LINKS TO RELEVANT DOCUMENTS

Appendix G of the 7th Edition of the Massachusetts State Building Code**,** 780 CMR 120.G, applies to all aspects of the building code for new and existing structures. For additional information on construction limitations in Coastal Wetland Resource Areas as reflected in the State Building Code see the following.

Regulations for the Wetlands Protections Act: 310 CMR 10.00
http://www.mass.gov/dep/service/regulations/310cmr10a.pdf

State Building Code 780 CMR 120.G Flood Resistant Construction and Construction in Coastal Dunes
http://www.mass.gov/Eeops/docs/dps/amendments_one_two_family_dwellings/bbrs_chapter_120_app_g.pdf

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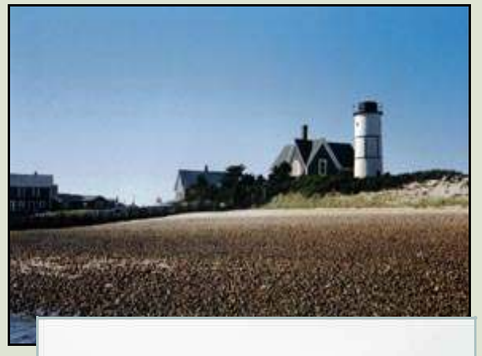

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Protecting Coastal Property from Major Storm Damage

How the Massachusetts Building Code and Wetlands Protection Act Work Together to Help You

Summary of the 7th Edition of
The Massachusetts Basic Building Code 780 CMR 120.G , Appendix G:
Flood-Resistant Construction and Construction in Coastal Dunes
Effective January 1, 2008

Hurricanes and other storms regularly batter Massachusetts coast. Homes, jetties, boats, and seawalls, are constantly subject to the erosional forces of everyday currents and tides. Millions of dollars are spent on measures that rarely provide long term protection from storm damage, or that inadvertently harm neighbor's property and the natural land formations which are our best form of protection against the sea. MassDEP and the Department of Public Safety have worked cooperatively to improve public safety and protect the natural resource areas by revising Appendix G of the Massachusetts Basic Building Code 780 CMR 120. The amended Code promotes the natural storm damage prevention and flood control capacity of coastal dunes. Appendix G establishes special administrative, design and construction requirements for new and existing buildings and structures located in flood-hazard zones (A Zones); high hazard zones (V Zones) and/or in coastal wetland resource areas containing coastal dunes that are deemed significant to the public interests of flood control and/or storm damage prevention.

What

Appendix 120.G has been revised in the 7th Edition of the Massachusetts Basic Building Code to:

- Conform to the National Flood Insurance Program
- Adopt the post Hurricane Katrina Federal Emergency Management Agency (FEMA) recommendations
- Facilitate consistency between Building Code and the Wetlands Protection Act regulations and their permit approvals.

Who

These changes apply to:

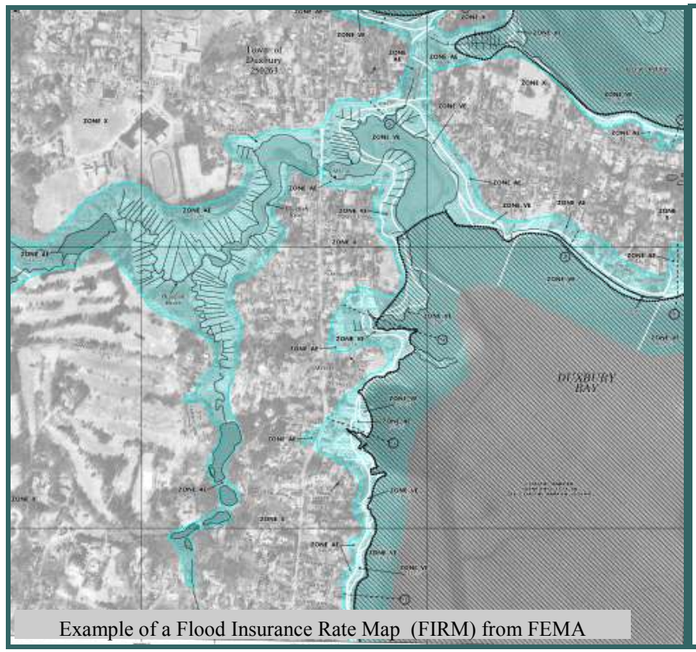
- Owners of coastal property with homes/structures that fall within Flood Hazard (A) Zones, High Hazard (V) Zones, or on coastal dunes.
- Building Inspectors in coastal communities
- Conservation Commissions in coastal communities

Why

- Improve public safety
- Reduce property damage
- Protect the natural storm damage prevention and flood control capacity of coastal dunes

Where

The new building code governs the construction, reconstruction, or alteration of buildings and structures located in in A Zones, V Zones or in coastal dunes deemed significant to the public interests of flood control and/or storm damage prevention.



