City of Cambridge
307 Gay Street
Cambridge, Maryland 21613

EXECUTIVE DEPARTMENT

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ORDINANCE NO. 1045

AN ORDINANCE OF THE COMMISSIONERS OF CAMBRIDGE, MARYLAND (THE COMMISSIONERS), TO AMMEND ARTICLE III OF CHAPTER 7 OF THE CODE OF LAWS OF THE CITY OF CAMBRIDGE.

WHEREAS, to protect the health, safety and welfare of its citizens, the Commissioners of Cambridge desire to amend in its entirety, Article III entitled "Floodplain Management" of Chapter 7 "Grading, Erosion, and Sediment Control" of The City Code.

NOW, THEREFORE, IT IS HEREBY ENACTED AND ORDAINED by the Commissioners of Cambridge that Article III "Floodplain Management" of the City Code, is hereby repealed and deleted in its entirety and hereby re-enacted with amendments to read as set forth on Exhibit "A" attached hereto and incorporated herein by reference.

AND BE IT FURTHER ENACTED AND ORDAINED that this Ordinance shall become effective on March 16, 2015.

ATTEST:

Oden C. Wheeler Jr.
Oden C. Wheeler, Acting Clerk and Treasurer

THE COMMISSIONERS OF CAMBRIDGE

BY: Donald J. Sydnor
Donald J. Sydnor, City Council President

Introduced this 23rd day of February, 2015

Adopted this 9th day of March, 2015

THE CITY OF CAMBRIDGE MARYLAND 1684

CITY OF CAMBRIDGE

FLOODPLAIN MANAGEMENT CHAPTER 7

(GRADING, EROSION AND SEDIMENT CONTROL)

City of Cambridge, Maryland
Floodplain Management Ordinance
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FLOODPLAIN MANAGEMENT ORDINANCE
City of Cambridge, Maryland

SECTION 1.0 GENERAL PROVISIONS

1.1 Findings

The Federal Emergency Management Agency has identified *special flood hazard areas* within the boundaries of the City of Cambridge. *Special flood hazard areas* are subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare. *Structures* that are inadequately elevated, improperly *floodproofed*, or otherwise unprotected from flood damage also contribute to flood losses.

The City of Cambridge, by resolution, agreed to meet the requirements of the National Flood Insurance Program and was accepted for participation in the program on January 16, 1981. As of that date, the initial effective date of the City of Cambridge *Flood Insurance Rate Map*, all *development* and *new construction* as defined herein, are to be compliant with these regulations.

1.2 Statutory Authorization

The Maryland General Assembly, Md. Code Ann., Land Use Article, Title 4, has established as policy of the State that the orderly development and use of land and structures requires comprehensive regulation through the implementation of planning and zoning control, and that planning and zoning controls shall be implemented by local government in order to, among other purposes, secure the public safety, promote health and general welfare, and promote the conservation of natural resources. Therefore, the Council of the City of Cambridge does hereby adopt the following floodplain management regulations.

1.3 Statement of Purpose

It is the purpose of these regulations to promote the public health, safety and general welfare, and to:

(A) Protect human life, health and welfare;

(B) Encourage the utilization of appropriate construction practices in order to prevent or minimize flood damage in the future;

(C) Minimize *flooding* of water supply and sanitary sewage disposal systems;

(D) Maintain natural drainage;

(E) Reduce financial burdens imposed on the *community*, its governmental units and its residents, by discouraging unwise design and construction of *development* in areas subject to *flooding*;

(F) Minimize the need for rescue and relief efforts associated with *flooding* and generally undertaken at the expense of the general public;

(G) Minimize prolonged business interruptions;

(H) Minimize damage to public facilities and other utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges;

(I) Reinforce that those who build in and occupy *special flood hazard areas* should assume responsibility for their actions;

(J) Minimize the impact of *development* on adjacent properties within and near *flood*-prone areas;

(K) Provide that the *flood* storage and conveyance functions of *floodplains* are maintained;

(L) Minimize the impact of *development* on the natural and beneficial functions of *floodplains*;

(M) Prevent *floodplain* uses that are either hazardous or environmentally incompatible; and

(N) Meet community participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations (CFR) at 44 CFR Section 59.22.

1.4 Areas to Which These Regulations Apply

These regulations shall apply to all *special flood hazard areas* within the jurisdiction of the City of Cambridge, and identified in Section 1.5.

1.5 Basis for Establishing Special Flood Hazard Areas and BFEs

(A) For the purposes of these regulations, the minimum basis for establishing *special flood hazard areas* and *base flood elevations* is the *Flood Insurance Study* for Dorchester County, Maryland And Incorporated Areas dated March 16, 2015, or the most recent revision thereof, and the accompanying *Flood Insurance Rate Map(s)*, and all subsequent amendments and revisions to the *FIRM*s. The *FIS* and *FIRM*s are retained on file and available to the public at the Department of Public Works.

(B) Where field surveyed topography or digital topography indicates that ground elevations are below the closest applicable *base flood elevation*, even in areas not delineated as a special flood hazard on the *FIRM*, the area shall be considered as *special flood hazard area*.

(C) To establish *base flood elevations* in *special flood hazard areas* that do not have such elevations shown on the *FIRM*, the Floodplain Administrator may provide the best available data for *base flood elevations*, may require the applicant to obtain available information from Federal, State or other sources, or may require the applicant to establish *special flood hazard areas* and *base flood elevations* as set forth in Section 3.3, Section 3.4, and Section 3.5 of these regulations.

1.6 Abrogation and Greater Restrictions

These regulations are not intended to repeal or abrogate any existing regulations and ordinances, including subdivision regulations, zoning ordinances, *building codes*, or any existing easements, covenants, or deed restrictions. In the event of a conflict between these regulations and any other ordinance, the more restrictive shall govern.

1.7 Interpretation

In the interpretation and application of these regulations, all provisions shall be:

(A) Considered as minimum requirements;

(B) Liberally construed in favor of the governing body; and,

(C) Deemed neither to limit nor repeal any other powers granted under State statutes.

Notes referencing publications of the Federal Emergency Management Agency refer to the most recent edition of those publications, are intended only as guidance, and do not bind or alter the authority of the Floodplain Administrator to interpret and apply these regulations.

1.8 Warning and Disclaimer of Liability

The degree of *flood* protection required by these regulations is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur, and *flood* heights may be increased by man-made or natural causes. These regulations do not imply that land outside of the *special flood hazard areas* or uses that are permitted within such areas will be free from *flooding* or *flood* damage.

These regulations shall not create liability on the part of the City of Cambridge, any officer or employee thereof, the Maryland Department of the Environment (MDE) or the Federal Emergency Management Agency (FEMA), for any *flood* damage that results from reliance on these regulations or any administrative decision lawfully made hereunder.

1.9 Severability

Should any section or provision of these regulations be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the regulations as a whole, or any part thereof other than the part so declared to be unconstitutional or invalid.

SECTION 2.0 DEFINITIONS

Unless specifically defined below, words or phrases used in these regulations shall be interpreted to have the meaning they have in common usage and to give these regulations the most reasonable application.

Accessory Structure: A building or *structure* on the same lot with, and of a nature customarily incidental and subordinate to, the principal *structure*. For the purposes of these regulations, an accessory structure shall be used solely for parking of vehicles and limited storage.

