



Docket # 591

THE COMMONWEALTH OF MASSACHUSETTS

William Francis Galvin
Secretary of the Commonwealth

Regulation Filing *To be completed by filing agency*

CHAPTER NUMBER: 780 CMR 120.00 Appendix G

CHAPTER TITLE: Flood Resistant Construction

AGENCY: State Board of Building Regulations and Standards

SUMMARY OF REGULATION: *State the general requirements and purposes of this regulation.*
Regulates construction in areas subjected to flooding.

REGULATORY AUTHORITY: C. 802 of Acts of 1972, as amended and MGL C. 143 Sections 93-100

AGENCY CONTACT: Don Finocchio PHONE: 617-727-3200,
x-25206

ADDRESS: 1 Ashburton Place, Boston, MA 02108

Compliance with M.G.L. c. 30A

EMERGENCY ADOPTION - *if this regulation is adopted as an emergency, state the nature of the emergency.*

PRIOR NOTIFICATION AND/OR APPROVAL - *If prior notification to and/or approval of the Governor, Legislature or others was required, list each notification, and/or approval and date, including notice to the Local Government Advisory Commission.*

DHCD and MMA

PUBLIC REVIEW - *M.G.L. c. 30A sections 2 and/or 3 requires notice of the hearing or comment period be filed with the Secretary of the Commonwealth, published in appropriate newspapers, and sent to persons to whom specific notice must be given at least 21 days prior to such hearing or comment period.*

Date of public hearing or comment period: BBRS Public Hearing on December 8, 2009

FISCAL EFFECT - *Estimate the fiscal effect of the public and private sectors.*

For the first and second year: _____

For the first five years: _____

No fiscal effect: _____

None

SMALL BUSINESS IMPACT - *State the impact of this regulation on small business. Include a description of reporting, record keeping and other compliance requirements as well as the appropriateness of performance versus design standards and whether this regulation duplicates or conflicts with any other regulation. If the purpose of this regulation is to set rates for the state, this section does not apply.*

None

CODE OF MASSACHUSETTS REGULATIONS INDEX -
Construction in areas subjected to flooding.

List key subjects that are relevant to this regulation:

PROMULGATION - *State the action taken by this regulation and its effect on existing provisions of the Code of Massachusetts Regulations (CMR) or repeal, replace or amend. List by CMR number:*

Amends 780 CMR 120.G

ATTESTATION - *The regulation described herein and attached hereto is a true copy of the regulation adopted by this agency.* ATTEST:

SIGNATURE: _____

DATE: 1/14/10

Publication - *To be completed by the Regulations Division*

MASSACHUSETTS REGISTER NUMBER: _____

1149

DATE: _____

2/5/10

EFFECTIVE DATE: 2/5/10

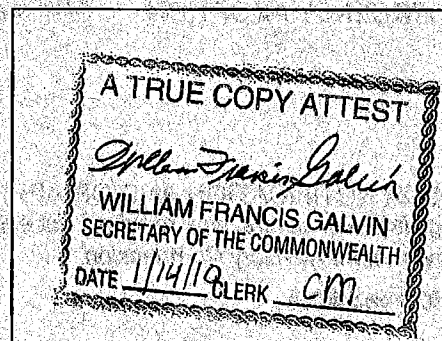
CODE OF MASSACHUSETTS REGULATIONS

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995, 996

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the structure's continued designation as a "historic structure."

Note 1: The following items can be excluded from the cost of improvement or repair: plans, specifications, survey, permits, and other items which are separate from or incidental to the repair of the damaged or improved building, *i.e.* debris removal/cartage.

Note 2: The latest Assessors' structure value may be used, provided that the Assessors certify that said value is based on 100% valuation, less depreciation.

Substantial Repair of a Foundation: Work to repair and/or replace a foundation that results in the repair or replacement of the portion of the foundation walls with a perimeter along the base of the foundation that equals or exceeds 50% of the perimeter of the base of the entire foundation measured in linear feet. The term "substantial repair of a foundation" also includes a building or structure including a manufactured home that has incurred a failure of a foundation regardless of the actual work done to repair or replace the foundation.