Example of a Flood Insurance Rate Map (FIRM) from FEMA

Building Code Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

A Zone Areas with a 1% annual chance of flooding and that are not subject to wave heights in excess of three feet. A Zones are synonymous with Flood–Hazard Zones.

V Zone Coastal areas with a 1% or greater chance of flooding. Areas of tidal influence which have been determined to be subject to wave run heights in excess of three feet or subject to high-velocity wave run-up or wave-induced erosion V Zones are synonymous with High Hazard Zones.

BFE The computed elevation to which floodwater is anticipated to rise during the base flood. Base Flood Elevations (BFEs) are shown on Flood Insurance Rate Maps (FIRMs) and are the regulatory requirement for the elevation or flood proofing of structures.

Flood Resistant Construction Requirements in Flood Hazard (A) or High Hazard (V) Zone

Why special construction requirements for structures in a flood zone?

Buildings and structures located closest to the ocean often incur the most extensive damage during hurricanes and major storm events. For the past year the Departments of Public Safety (DPS) and Environmental Protection (DEP) have worked cooperatively to revise the 7th Edition of the Massachusetts Basic Building Code, in particular Appendix 120.G, to ensure the structural integrity of buildings subject to the forces of flood waters, high velocity wave run-up, and wave induced erosion.

The Code now conforms to the National Flood Insurance Program and adopts post Hurricane Katrina FEMA recommendations to improve public safety, reduce extensive loss of coastal property during storm events, and maintain existing land formations that provide natural protection to landward parcels. Practical construction design constraints have been added to all buildings and structures located in Flood Hazard (A) Zones and High Hazard (V) Zones.

What are the Requirements?

For proposed or substantially renovated buildings/structures in a high-hazard zone (V Zone) a 2 feet "freeboard" requirement was added to the base flood elevation (BFE) setting for the lowest horizontal structural member supporting the lowest floor. The freeboard requirement applies to construction projects located within the V Zone including new buildings, all buildings undergoing substantial improvement or that suffer substantial damage, substantial repair of a foundation and lateral additions.

Construction requirements have also been placed on building projects proposed on coastal dunes. Building permits can only be issued when work in a coastal dune is permitted by the local Conservation Commission and the specific requirements of the Order of Conditions are met.

An as-built elevation of the foundation prepared by a licensed land surveyor or a registered design professional must be submitted prior to the construction of the remainder of the building/structure. The as-built elevation must be accompanied by a certification by the licensed land surveyor or registered design professional that the actual elevation meets all applicable elevation requirements of Appendix 120.G.. This requirement is intended to avoid a situation where construction is completed on a foundation system that does not meet the elevation requirements.

How do I know if my property is located in a Flood Hazard or High Hazard Zone?

First check your community FIRM Map to locate your parcel. Definitions have been added or refined in the DEFINITIONS Section of the Building Code, 780 CMR 320.G201, that relate terms used by FEMA on the Flood Insurance Rate Maps (FIRM) to describe High Risk Areas (A Zones) and High Risk Coastal Areas (V Zones) with terms used in the Building code to describe Flood Hazard (A) Zones and High Hazard (V) Zones, Base Flood Elevation, etc.

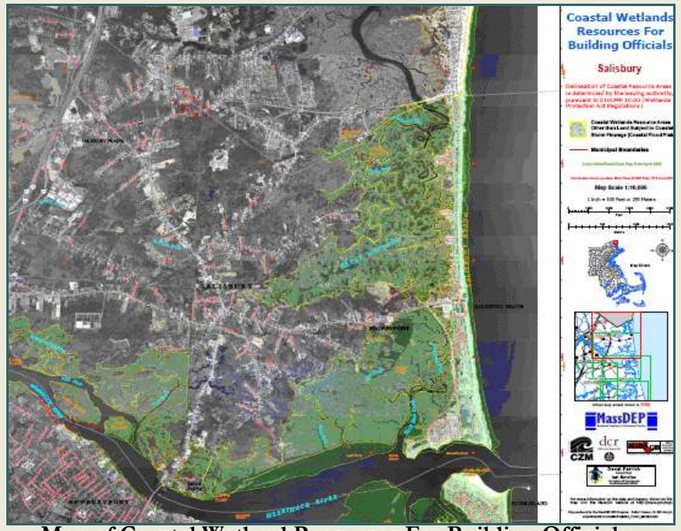
After checking the FIRM maps talk to your Building Inspector about whether your building/structure falls within a high risk flood area on the FIRM for building permit requirements..

