code and amendments made to the flood provisions of the model I-Codes; and (4) a description of New Jersey's unique "prior approval" process through which local construction officials and local floodplain administrators are to coordinate on such matters as Substantial Improvement determinations. The appendix also notes that New Jersey maintains its own register of historic places.

2.2 New York State

Two departments of the State of New York have statutory authorities and programs that affect floodplain management at the local jurisdiction level: the Department of Environmental Conservation (NYSDEC) has a number of programs that have bearing on floodplain management, and the Department of State is charged with adopting and maintaining the State's building code.

Floodplain management has a long history in New York. Many local jurisdictions have regulated flood hazard areas since the early 1970s in order to participate in the NFIP. Building codes also have a long history in New York. The legislative action that authorized a statewide uniform code found

¹ <http://www.state.nj.us/dca/divisions/codes/codreg/ucc.html>.

that a “multiplicity” of codes had been adopted at various levels of State and local government, which indicates that many communities had enforced building codes for many years before the first statewide building code was enacted in 1984.

Appendix G, Section G.2, contains descriptions of the NYSDEC’s floodplain management program, model local law for flood damage prevention, and the State’s programs for administering the State building code and amendments made to the flood provisions of the model I-Codes. The appendix also notes that New York State maintains its own register of historic places.

2.3 New York City

The history of New York City’s construction regulations is summarized in the 2011 Construction Codes Revision Handbook (NYC DOB 2011). Rules that affect building locations, public safety, and sanitary needs in the area that is now incorporated as New York City date back to 1674. Today, New York City comprises the Boroughs of Manhattan (New York County), Queens (Queens County), Brooklyn (Kings County), The Bronx (Bronx County), and Staten Island (Richmond County).

The first document to be called a “Building Code” was published in 1899 and significantly updated in 1916. Significant changes were made in 1938 and, in the face of the Stock Market Crash of 1929, efforts were made to remove costly, outdated provisions, resulting in the 1938 Code. By the 1950s, criticisms that the 1938 Code did not embrace the latest technology led to efforts to revise the code, culminating in the 1968 Code.

By State law, the City is authorized to adopt and maintain its own code, rather than enforce the New York State Uniform Fire Prevention and Building Code. The current version of the New York City Construction Code,² based on the 2003 edition of the I-Codes, became effective on July 1, 2008, and has been subject to numerous amendments.

The Construction Codes consist of five technical volumes: the Building Code, Plumbing Code, Mechanical Code, Fuel Gas Code, and the Energy Conservation Code. The same codes apply to all new buildings, whether state-of-the-art skyscrapers or one- and two-family dwellings. The City maintains a separate Administrative Code that contains administration, enforcement, permitting, licensing, fees, and other provisions that apply to the five technical volumes.

The New York City Department of Buildings (DOB)³ ensures the safe and lawful use of over 975,000 buildings and properties by enforcing the Construction Code, Electrical Code, Zoning Resolution, New York State Labor Law, and New York State Multiple Dwelling Law. The DOB examines construction plans, issues construction permits, inspects properties, issues Certificates of Occupancy, and licenses trades.

The Construction Code is maintained, administered, and enforced by the DOB. The City is required to develop revisions every 3 years to maintain consistency with the I-Codes. The DOB uses a consensus-based approach, involving extensive participation from the architectural and

² <http://publicecodes.cyberregs.com/st/ny/ci-nyc/YC-P-2008-000006.htm>.

³ <http://www.nyc.gov/html/dob/html/about/about.shtml>.

engineering community, industry, labor, and government. Using a committee structure, new code texts are evaluated and debated. Technical committees reach agreement on the majority of changes. Issues not resolved by committees are mediated by the Department.

The DOB's multi-phase code revision process to produce the next edition of the Construction Code began in 2011. Revisions to bring it up to date with the 2009 I-Codes were introduced to City Council in May 2013 (Int. No. 1056).⁴ Among the many revisions throughout the code to incorporate modifications that are unique to New York City are numerous amendments to the flood provisions, which are found primarily in Appendix G, Flood-Resistant Construction, of the Construction Code (see Appendix G, Section G.3.1, of this report).

Appendix G, Section G.3 of this report, contains descriptions of New York City's program for administering the City's building code and amendments made to the flood provisions of the model I-Codes and ASCE 24. The appendix also highlights how the DOB responded to Hurricane Sandy, including passing emergency rules, and notes that the City maintains a list of historic properties, structures, objects, and archaeological sites.

2.4 Guidelines and Standards for Healthcare Facilities

Healthcare facilities are required to be designed and constructed in accordance with building codes and any additional specifications adopted by the applicable jurisdiction. This section describes the flood provisions and emergency power requirements contained in the FGI Guidelines and a standard produced by the NFPA. Both documents are cited by building codes and other regulations in New Jersey and New York State.

The FGI Guidelines are not referenced by the IBC but are referenced by both New Jersey and New York:

- + New Jersey requires the construction and rehabilitation of healthcare facilities to be in accordance with the UCC building subcode and the FGI Guidelines, providing that the more restrictive shall govern (§ 5:23-3.2(b), N.J.A.C.).

NEW YORK STATE HOSPITAL CODE

The State Health Commissioner is authorized (but not required) to specify certain requirements for healthcare facilities in floodplains, including:

- No floors located below the "100-year flood crest level" unless specifically approved
- Surgical suites, medical records storage, or medical records libraries above the "100-year flood crest level"
- Helicopter landing pads to evacuate patients and staff
- Capability to provide services necessary to maintain the life and safety of patients and staff, including electrical service and emergency power, heating, ventilation, sterilization, communications, food service, emergency department, and x-ray service
- Alternate water supply and alternate means to store or dispose of sewage, garbage, and biological waste

SOURCE: SEC. 711.3, NEW YORK STATE HOSPITAL CODE

⁴ <http://council.nyc.gov/html/committees/legislation.shtml> (search for "1056" for 2013).

- +New York State requires all health facilities to comply with building codes and the more restrictive requirements of numerous technical standards cited in regulations applicable to the construction of medical facilities, including the 2010 edition of the FGI Guidelines (Title 10, New York Codes, Rules and Regulations, Subchapter C State Hospital Code, s. 711.2).

NFPA 99 is adopted by reference in IBC and cited only in Section 407.10, which applies only to hyperbaric facilities. NFPA 99 is referenced in the FGI Guidelines. New York State also references NFPA 99 (1999 edition) in regulations that apply to the construction of medical facilities.

Appendix F, Section F.5, contains descriptions of the flood provisions of the FGI Guidelines and NFPA 99.