Agreement to Submit an Elevation Certificate: A form on which the applicant for a permit to construct a building or *structure*, to construct certain horizontal additions, to place or replace a *manufactured home*, to substantially improve a building, *structure*, or *manufactured home*, agrees to have an *Elevation Certificate* prepared by a *licensed* professional engineer or *licensed* professional surveyor, as specified by the Floodplain Administrator, and to submit the certificate:

(1) Upon placement of the *lowest floor* and prior to further vertical construction; and

(2) Prior to the final inspection and issuance of the Certificate of Occupancy.

Alteration of a Watercourse: For the purpose of these regulations, alteration of a watercourse includes, but is not limited to widening, deepening or relocating the channel, including excavation or filling of the channel. Alteration of a watercourse does not include construction of a road, bridge, culvert, dam, or in-stream pond unless the channel is proposed to be realigned or relocated as part of such construction.

Area of Shallow Flooding: A designated Zone AO on the *Flood Insurance Rate Map* with a 1-percent annual chance or greater of *flooding* to an average depth of one to three feet where a clearly defined channel does not exist, where the path of *flooding* is unpredictable, and where velocity flow may be evident; such *flooding* is characterized by ponding or sheet flow.

Base Building: The building to which an addition is being added. This term is used in provisions relating to additions.

Base Flood: The *flood* having a one-percent chance of being equaled or exceeded in any given year; the base flood also is referred to as the 1-percent annual chance (100-year) *flood*.

Base Flood Elevation: The water surface elevation of the *base flood* in relation to the datum specified on the *community*'s *Flood Insurance Rate Map*. In *areas of shallow flooding*, the base flood elevation is the highest adjacent natural grade elevation plus the depth number specified in feet on the *Flood Insurance Rate Map*, or at least four (4) feet if the depth number is not specified.

Basement: Any area of the building having its floor subgrade (below ground level) on all sides.

Building Code(s): The effective Maryland Building Performance Standards (COMAR 05.02.07), including the building code, residential code, and existing building code.

Coastal A Zone: An area within a *special flood hazard area*, landward of a coastal high hazard area (V Zone) or landward of a shoreline without a mapped coastal high hazard area, in which the principal source(s) of *flooding* are astronomical tides and storm surges, and in which, during *base flood* conditions, the potential exists for breaking waves with heights greater than or equal

to 1.5 feet. The inland limit of the Coastal A Zone may be delineated on *FIRM*s as the *Limit of Moderate Wave Action (LiWMA)*.

Coastal High Hazard Area: An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms. *Coastal high hazard areas* also are referred to as "V Zones" and are designated on *FIRM*s as zones VE or V1-30.

Community: A political subdivision of the State of Maryland (county, city or town) that has authority to adopt and enforce floodplain management regulations within its jurisdictional boundaries.

Critical and Essential Facilities: Buildings and other *structures* that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquakes. [Note: See Maryland Building Performance Standards, Sec. 1602 and Table 1604.5.] Critical and essential facilities typically include hospitals, fire stations, police stations, storage of critical records, facilities that handle or store hazardous materials, and similar facilities.

Declaration of Land Restriction (Nonconversion Agreement): A form signed by the owner to agree not to convert or modify in any manner that is inconsistent with the terms of the permit and these regulations, certain *enclosures below the lowest floor* of elevated buildings and certain *accessory structures*. The form requires the owner to record it on the property deed to inform future owners of the restrictions.

Development: Any manmade change to improved or unimproved real estate, including but not limited to buildings or other *structures*, placement of *manufactured homes*, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

Elevation Certificate: FEMA form on which surveyed elevations and other data pertinent to a property and a building are identified and which shall be completed by a *licensed* professional land surveyor or a *licensed* professional engineer, as specified by the Floodplain Administrator. When used to document the height above grade of buildings in *special flood hazard areas* for which *base flood elevation* data are not available, the Elevation Certificate shall be completed in accordance with the instructions issued by FEMA. [Note: FEMA Form 086-0-33 and instructions are available online at http://www.fema.gov/library/viewRecord.do?id=1383.]

Enclosure Below the Lowest Floor: An unfinished or *flood*-resistant enclosure that is located below an elevated building, is surrounded by walls on all sides, and is usable solely for parking of vehicles, building access or storage, in an area other than a *basement* area, provided that such enclosure is built in accordance with the applicable design requirements specified in these regulations. Also see "Lowest Floor."

Federal Emergency Management Agency (FEMA): The Federal agency with the overall responsibility for administering the National Flood Insurance Program.

Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters, and/or

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

Flood Damage-Resistant Materials: Any construction material that is capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair. [Note: See NFIP Technical Bulletin #2, "Flood Damage-Resistant Materials Requirements."]

Flood Insurance Rate Map (FIRM): An official map on which the Federal Emergency Management Agency has delineated *special flood hazard areas* to indicate the magnitude and nature of *flo*od hazards, to designate applicable flood zones, and to delineate floodways, if applicable. FIRMs that have been prepared in digital format or converted to digital format are referred to as Digital FIRMs (DFIRM).

Flood Insurance Study (FIS): The official report in which the Federal Emergency Management Agency has provided *flood* profiles, *floodway* information, and the water surface elevations.

Flood Opening: A flood opening (non-engineered) is an opening that is used to meet the prescriptive requirement of 1 square inch of net open area for every square foot of enclosed area. An engineered flood opening is an opening that is designed and certified by a *licensed* professional engineer or *licensed* architect as meeting certain performance characteristics, including providing automatic entry and exit of floodwaters; this certification requirement may be satisfied by an individual certification for a specific structure or issuance of an Evaluation Report by the ICC Evaluation Service, Inc. [Note: See NFIP Technical Bulletin #1, "Openings in Foundation Walls and Walls of Enclosures."]

Flood Protection Elevation: The *base flood elevation* plus two (2) feet of freeboard. Freeboard is a factor of safety that compensates for uncertainty in factors that could contribute to *flood* heights greater than the height calculated for a selected size *flood* and *floodway* conditions, such as wave action, obstructed bridge openings, debris and ice jams, climate change, and the hydrologic effect of urbanization in a watershed.

Flood Protection Setback: A distance measured perpendicular to the top of bank of a *watercourse* that delineates an area to be left undisturbed to minimize future *flood* damage and to recognize the potential for bank erosion. Along *nontidal waters of the State,* the flood protection setback is:

(1) 100 feet, if the *watercourse* has *special flood hazard areas* shown on the *FIRM*, except where the setback extends beyond the boundary of the flood hazard area; or

(2) 50 feet, if the *watercourse* does not have *special flood hazard areas* shown on the *FIRM*.

Flood Zone: A designation for areas that are shown on *Flood Insurance Rate Maps*:

(1) **Zone A:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood*; *base flood elevations* are not determined.

(2) **Zone AE and Zone A1-30:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood*; *base flood elevations* are determined; *floodways* may or may not be determined. In areas subject to tidal *flooding*, the Limit of Moderate Wave Action may or may not be delineated.

(3) **Zone AH and Zone AO:** *Areas of shallow flooding*, with *flood* depths of 1 to 3 feet (usually areas of ponding or sheet flow on sloping terrain), with or without BFEs or designated *flood* depths.