V Zones: V Zones are synonymous with High-Hazard Zones.

Variance: A grant of relief by a community and the Commonwealth, via the Boards of Appeal, from the terms of the Floodplain Management Regulations.

Venting: A system designed to allow flood waters to enter an enclosure, usually the interior of foundations walls, so that the rising water does not create a dangerous differential in hydrostatic pressure, usually achieved through openings in the walls. Vents may be installed in garage doors to satisfy this requirement, provided such vents are installed consistent with 780 CMR 120.G. The necessity of human intervention, such as opening garage doors, does not satisfy this requirement.

780 CMR 120.G301 BASE FLOOD ELEVATION

120.G301.1 Base Flood Elevation. The base flood elevation shall be used to define areas prone to flooding, and shall describe, at a minimum, the depth or peak elevation of flooding (including wave height) which has a 1% (100-year flood) or greater chance of occurring in any given year.

The 100-year flood elevation shall be determined as follows:

1. In A1-30, AH, AE, V1-30 and VE, the Base Flood Elevation is provided on the community's Flood Insurance Study and the Flood Insurance Rate Map (FIRM).
2. In AO zones, add the depth provided on the Flood Insurance Rate Map to the highest adjacent

grade. If no depth is provided, add at least two feet to the highest adjacent grade.

3. In A, A99 and V zones, the building official, design professional, or surveyor shall obtain, review and reasonably utilize any Base Flood Elevation Data available from a federal, state or other reliable sources.

780 CMR 120.G401 HAZARD ZONES

120.G401.1 Hazard Zones. Areas which have been determined to have a 1% or greater chance of flooding in any given year shall be classified as either flood-hazard zones (A Zones) or high-hazard zones (V Zones) in accordance with 780 CMR 120.G501 and 120.G601.

780 CMR 120.G501 FLOOD HAZARD ZONES

120.G501.1 Construction in Flood-hazard zones (A Zones). All areas which have a 1% or greater chance of flooding in any given year but are not subject to wave heights in excess of three feet shall be designated as flood-hazard zones. Flood-hazard zones shall include all areas shown as A Zones on the most recent Flood Hazard Boundary Map or FIRM. All buildings and structures as defined in 780 CMR 120.G201 including new or replacement manufactured homes erected or substantially improved in flood-hazard zones shall be designed and constructed in accordance with 780 CMR 120.G501.

Plans for the construction or substantial improvement of a building or structure, including a new or replacement manufactured home, in a flood-hazard zone shall be prepared by a qualified registered professional engineer or architect to ensure the compliance with 780 CMR 120.G501.

Exception: If a substantial improvement consists exclusively of a lateral addition that does not rely on the support of the existing structure, only the lateral addition must be erected in accordance with the applicable provisions of 780 CMR 120.G501. In that event, the existing structure is not required to come into compliance with 780 CMR 120.G501.

Note: If located in a coastal dune that is significant to flood control and/or storm damage prevention, a building or structure, including a new or replacement manufactured home, in a flood-hazard zone shall be designed and constructed in accordance with the applicable provisions of 780 CMR 120.G701, and 120.G801 as well as 780 CMR 120.G501.

120.G501.2 Elevation in a Flood-hazard Zone. Except as otherwise provided in 120.G501, all buildings or structures, including new or replacement manufactured homes, erected or substantially improved within a flood-hazard zone shall be elevated so that the lowest floor, including a basement/cellar floor, is located at or above the

base flood elevation.

Exceptions:

1. Floors in buildings other than use group R may be built below base flood elevation if in conformance with 780 CMR 120.G 510.5.2.
2. Floors, not including basements/cellars, in any use group which are used solely for means of egress, incidental storage and garages may be built below the base flood elevation if in conformance with 780 CMR 120.G 501.4.

