

# HURRICANE SANDY

IN NEW JERSEY  
AND NEW YORK

# I Definitions of Critical Facilities and Risk Categories

Part 9 of 44 CFR defines “Critical Actions” that improve the performance and useful life of critical facilities located in floodplains. The International Building Code (IBC), American Society of Engineers (ASCE) publications, ASCE 7 and ASCE 24, and the Federal Emergency Management Agency’s National Disaster Recovery Framework (FEMA 2011) all address critical facilities and Risk Category III and IV structures.

## I.1 44 Code of Federal Regulations

44 CFR Part 9 sets forth FEMA’s policy, procedure, and responsibilities for implementing and enforcing Executive Order 11988, *Floodplain Management*, and Executive Order 11990, *Protection of Wetlands*. The term “Critical Action,” as used in this part of the regulations, is defined as follows:

Critical Action means an action for which even a slight chance of flooding is too great. The minimum floodplain of concern for critical actions is the 500-year floodplain, i.e., critical action floodplain. Critical actions include, but are not limited to, those which create or extend the useful life of structures or facilities:

- a. Such as those which produce, use or store highly volatile, flammable, explosive, toxic or water-reactive materials;
- b. Such as hospitals and nursing homes, and housing for the elderly, which are likely to contain occupants who may not be sufficiently mobile to avoid the loss of life or injury during flood and storm events;

- c. Such as emergency operation centers, or data storage centers which contain records or services that may become lost or inoperative during flood and storm events; and
- d. Such as generating plants, and other principal points of utility lines.

## I.2 IBC and ASCE 7-10

Critical facilities in the 2012 IBC (Section 1604, *General Design Requirements*, Table 1604.5) and ASCE 7-10 (Section 1.2, *Definitions and Notations*, Table 1.5-1) are classified as Risk Category IV facilities. Risk Categories in building codes are assigned to reflect current understanding of the risk to human life, health, and welfare associated with damage or failure of a facility by nature of its occupancy or use. Risk Category IV, the highest risk category, includes buildings and structures that, if severely damaged, would reduce the availability of essential community services necessary to cope with an emergency. Risk Category IV buildings and structures include hospitals, police stations, fire stations, emergency communication centers, and similar emergency facilities, as well as ancillary structures required for the operation of these facilities during an emergency, and facilities containing extremely hazardous materials that would threaten the public if released (ASCE 2010, IBC 2012). The 2012 IBC also includes other public utility facilities required for emergency backup as Risk Category IV facilities; such facilities include power generating stations, aviation control centers, water storage facilities, and pump systems for fire suppression. Local jurisdictions can also designate other facilities as Risk Category IV on the basis of their critical function in the community.

Risk Category III buildings and structures house a large number of people in one place, or house persons with limited mobility or ability to escape to a safe haven. Risk Category III includes such structures as theaters, lecture halls, and elementary schools, prisons, and small healthcare facilities. Risk Category III includes structures associated with utilities that are required to protect the health and safety of a community. Risk Category III buildings and structures typically include power generating stations, telecommunication centers, and water and sewage treatment plants (ASCE 2010, IBC 2012).

### CRITICAL FACILITIES RISK CATEGORIES

Given the dense urban environment, the large population, and the interconnectedness of critical facilities and supporting infrastructure systems, both Risk Categories III and IV facilities were considered critical facilities.

## I.3 IBC and ASCE 24-05

The 2012 and 2009 editions of the IBC reference ASCE 24-05 for specific design and construction requirements for buildings and structures in flood hazard areas based on their Structure Category (also called Risk Category). Risk Category III and IV buildings and structures have requirements more stringent than those applicable to Risk Category I and II buildings and structures. Along with other requirements, ASCE 24-05 specifies elevation and floodproofing protection requirements for buildings and structures (refer to Appendices F and G for additional information).