(4) **Zone B and Zone X (shaded):** Areas subject to inundation by the 0.2-percent annual chance (500-year) *flood*; areas subject to the 1-percent annual chance (100-year) *flood* with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected from the *base flood* by levees.

(5) **Zone C and Zone X (unshaded):** Areas outside of Zones designated A, AE, A1-30, AO, VE, V1-30, B, and X (shaded).

(6) **Zone VE and Zone V1-30:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood* and subject to high velocity wave action (also see *coastal high hazard area*).

Floodplain: Any land area susceptible to being inundated by water from any source (see definition of "Flood" or "Flooding").

Floodproofing or Floodproofed: Any combination of structural and nonstructural additions, changes, or adjustments to buildings or *structures* which reduce or eliminate *flood* damage to real estate or improved real property, water and sanitary facilities, *structures* and their contents, such that the buildings or *structures* are watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. [Note: State regulations at COMAR 26.17.04.11(B)(7) do not allow new nonresidential buildings in *nontidal waters of the State* to be floodproofed.]

Floodproofing Certificate: FEMA form that is to be completed, signed and sealed by a *licensed* professional engineer or *licensed* architect to certify that the design of *floodproofing* and

proposed methods of construction are in accordance with the applicable requirements of Section 5.5(B) of these regulations. [Note: FEMA Form 086-0-34 is available online at http://www.fema.gov/library/viewRecord.do?id=1600.]

Floodway: The channel of a river or other *watercourse* and the adjacent land areas that must be reserved in order to pass the *base flood* discharge such that the cumulative increase in the water surface elevation of the *base flood* discharge is no more than a designated height. When shown on a *FIRM*, the floodway is referred to as the "designated floodway."

Free-of-Obstruction: A term that describes open foundations (pilings, columns, or piers) without attached elements or foundation components that would obstruct the free passage of floodwaters and waves beneath *structures* that are elevated on such foundations. [Note: See NFIP Technical Bulletin #5, "Free-of-Obstruction Requirements."]

Functionally Dependent Use: A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water; the term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Highest Adjacent Grade: The highest natural elevation of the ground surface, prior to construction, next to the proposed foundation of a *structure*.

Historic Structure: Any *structure* that is:

(1) Individually listed in the National Register of Historic Places (a listing maintained by the U.S. Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listings on the National Register;

(2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

(3) Individually listed on the Maryland Register of Historic Places; or

(4) Individually listed on the inventory of historic places maintained by the City of Cambridge whose historic preservation program has been certified by the Maryland Historical Trust or the Secretary of the Interior.

Hydrologic and Hydraulic Engineering Analyses: Analyses performed by a *licensed* professional engineer, in accordance with standard engineering practices that are accepted by the Maryland Department of the Environment (Nontidal Wetlands & Waterways) and FEMA, used to determine the *base flood*, other frequency floods, *flood* elevations, *floodway* information and boundaries, and *flood* profiles.

Letter of Map Change (LOMC): A Letter of Map Change is an official FEMA determination, by letter, that amends or revises an effective *Flood Insurance Rate Map* or *Flood Insurance Study*. Letters of Map Change include:

Letter of Map Amendment (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated *special flood hazard area*. A LOMA amends the current effective *Flood Insurance Rate Map* and establishes that a specific property or *structure* is not located in a *special flood hazard area*.

Letter of Map Revision (LOMR): A revision based on technical data that may show changes to *flood zones*, *flood* elevations, *floodplain* and *floodway* delineations, and planimetric features. A Letter of Map Revision Based on Fill (LOMR-F), is a determination that a *structure* or parcel of land has been elevated by fill above the *base flood elevation* and is, therefore, no longer exposed to *flooding* associated with the *base flood*. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the *community*'s floodplain management regulations.

Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed *flood* protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of *special flood hazard areas*. A Conditional Letter of Map Revision Based on Fill (CLOMR-F) is a determination that a parcel of land or proposed structure that will be elevated by fill would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed. A CLOMR does not revise the effective *Flood Insurance Rate Map* or *Flood Insurance Study*; upon submission and approval of certified as-built documentation, a Letter of Map Revision may be issued by FEMA, to revise the effective *FIRM*.

Licensed: As used in these regulations, licensed refers to professionals who are authorized to practice in the State of Maryland by issuance of licenses by the Maryland Board of Architects, Maryland Board of Professional Engineers, Maryland Board of Professional Land Surveyors, and the Maryland Real Estate Appraisers and Home Inspectors Commission.

Limit of Moderate Wave Action (LiMWA): Inland limit of the area affected by waves greater than 1.5 feet during the base flood. Base flood conditions between the VE Zone and the LiMWA will be similar to, but less severe than those in the VE Zone.

Lowest Floor: The lowest floor of the lowest enclosed area (including *basement*) of a building or *structure*; the floor of an *enclosure below the lowest floor* is not the lowest floor provided the enclosure is constructed in accordance with these regulations. The lowest floor of a *manufactured home* is the bottom of the lowest horizontal supporting member (longitudinal chassis frame beam).

Manufactured Home: A *structure*, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term manufactured home does not include a *recreational vehicle.*

Market Value: The price at which a property will change hands between a willing buyer and a willing seller, neither party being under compulsion to buy or sell and both having reasonable knowledge of relevant facts. For the purposes of these regulations, the market value of a building is determined by a *licensed* real estate appraiser or the most recent, full phased-in assessment value of the building (improvement) determined by the Maryland Department of Assessments and Taxation.

Maryland Department of the Environment (MDE): A principal department of the State of Maryland that is charged with, among other responsibilities, the coordination of the National Flood Insurance Program in Maryland (NFIP State Coordinator) and the administration of regulatory programs for *development* and construction that occur within the *waters of the State*, including nontidal wetlands, nontidal waters and floodplains, and State and private tidal wetlands (Tidal Wetlands). Unless otherwise specified, "MDE" refers to the Department's Wetlands and Waterways Program.

Mixed-use Structure: Any *structure* that is used or intended for use for a mixture of nonresidential and residential uses in the same structure.

National Flood Insurance Program (NFIP): The program authorized by the U.S. Congress in 42 U.S.C. §§4001 - 4129. The NFIP makes flood insurance coverage available in communities that agree to adopt and enforce minimum regulatory requirements for *development* in areas prone to *flooding* (see definition of "Special Flood Hazard Area").

New Construction: *Structures*, including additions and improvements, and the placement of *manufactured homes*, for which the *start of construction* commenced on or after January 16, 1981, the initial effective date of the City of Cambridge *Flood Insurance Rate Map*, including any subsequent improvements, alterations, modifications, and additions to such *structures*.

NFIP State Coordinator: See Maryland Department of the Environment.

Nontidal Waters of the State: See "Waters of the State." As used in these regulations, "nontidal waters of the State" refers to any stream or body of water within the State that is subject to State regulation, including the "100-year frequency *floodplain* of free-flowing waters." COMAR 26.17.04 states that "the landward boundaries of any tidal waters shall be deemed coterminous with the wetlands boundary maps adopted pursuant to Environment Article, §16-301, Annotated Code of Maryland." Therefore, the boundary between the tidal and nontidal waters of the State is the tidal wetlands boundary.