120.G501.3 Anchorage in a Flood-hazard Zone. The structural systems of all buildings or structures, including new or replacement manufactured homes, 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 base flood elevation and shall be designed in accordance with 780 CMR 1615.2 and 1615.3.

120.G501.4 Enclosures below Base Flood Elevation in a Flood-hazard Zone. Enclosed spaces below the base flood elevation shall not be used for human occupancy with the exception of means of egress, incidental storage and garages. Such spaces shall be designed to equalize automatically hydrostatic forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall either be certified by a registered design professional in accordance with 780 CMR 120.G501.11 through 120.G501.13 or conform to the following minimum criterion: a minimum of two openings having a total net area of not less than one square inch (645 mm²) for every one square foot (0.1 m²) of enclosed area subject to flooding shall be provided. The bottom of all openings shall not be higher than 12 inches (305 mm) above grade immediately adjacent to the location of the opening. Openings shall not be equipped with screens, louvers, valves or other coverings or devices unless such devices permit the automatic entry and discharge of floodwaters.

120.G501.5 Water-resistant Construction in a Flood-hazard Zone. Occupancies in any use group other than Use Group R may, in lieu of meeting the elevation provisions of 780 CMR 120.G501.2 be erected with floors usable for human occupancy below the base flood elevation provided that the following conditions are met:

1. All space below the base flood elevation shall be constructed with walls and floors that are substantially impermeable to the passage of water.
2. All structural components subject to hydrostatic and hydrodynamic loads and stresses during the occurrence of flooding to the base flood elevation shall be capable of resisting such forces, including the effects of buoyancy.
3. All openings below the base flood elevation shall be provided with water-tight closures and shall have adequate structural capacity to support

all flood loads acting upon the closure surfaces.

4. All floor and wall penetrations for plumbing, mechanical and electrical systems shall be made water tight to prevent floodwater seepage through spaces between the penetration and wall construction materials. Sanitary sewer and storm drainage systems that have openings below the base flood elevation shall be provided with shutoff valves or closure devices to prevent backwater flow during conditions of flooding.

120.G501.6 Repair or Replacement of Existing Foundations in a Flood-hazard Zone. Existing foundations in a flood-hazard zone may be repaired without further compliance with 780 CMR 120.G501, unless the work replaces the foundation in total, replaces the foundation so as to constitute new construction or constitutes a substantial repair of a foundation as defined in 780 CMR 120.G201. In such events, the foundation shall be brought into compliance with the applicable provisions of 780 CMR 120.G501.

See Note 780 CMR 120.G501.1.

120.G501.7 Protection of Mechanical and Electrical Systems in a Flood-hazard Zone. New and replacement electrical, heating, ventilating, air conditioning and other service equipment in a flood-hazard zone shall either be placed above the base flood elevation or protected so as to prevent water from entering or accumulating within the system components during floods up to the base flood elevation in accordance with the mechanical code listed in 780 CMR 100.0. Installation of electrical wiring and outlets, switches, junction boxes and panels below the base flood elevation shall conform to the provisions of 527 CMR 12.00 listed in 780 CMR 100.0 for location of such items in wet locations. Duct insulation subject to water damage shall not be installed below the base flood elevation.

120.G501.8 Construction Materials, Methods, and Practices in a Flood-hazard Zone. All buildings or structures, including new or replacement manufactured homes, erected in a flood-hazard zone shall be constructed with materials resistant to flood damage and be constructed by methods and practices that minimize flood damage. Construction materials shall be resistant to water damage in accordance with the provisions of 780 CMR 1808.0, 1810.2, 1813.4, 2307.2, 2309.1, 2311.4, 2311.6, and 2503.4.

120.G501.9 Recreational Vehicles in a Flood-hazard Zone. All recreational vehicles placed in a flood-hazard zone and that are not fully licensed and ready for highway use or that are to be placed on a site for more than 180 consecutive days shall comply with the provisions of 780 CMR 120.G501 applicable to buildings or structures, including new or replacement manufactured homes.