Is My Proposed Building in a Coastal Dune? New Flood-Resistant Construction Requirements.

"The edge of the sea is a strange and beautiful place. All through the long history of Earth it has been an area of unrest where waves have broken heavily against the land, where the tides have pressed forward over the continents, receded, and then returned. For no two successive days is the shoreline precisely the same. … Today a little more land may belong to the sea, tomorrow a little less. Always the edge of the sea remains an elusive and indefinable boundary…" The Edge of the Sea by Rachel Carson

Recognizing the nature of coastal beaches and dunes helps to understand how they function and why it's important to protect their function. The fluid exchange of sand between coastal beaches and dunes is driven by the constant action of wind and waves and is part of the dynamic process of coastal dune building by accretion and beach maintenance by erosion of dunes. The volume and height of coastal dunes provide a buffer from storm waves and elevated sea levels for landward properties and landward coastal wetlands. To protect the public benefits that the coastal dunes provide, dune volume must be maintained while allowing the coastal dune shape to conform to natural wind and water flow patterns.

In matters of regulation and policy, MassDEP considers the dunes closest to the coastal beaches (primary coastal dunes) to play a critical role in storm damage prevention and coastal flood control by serving as a buffer and supplying sand to coastal beaches. In all but very rare cases, the Department restricts new construction as well as reconstruction or expansion of structures on primary coastal dunes.



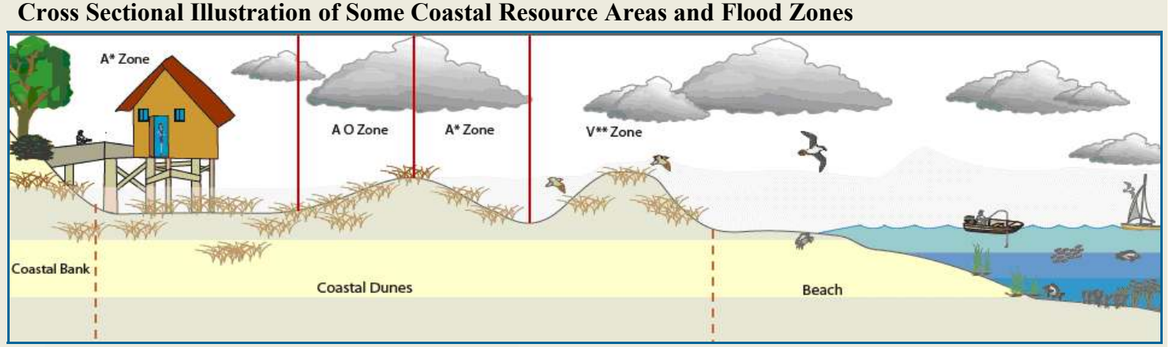
Map of Coastal Wetland Resources For Building Officials

The Wetlands Protection Act Regulations, 310 CMR 10.28, and Massachusetts Basic Building Code, 780 CMR 120.G.701 and 120.G.801 both establish requirements for building design and construction in coastal dunes and flood hazard zones that are intended to protect the function of coastal dunes and ensure the structural integrity of buildings.

The Building Inspector must determine what design requirements apply to your project when reviewing your building code permit application. If the project is on a parcel of land located all or partially in a coastal wetland resource area shown on the **"Map of Coastal Wetland Resources For Building Officials",** the applicant must submit a construction document, an official determination from the wetlands issuing authority (Conservation Commission or MassDEP) indicating whether the construction is in a coastal dune and whether the coastal dune is significant to the interests of storm damage prevention or flood control. The determination can take the form of a valid Order of Conditions, Order of Resource Area Delineation, or Determination of Applicability.

If the wetlands issuing authority determines that a proposed building site is located on a coastal dune and the dune is determined to be significant to the interests of storm damage prevention or flood control, the building permit shall, at a minimum, require that the building conform to the conditions established by the wetlands issuing authority in addition to the building code elevation and design requirements. No building permit can be issued unless the Order of Conditions allows the construction.

Cross Sectional Illustration of Some Coastal Resource Areas and Flood Zones



**Includes A1-30, AE or AH ** Includes V1-30 or VE*