Person: An individual or group of individuals, corporation, partnership, association, or any other entity, including State and local governments and agencies.

Recreational Vehicle: A vehicle that is built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use.

Special Flood Hazard Area (SFHA): The land in the *floodplain* subject to a one-percent or greater chance of *flooding* in any given year. Special flood hazard areas are designated by the Federal Emergency Management Agency in *Flood Insurance Studies* and on *Flood Insurance Rate Maps* as Zones A, AE, AH, AO, A1-30, and A99. The term includes areas shown on other flood maps that are identified in Section 1.5.

Start of Construction: The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a *structure* on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a *manufactured home* on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a *basement*, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of *accessory structures*, such as garages or sheds not occupied as dwelling units or not part of the main *structure*. For *substantial improvements*, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure: That which is built or constructed; specifically, a walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a *manufactured home*.

Substantial Damage: Damage of any origin sustained by a building or *structure* whereby the cost of restoring the building or *structure* to its before-damaged condition would equal or exceed 50 percent of the *market value* of the building or *structure* before the damage occurred. Also used as "substantially damaged" structures. [*see Section 4.6.]* [Note: See "Substantial Improvement/Substantial Damage Desk Reference" (FEMA P-758).]

Substantial Improvement: Any reconstruction, rehabilitation, addition, or other improvement of a building or *structure*, the cost of which equals or exceeds 50 percent of the *market value* of the building or *structure* before the *start of construction* of the improvement. The term includes *structures* which have incurred *substantial damage*, regardless of the actual repair work performed. The term does not, however, include either:

(1) Any project for improvement of a building or *structure* to correct existing violations of State or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official prior to submission of an application for a permit and which are the minimum necessary to assure safe living conditions; or

(2) Any alteration of a *historic structure*, provided that the alteration will not preclude the *structure*'s continued designation as a *historic structure*.

[Note: See "Substantial Improvement/Substantial Damage Desk Reference" (FEMA P-758).]

Temporary Structure: A *structure* installed, used, or erected for a period of less than 180 days.

Variance: A grant of relief from the strict application of one or more requirements of these regulations.

Violation: Any construction or *development* in a *special flood hazard area* that is being performed without an issued permit. The failure of a building, *structure*, or other *development* for which a permit is issued to be fully compliant with these regulations and the conditions of the issued permit. A building, *structure*, or other *development* without the required design certifications, the *Elevation Certificate*, or other evidence of compliance required is presumed to be a *violation* until such time as the required documentation is provided.

Watercourse: The channel, including channel banks and bed, of *nontidal waters of the State*.

Waters of the State: [See Environment Article, Title 5, Subtitle 1, Annotated Code of Maryland.] Waters of the State include:

(1) Both surface and underground waters within the boundaries of the State subject to its jurisdiction;

(2) That portion of the Atlantic Ocean within the boundaries of the State;

(3) The Chesapeake Bay and its tributaries;

(4) All ponds, lakes, rivers, streams, public ditches, tax ditches, and public drainage systems within the State, other than those designed and used to collect, convey, or dispose of sanitary sewage; and

(5) The *floodplain* of free-flowing waters determined by MDE on the basis of the 100-year *flood* frequency.

SECTION 3.0 ADMINISTRATION

3.1 Designation of the Floodplain Administrator

The Building Official of the City of Cambridge is hereby appointed to administer and implement these regulations and is referred to herein as the Floodplain Administrator. The Floodplain Administrator may:

(A) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.

(B) Enter into a written agreement or written contract with another Maryland *community* or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the *community* of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations (CFR) at 44 CFR Section 59.22.

3.2 Duties and Responsibilities of the Floodplain Administrator

The duties and responsibilities of the Floodplain Administrator shall include but are not limited to:

(A) Review applications for permits to determine whether proposed activities will be located in flood hazard areas.

(B) Interpret *floodplain* boundaries and provide available *base flood elevation* and *flood* hazard information.

(C) Review applications to determine whether proposed activities will be reasonably safe from *flooding* and require *new construction* and *substantial improvements* to meet the requirements of these regulations.

(D) Review applications to determine whether all necessary permits have been obtained from the Federal, State or local agencies from which prior or concurrent approval is required; in particular, permits from MDE for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, *structures*), any *alteration of a watercourse*, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency *floodplain* of free-flowing *nontidal waters of the State*.

(E) Verify that applicants proposing an *alteration of a watercourse* have notified adjacent communities and MDE (NFIP State Coordinator), and have submitted copies of such notifications to FEMA.

(F) Advise applicants for *new construction* or *substantial improvement* of *structures* that are located within an area of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such *structures*; areas subject to this limitation are shown on *Flood Insurance Rate Maps* as Coastal Barrier Resource System Areas (CBRS) or Otherwise Protected Areas (OPA).

(G) Approve applications and issue permits to develop in *flood* hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.

(H) Inspect or cause to be inspected, buildings, *structures*, and other *development* for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or *violations* have been committed.

(I) Review *Elevation Certificate*s and require incomplete or deficient certificates to be corrected.

(J) Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain *FIRMs*, including *hydrologic and hydraulic engineering analyses* prepared by or for the City of Cambridge within six months after such data and information becomes available if the analyses indicate changes in *base flood elevation*s or boundaries.

(K) Maintain and permanently keep records that are necessary for the administration of these regulations, including:

(1) *Flood Insurance Studies*, *Flood Insurance Rate Maps* (including historic studies and maps and current effective studies and maps) and Letters of Map Change; and

(2) Documentation supporting issuance and denial of permits, *Elevation Certificate*s, documentation of the elevation (in relation to the datum on the *FIRM*) to which *structures* have been *floodproofed*, other required design certifications, *variances*, and records of enforcement actions taken to correct *violations* of these regulations.

(L) Enforce the provisions of these regulations, investigate *violations*, issue notices of *violations* or stop work orders, and require permit holders to take corrective action.

(M) Advise the Board of Zoning Appeals regarding the intent of these regulations and, for each application for a *variance*, prepare a staff report and recommendation.

(N) Administer the requirements related to proposed work on existing buildings:

(1) Make determinations as to whether buildings and *structures* that are located in *flood* hazard areas and that are damaged by any cause have been *substantially damaged*.

(2) Make reasonable efforts to notify owners of *substantially damaged structures* of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of *substantially damaged* buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or *structure* to prevent additional damage.

(O) Undertake, as determined appropriate by the Floodplain Administrator due to the circumstances, other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged *structures*; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged *structures* information related to the proper repair of damaged *structures* in *special flood hazard areas*; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance (ICC) coverage under NFIP flood insurance policies.

(P) Notify the Federal Emergency Management Agency when the corporate boundaries of the City of Cambridge have been modified and:

(1) Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and

(2) If the *FIRM* for any annexed area includes *special flood hazard areas* that have *flood zones* that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the *FIRM* and appropriate requirements, and submit the amendments to the governing body for adoption; such adoption shall take place within six months of the date of annexation and a copy of the amended regulations shall be provided to MDE (NFIP State Coordinator) and FEMA.

(Q) Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the SFHA, number of permits issued for *development* in the SFHA, and number of *variances* issued for *development* in the SFHA.

