

## Certification of Flood Resistant Design

Any new development in flood-prone areas should be “reasonably safe” from flood damage. Specific standards for development in regulated floodplain areas (shown on Flood Insurance Rate Maps) include the following:

- New construction and substantially improved structures (including gas or liquid storage tanks), together with equipment servicing those structures, shall be designed (or modified) and **anchored** to prevent flotation, collapse, or lateral movement during the base flood.
- For new construction and substantially improved structures, **building materials and utility equipment** located below the flood protection level shall be resistant to flood damage.
- New construction and substantially improved structures shall be constructed using **methods and practices** that minimize flood damage.
- **Flood vents** for enclosed areas below the flood protection level of new construction and substantially improved structures (crawl spaces, accessory structures, enclosed parking/storage areas, etc.) shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting this requirement must be certified by a licensed professional engineer or architect unless they meet or exceed the following minimum criteria:
  - A minimum of two openings on different sides of each enclosed area having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
  - The bottom of all such openings no higher than one foot above the adjacent finished grade;
  - Openings at least three inches in diameter;
  - Any louvers, valves, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the enclosed area; any resulting obstruction to flow shall be accounted for in determining the net area of the opening; and
  - Openings installed in doors and windows that meet the above requirements are acceptable; however, doors and windows without installed openings do not meet the requirements.
- New or replacement **utilities** (including electrical equipment, heating, ventilation, air conditioning, plumbing appliances, plumbing fixtures, duct systems, and other service equipment) shall be located above the flood protection level or 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 flood protection level. Standards for electrical equipment in wet locations are specified in the Building Code of New York State or the Residential Code of New York State. The municipality may require certification from a licensed professional engineer or architect that utilities located below the flood protection level are resistant to flood damage.
- New and replacement **water supply systems** shall be designed to prevent infiltration of floodwaters into the system.
- New and replacement **sanitary sewage systems** shall be designed and constructed to prevent infiltration of floodwaters into the systems and discharges from the systems into floodwaters. Sanitary sewer and storm drainage systems for buildings that have openings below the flood protection level shall be provided with automatic backflow valves or other automatic backflow devices that are installed in each discharge line passing through a building’s exterior wall.
- **On-site waste disposal systems** shall be located to avoid impairment to them or contamination from them during flooding.
- **Public utilities and facilities** such as sewer, gas, electrical and water systems shall be located and constructed so as to minimize flood damage.

The attached form may be used for professional certification that a design is resistant to flood damage, as required by floodplain development standards. It is not appropriate for documenting that a non-residential structure is dry floodproofed, which requires a FEMA Floodproofing Certificate. It is also not necessary for buildings and associated equipment that are protected by elevation and should thus be documented on a FEMA Elevation Certificate.<sup>1</sup>

<sup>1</sup> FEMA Floodproofing and Elevation Certificate forms are available at [http://www.fema.gov/plan/prevent/fhm/frm\\_form](http://www.fema.gov/plan/prevent/fhm/frm_form).