3.3 Use and Interpretation of FIRMs

The Floodplain Administrator shall make interpretations, where needed, as to the exact location of *special flood hazard areas*, *floodplain* boundaries, and *floodway* boundaries. The following shall apply to the use and interpretation of *FIRMs* and data:

(A) Where field surveyed topography indicates that ground elevations:

(1) Are below the *base flood elevation*, even in areas not delineated as a *special flood hazard area* on a *FIRM*, the area shall be considered as *special flood hazard area* and subject to the requirements of these regulations;

(2) Are above the *base flood elevation*, the area shall be regulated as *special flood hazard area* unless the applicant obtains a *Letter of Map Change* that removes the area from the *special flood hazard area*.

(B) In FEMA-identified *special flood hazard areas* where *base flood elevation* and *floodway* data have not been identified and in areas where FEMA has not identified *special flood hazard areas*, any other flood hazard data available from a Federal, State, or other source shall be reviewed and reasonably used.

(C) *Base flood elevations* and designated *floodway* boundaries on *FIRM*s and in *FIS*s shall take precedence over *base flood elevations* and *floodway* boundaries by any other sources if such sources show reduced *floodway* widths and/or lower *base flood elevations*.

(D) Other sources of data shall be reasonably used if such sources show increased *base flood elevations* and/or larger *floodway* areas than are shown on *FIRM*s and in *FIS*s.

(E) If a Preliminary *Flood Insurance Rate Map* and/or a Preliminary *Flood Insurance Study* has been provided by FEMA:

(1) Upon the issuance of a Letter of Final Determination by FEMA, if the preliminary flood hazard data is more restrictive than the effective data, it shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.

(2) Prior to the issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to Section 1.5(C) and used where no *base flood elevations* and/or *floodway* areas are provided on the effective *FIRM*.

(3) Prior to issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary *base flood elevations, floodplain* or *floodway* boundaries exceed the *base flood elevations*

and/or designated *floodway* widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

3.4 Permits Required and Expiration

(A) It shall be unlawful for any *person* to begin any *development* or construction which is wholly within, partially within, or in contact with any flood hazard area established in Section 1.5, including but not limited to: filling; grading; construction of new *structures*; the *substantial improvement* of buildings or *structures*, including repair of *substantial damage*; placement or replacement of *manufactured homes*, including *substantial improvement* or repair of *substantial damage* of *manufactured homes*; erecting or installing a *temporary structure*, or *alteration of a watercourse*, until a permit is obtained from the City of Cambridge. No such permit shall be issued until the requirements of these regulations have been met.

(B) In addition to the permits required in paragraph (A), applicants for permits in *nontidal waters of the State* are advised to contact MDE. Unless waived by MDE, pursuant to Code of Maryland Regulations 26.17.04, Construction on Nontidal Waters and Floodplains, MDE regulates the "100-year frequency floodplain of free-flowing waters," also referred to as *nontidal waters of the State*. To determine the 100-year frequency floodplain, hydrologic calculations are based on the ultimate *development* of the watershed, assuming existing zoning. The resulting flood hazard areas delineated using the results of such calculations may be different than the *special flood hazard areas* established in Section 1.5 of these regulations. A permit from the City of Cambridge is still required in addition to any State requirements.

(C) A permit is valid provided the actual start of work is within 180 days of the date of permit issuance. Requests for extensions shall be submitted in writing and justifiable cause demonstrated. The Floodplain Administrator may grant, in writing, one or more extensions of time, for additional periods not exceeding 90 days each and provided there has been no amendment or revision to the basis for establishing *special flood hazard areas* and BFEs set forth in Section 1.5.

3.5 Application Required

Application for a permit shall be made by the owner of the property or the owner's authorized agent (herein referred to as the applicant) prior to the start of any work. The application shall be on a form furnished for that purpose.

(A) Application Contents

At a minimum, applications shall include:

(1) Site plans drawn to scale showing the nature, location, dimensions, and existing and proposed topography of the area in question, and the location of existing and proposed *structures*, excavation, filling, storage of materials, drainage facilities, and other proposed activities.

(2) Elevation of the existing natural ground where buildings or *structures* are proposed referenced to the datum on the *FIRM*.

(3) Delineation of flood hazard areas, designated *floodway* boundaries, *flood zones*, *base flood elevations*, and *flood protection setbacks*. *Base flood elevations* shall be used to delineate the boundary of flood hazard areas and such delineations shall prevail over the boundary of SFHAs shown on *FIRMs*.

(4) Where floodways are not delineated or *base flood elevations* are not shown on the *FIRMs*, the Floodplain Administrator has the authority to require the applicant to use information provided by the Floodplain Administrator, information that is available from Federal, State, or other sources, or to determine such information using accepted engineering practices or methods approved by the Floodplain Administrator. [Note: See "Managing Floodplain Development in Approximate Zone A Areas: A Guide for Obtaining and Developing Base (100-Year) Flood Elevations" (FEMA 265).]

(5) Determination of the *base flood elevations*, for *development* proposals and subdivision proposals, each with at least 5 lots or at least 5 acres, whichever is the lesser, in *special flood hazard areas* where *base flood elevations* are not shown on the *FIRM*; if *hydrologic and hydraulic engineering analyses* are submitted, such analyses shall be performed in accordance with the requirements and specifications of MDE and FEMA.

(6) *Hydrologic and hydraulic engineering analyses* for proposals in *special flood hazard areas* where FEMA has provided *base flood elevations* but has not delineated a *floodway*; such analyses shall demonstrate that the cumulative effect of proposed *development*, when combined with all other existing and anticipated development will not increase the water surface elevation of the *base flood* by more than one foot or a lower increase if required by MDE.

(7) For encroachments in *floodways*, an evaluation of alternatives to such encroachments, including different uses of the site or portion of the site within the *floodway*, and minimization of such encroachment.

(8) If fill is proposed to be placed for a purpose other than to elevate *structures*, the applicant shall indicate the intended purpose for the fill.

(9) For proposed buildings and *structures*, including *substantial improvement* and repair of *substantial damage*, and placement and replacement of manufactured homes, including *substantial improvement* and repair of *substantial damage*:

(a) The proposed elevation of the *lowest floor*, including *basement*, referenced to the datum on the *FIRM* and a signed *Agreement to Submit an Elevation Certificate*.

(b) The signed *Declaration of Land Restriction (Nonconversion Agreement)* that shall be recorded on the property deed prior to issuance of the Certificate of Occupancy, if the application includes an *enclosure below the lowest floor* or a crawl/underfloor space that is more than four (4) feet in height.

(c) A written evaluation of alternative methods considered to elevate *structures* and *manufactured homes*, if the location is in *nontidal waters of the State* and fill is proposed to achieve the elevation required in Section 5.4(A) or Section 5.5(A).

(10) For *accessory structures* that are 900 square feet or larger in area (footprint) and that are below the *base flood elevation*, a variance is required as set forth in Section 7.0. If a variance is granted, a signed *Declaration of Land Restriction (Nonconversion Agreement)* shall be recorded on the property deed prior to issuance of the Certificate of Occupancy.

(11) For *temporary structures* and temporary storage, specification of the duration of the temporary use.

(12) For proposed work on existing buildings, *structure*, and *manufactured homes*, including any improvement, addition, repairs, alterations, rehabilitation, or reconstruction, sufficient information to determine if the work constitutes *substantial improvement* or repair of *substantial damage*, including but not limited to:

(a) If the existing building or *structure* was constructed after January 16, 1981, evidence that the work will not alter any aspect of the building or *structure* that was required for compliance with the floodplain management requirements in effect at the time the building or *structure* was permitted.

(b) If the proposed work is a horizontal addition, a description of the addition and whether it will be independently supported or structurally connected to the *base building* and the nature of all other modifications to the *base building*, if any.

(c) Documentation of the *market value* of the building or *structure* before the improvement or, if the work is repair of damage, before the damage occurred.

(d) Documentation of the actual cash value of all proposed work, including the actual cash value of all work necessary to repair and restore damage to the before-damaged condition, regardless of the amount of work that will be performed. The value of work performed by the owner or volunteers shall be valued at market labor rates; the value of donated or discounted materials shall be valued at market rates.

(13) Certifications and/or technical analyses prepared or conducted by a *licensed* professional engineer or *licensed* architect, as appropriate, including:

(a) The determination of the *base flood elevations* or *hydrologic and hydraulic engineering analyses* prepared by a *licensed* professional engineer that are required by the Floodplain Administrator or are required by these regulations in: Section 4.2 for certain subdivisions and *development*; Section 5.3(A) for *development* in designated *floodways*; Section 5.3(C) for *development* in flood hazard areas with *base flood elevations* but no designated *floodways*; and Section 5.3(E) for deliberate alteration or relocation of *watercourses*.

(b) The *Floodproofing Certificate* for nonresidential *structures* that are *floodproofed* as required in Section 5.5(B).

(c) Certification that engineered *flood openings* are designed to meet the minimum requirements of Section 5.4(C)(3) to automatically equalize hydrostatic flood forces.

(d) Certification that the proposed elevation, structural design, specifications and plans, and the methods of construction to be used for *structures* in *coastal high hazard areas* (V Zones) and *Coastal A Zones*, are in accordance with accepted standards of practice and meet the requirements of Section 6.3(C).

(14) For nonresidential *structures* that are proposed with *floodproofing*, an operations and maintenance plan as specified in Section 5.5(B)(3).

(15) Such other material and information as may be requested by the Floodplain Administrator and necessary to determine conformance with these regulations.

(B) New Technical Data

(1) The applicant may seek a *Letter of Map Change* by submitting new technical data to FEMA, such as base maps, topography, and engineering analyses to support revision of *floodplain* and *floodway* boundaries and/or *base flood elevations*. Such submissions shall be prepared in a format acceptable to FEMA and any fees shall be the sole responsibility of the applicant. A copy of the submittal shall be attached to the application for a permit.

(2) If the applicant submits new technical data to support any change in *floodplain* and designated *floodway* boundaries and/or *base flood elevations* but has not sought a *Letter of Map Change* from FEMA, the applicant shall submit such data to FEMA as soon as practicable, but not later than six months after the date such information becomes available. Such submissions shall be prepared in a format acceptable to FEMA and any fees shall be the sole responsibility of the applicant.

3.6 Review of Application

The Floodplain Administrator shall:

(A) Review applications for *development* in *special flood hazard areas* to determine the completeness of information submitted. The applicant shall be notified of incompleteness or additional information that is required to support the application.

(B) Notify applicants that permits from MDE and the U.S. Army Corps of Engineers, and other State and Federal authorities may be required.

(C) Review all permit applications to assure that all necessary permits have been received from the Federal, State or local governmental agencies from which prior approval is required. The applicant shall be responsible for obtaining such permits, including permits issued by:

(1) The U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act;

(2) MDE pursuant to COMAR 26.23 (Nontidal Wetlands) and Section 401 of the Clean Water Act;

(3) MDE for construction on *nontidal waters of the State* pursuant to COMAR 26.17.04; and

(4) MDE pursuant to COMAR 26.24 (Tidal Wetlands).

(D) Review applications for compliance with these regulations after all information required in Section 3.5 of these regulations or identified and required by the Floodplain Administrator has been received.

3.7 Inspections

The Floodplain Administrator shall make periodic inspections of *development* permitted in *special flood hazard areas*, at appropriate times throughout the period of construction in order to monitor compliance. Such inspections may include:

(A) Stake-out inspection, to determine location on the site relative to the flood hazard area and designated *floodway*.

(B) Foundation inspection, upon placement of the *lowest floor* and prior to further vertical construction, to collect information or certification of the elevation of the *lowest floor*.

(C) Inspection of *enclosures below the lowest floor*, including crawl/underfloor spaces, to determine compliance with applicable provisions.

(D) Utility inspection, upon installation of specified equipment and appliances, to determine appropriate location with respect to the *base flood elevation*.

(E) Final inspection prior to issuance of the Certificate of Occupancy.

3.8 Submissions Required Prior to Final Inspection

Pursuant to the *Agreement to Submit an Elevation Certificate* submitted with the application as required in Section 3.5(A)(9), the permittee shall have an *Elevation Certificate* prepared and submitted prior to final inspection and issuance of a Certificate of Occupancy for elevated *structures* and *manufactured homes*, including new *structures* and *manufactured homes*, substantially-improved *structures* and *manufactured homes*, and additions to *structures* and *manufactured homes.*

SECTION 4.0 REQUIREMENTS IN ALL FLOOD HAZARD AREAS

4.1 Application of Requirements

The general requirements of this section apply to all *development* proposed within all *special flood hazard areas* identified in Section 1.5.

4.2 Subdivision Proposals and Development Proposals

(A) In all *flood zones*:

(1) Subdivision proposals and *development* proposals shall be consistent with the need to minimize flood damage and are subject to all applicable standards in these regulations.

(2) Subdivision proposals and *development* proposals shall have utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.

(3) Subdivision proposals and *development* proposals shall have adequate drainage paths provided to reduce exposure to flood hazards and to guide floodwaters around and away from proposed *structures*.

(4) Subdivision proposals and *development* proposals containing at least 5 lots or at least 5 acres, whichever is the lesser, that are wholly or partially in flood hazard areas where *base flood elevation* data are not provided by the Floodplain Administrator or available from other sources, shall be supported by determinations of *base flood elevations* as required in Section 3.5 of these regulations.

(5) Subdivision access roads shall have the driving surface at or above the *base flood elevation*.

(B) In *special flood hazard areas* of *nontidal waters of the State*:

(1) Subdivision proposals shall be laid out such that proposed building pads are located outside of the *special flood hazard area* and any portion of platted lots that include land areas that are below the *base flood elevation* shall be used for other purposes, deed restricted, or otherwise protected to preserve it as open space.

(2) Subdivision access roads shall have the driving surface at or above the *base flood elevation*.

4.3 Protection of Water Supply and Sanitary Sewage Systems

(A) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems.

(B) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters.

(C) On-site waste disposal systems shall be located to avoid impairment to or contamination from them during conditions of *flooding*.

4.4 Buildings and Structures

New buildings and *structures* (including the placement and replacement of *manufactured homes*) and *substantial improvement* of existing *structures* (including *manufactured homes*) that are located, in whole or in part, in any *special flood hazard area* shall:

(A) Be designed (or modified) and constructed to safely support flood loads. The construction shall provide a complete load path capable of transferring all loads from their point of origin through the load-resisting elements to the foundation. *Structures* shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses, including hydrodynamic and hydrostatic loads and the effects of buoyancy, from *flooding* equal to the *flood protection elevation* or the elevation required by these regulations or the *building code*, whichever is higher.

(B) Be constructed by methods and practices that minimize flood damage.

(C) Use *flood damage-resistant materials* below the elevation of the *lowest floor* required in Section 5.4(A) or Section 5.5(A) (for A Zones) or Section 6.3(B) (for V Zones and *Coastal A Zones*).

(D) Have electrical systems, equipment and components, and mechanical, heating, ventilating, air conditioning, and plumbing appliances, plumbing fixtures, duct systems, and other service equipment located at or above the elevation of the *lowest floor* required in Section 5.4(A) or Section 5.5(A) (A Zones) or Section 6.3(B) (V Zones and *Coastal A Zones*). Electrical wiring systems are permitted to be located below elevation of the *lowest floor* provided they conform to the provisions of the electrical part of the *building code* for wet locations. If replaced as part of a *substantial improvement*, electrical systems, equipment and components, and heating, ventilation, air conditioning, and plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall meet the requirements of this section.

(E) As an alternative to paragraph (D), electrical systems, equipment and components, and heating, ventilating, air conditioning, and plumbing appliances, plumbing fixtures, duct systems, and other service equipment are permitted to be located below the elevation of the *lowest floor* provided they are 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 that elevation.

(F) Have the electric panelboard elevated at least three (3) feet above the BFE.

(G) If located in flood hazard areas (A Zones) that are not identified as *Coastal A Zones* and *coastal high hazard areas* (V Zones), comply with the specific requirements of Section 5.0.

(H) If located in *Coastal A Zone*, comply with the specific requirements of:

(1) Section 6.0 (*new construction* and placement of new *manufactured homes*); or

(2) Section 5.0 (*substantial improvements* (including repair of *substantial damage*) and replacement *manufactured homes*).

(I) If located in *coastal high hazard areas* (V Zones), comply with the specific requirements of Section 6.0.

(J) Comply with the requirements of the most restrictive designation if located on a site that has more than one *flood zone* designation (A Zone, designated *floodway*, *Coastal A Zone*, V Zone).

4.5 Placement of Fill

(A) Disposal of fill, including but not limited to earthen soils, rock, rubble, construction debris, woody debris, and trash, shall not be permitted in *special flood hazard areas*.

(B) Fill shall not be placed in *Coastal A Zones* or *coastal high hazard areas* (V Zones) except as provided in Section 6.2.

(C) Fill proposed to be placed to elevate *structures* in flood hazard areas (A Zones) that are not *Coastal A Zones* or *coastal high hazard areas* (V Zones) shall comply with the *floodways* requirements in Section 5.3(A), Section 5.3(B), and Section 5.3(C) and the limitations of Section 5.4(B).

4.6 Historic Structures

Repair, alteration, addition, rehabilitation, or other improvement of *historic structures* shall be subject to the requirements of these regulations if the proposed work is determined to be a *substantial improvement*, unless a determination is made that the proposed work will not preclude the *structure*'s continued designation as a *historic structure*. The Floodplain Administrator may require documentation of a *structure*'s continued eligibility and designation as a *historic structure*.

4.7 Manufactured Homes

(A) New *manufactured homes* shall not be placed or installed in *floodways* or *coastal high hazard areas* (V Zones).

(B) For the purpose of these regulations, the *lowest floor* of a *manufactured home* is the bottom of the lowest horizontal supporting member (longitudinal chassis frame beam).

(C) New *manufactured homes* located outside of *floodways* and *coastal high hazard areas* (V Zones), replacement *manufactured homes* in any flood hazard areas, and *substantial improvement* (including repair of *substantial damage*) of existing *manufactured homes* in all flood hazard area, shall:

(1) Be elevated on a permanent, reinforced foundation in accordance with Section 5.0 or Section 6.0, as applicable to the *flood zone*;

(2) Be installed in accordance with the anchor and tie-down requirements of the *building code* or the manufacturer's written installation instructions and specifications; and

(3) Have *enclosures below the lowest floor* of the elevated *manufactured home*, if any, including enclosures that are surrounded by rigid skirting or other material that is attached to the frame or foundation, that comply with the requirements of Section 5.0 or Section 6.0, as applicable to the *flood zone*.

[Note: See "Protecting Manufactured Homes from Floods and Other Hazards: A Multi-Hazard Foundation and Installation Guide" (FEMA P-85).]

4.8 Recreational Vehicles

Recreational vehicles shall:

(A) Meet the requirements for *manufactured homes* in Section 4.7; or

(B) Be fully licensed and ready for highway use; or

(C) Be on a site for less than 180 consecutive days.

4.9 Critical and Essential Facilities

Critical and essential facilities shall:

(A) Not be located in *coastal high hazard areas* (V Zones), *Coastal A Zones* or *floodways*; or

(B) If located in flood hazard areas other than *coastal high hazard areas* (V Zones), *Coastal A Zones* and *floodways*, be elevated to the higher of elevation required by these regulations plus one (1) foot, the elevation required by the *building code*, or the elevation of the 0.2 percent chance (500-year) flood.

4.10 Temporary Structures and Temporary Storage

In addition to the application requirements of Section 3.5, applications for the placement or erection of *temporary structures* and the temporary storage of any goods, materials, and equipment, shall specify the duration of the temporary use. *Temporary structures* and temporary storage in *floodways* shall meet the limitations of Section 5.3(A) of these regulations. In addition:

(A) *Temporary structures* shall:

(1) Be designed and constructed to prevent flotation, collapse or lateral movement resulting from hydrodynamic loads and hydrostatic loads during conditions of the *base flood*;

(2) Have electric service installed in compliance with the electric code; and

(3) Comply with all other requirements of the applicable State and local permit authorities.

(B) Temporary storage shall not include hazardous materials.

4.11 Gas or Liquid Storage Tanks

(A) Underground tanks in flood hazard areas shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of the *base flood*.

(B) Above-ground tanks in flood hazard areas shall be anchored to a supporting structure and elevated to or above the *base flood elevation*, or shall be anchored or otherwise designed and constructed to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the *base flood*.

(C) In flood hazard areas, tank inlets, fill openings, outlets and vents shall be:

(1) At or above the *base flood elevation* or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the *base flood*; and

(2) Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the *base flood*.

4.12 Functionally Dependent Uses

Applications for *functionally dependent uses* that do not conform to the requirements of these regulations shall be approved only by *variances* issued pursuant to Section 6.0. If approved, *functionally dependent uses* shall be protected by methods that minimize flood damage during the *base flood*, including measures to allow floodwaters to enter and exit, use of *flood damage-resistant materials*, and elevation of electric service and equipment to the extent practical given the use of the building.

SECTION 5.0 REQUIREMENTS IN FLOOD HAZARD AREAS (A ZONES) THAT ARE NOT COASTAL HIGH HAZARD AREAS (V ZONES) OR COASTAL A ZONES

5.1 General Requirements

In addition to the general requirements of Section 4.0, the requirements of this section shall:

(A) Apply in flood hazard areas that are not identified as *coastal high hazard areas* (V Zones) and *Coastal A Zones*. These flood hazard areas, referred to collectively as "A Zones," include *special flood hazard areas* along *nontidal waters of the State*, landward of *coastal high hazard areas* (V Zones), and landward of *Coastal A Zones* (if delineated).

(B) Apply to all *development, new construction, substantial improvements* (including repair of *substantial damage*), and placement, replacement, and *substantial improvement* (including repair of *substantial damage*) of *manufactured homes*.

5.2 Flood Protection Setbacks

Within areas defined by *flood protection setbacks* along *nontidal waters of the State*:

(A) No new buildings, *structures*, or other *development* shall be permitted unless the applicant demonstrates that the site cannot be developed without such encroachment into the *flood protection setback* and the encroachment is the minimum necessary after consideration of varying other siting standards such as side, front, and back lot line setbacks.

(B) Disturbance of natural vegetation shall be minimized and any disturbance allowed shall be vegetatively stabilized.

(C) Public works and temporary construction may be permitted.

5.3 Development that Affects Flood-Carrying Capacity of Nontidal Waters of the State

(A) **Development in Designated Floodways**

For proposed *development* that will encroach into a designated *floodway*, Section 3.5(A)(7) requires the applicant to submit an evaluation of alternatives to such encroachment, including different uses of the site or the portion of the site within the *floodway*, and minimization of such encroachment. This requirement does not apply to fences that do not block the flow of floodwaters or trap debris.

Proposed *development* in a designated *floodway* may be permitted only if:

(1) The applicant has been issued a permit by MDE; and

(2) The applicant has developed *hydrologic and hydraulic engineering analyses* and technical data prepared by a *licensed* professional engineer reflecting such changes, and the analyses, which shall be submitted to the Floodplain Administrator, demonstrate that the proposed activity will not result in any increase in the *base flood elevation*; or

(3) If the analyses demonstrate that the proposed activities will result in an increase in the *base flood elevation*, the applicant has obtained a Conditional Letter of Map Revision and a Letter of Map Revision from FEMA upon completion of the project. Submittal requirements and fees shall be the responsibility of the applicant.

(B) Development that Includes the Placement of Fill in Nontidal Waters of the State

For proposed *development* that includes the placement of fill in *nontidal waters of the State*, other than *development* that is subject to paragraph (D), a hydraulically-equivalent volume of excavation is required. Such excavations shall be designed to drain freely.

(C) Development in Areas with Base Flood Elevations but No Designated Floodways

For *development* in *special flood hazard areas* of *nontidal waters of the State* with *base flood elevations* but no designated *floodways*:

(1) The applicant shall develop *hydrologic and hydraulic engineering analyses* and technical data reflecting the proposed activity and shall submit such technical data to the Floodplain Administrator as required in Section 3.5(A)(6). The analyses shall be prepared by a *licensed* professional engineer in a format required by FEMA for a Conditional Letter of Map Revision and a Letter of Map Revision upon completion of the project. Submittal requirements and fees shall be the responsibility of the applicant.

(2) The proposed *development* may be permitted if the applicant has received a permit by MDE and if the analyses demonstrate that the cumulative effect of the proposed *development*, when combined with all other existing and potential flood hazard area encroachments will not increase the *base flood elevation* more than 1.0 foot at any point.

(D) Construction of Roads, Bridges, Culverts, Dams and In-Stream Ponds

Construction of roads, bridges, culverts, dams, and in-stream ponds in *nontidal waters of the State* shall not be approved unless they comply with this section and the applicant has received a permit from MDE.

(E) Alteration of a Watercourse

For any proposed *development* that involves *alteration of a watercourse* not subject to paragraph (C), unless waived by MDE, the applicant shall develop *hydrologic and hydraulic engineering analyses* and technical data reflecting such changes, including the *floodway* analysis required in Section 3.5(A), and submit such technical data to the Floodplain Administrator and to FEMA. The analyses shall be prepared by a *licensed* professional engineer in a format required by MDE and by FEMA for a Conditional Letter of Map Revision and a Letter of Map Revision upon completion of the project. Submittal requirements and fees shall be the responsibility of the applicant.

Alteration of a watercourse may be permitted only upon submission, by the applicant, of the following:

(1) A description of the extent to which the *watercourse* will be altered or relocated;

(2) A certification by a *licensed* professional engineer that the flood-carrying capacity of the *watercourse* will not be diminished;

(3) Evidence that adjacent communities, the U.S. Army Corps of Engineers, and MDE have been notified of the proposal, and evidence that such notifications have been submitted to FEMA; and

(4) Evidence that the applicant shall be responsible for providing the necessary maintenance for the altered or relocated portion of the *watercourse* so that the flood carrying capacity will not be diminished. The Floodplain Administrator may require the applicant to enter into an agreement with the City of Cambridge specifying the maintenance responsibilities; if an agreement is required, the permit shall be conditioned to require that the agreement be recorded on the deed of the property which shall be binding on future owners.

5.4 Residential Structures and Residential Portions of Mixed Use Structures

New residential *structures* and residential portions of mixed use *structures*, and *substantial improvement* (including repair of *substantial damage*) of existing residential *structures* and residential portions of mixed use *structures* shall comply with the applicable requirements of Section 4.0 and this section. See Section 5.6 for requirements for horizontal additions.

(A) Elevation Requirements

(1) *Lowest floors* shall be elevated to or above the *flood protection elevation*.

(2) In *areas of shallow flooding* (Zone AO), the *lowest floor* (including *basement*) shall be elevated at least as high above the *highest adjacent grade* as the depth number specified in feet on the *FIRM* plus two (2) feet, or at least four (4) feet if a depth number is not specified.

(3) *Enclosures below the lowest floor* shall meet the requirements of paragraph (C).

(B) Limitations on Use of Fill to Elevate Structures

Unless otherwise restricted by these regulations, especially by the limitations in Section 5.3(A), Section 5.3(B), and Section 5.3(C), fill placed for the purpose of raising the ground level to support a building or *structure* shall:

(1) Consist of earthen soil or rock materials only.

(2) Extend laterally from the building footprint to provide for adequate access as a function of use; the Floodplain Administrator may seek advice from the State Fire Marshal's Office and/or the local fire services agency;

(3) Comply with the requirements of the *building code* and be placed and compacted to provide for stability under conditions of rising and falling floodwaters and resistance to erosion, scour, and settling;

(4) Be sloped no steeper than one (1) vertical to two (2) horizontal, unless approved by the Floodplain Administrator;

(5) Be protected from erosion associated with expected velocities during the occurrence of the *base flood*; unless approved by the Floodplain Administrator, fill slopes shall be protected by vegetation if the expected velocity is less than five feet per second, and by other means if the expected velocity is five feet per second or more; and

(6) Be designed with provisions for adequate drainage and no adverse effect on adjacent properties.

(C) Enclosures Below the Lowest Floor

(1) *Enclosures below the lowest floor* shall be used solely for parking of vehicles, building access, crawl/underfloor spaces, or limited storage.

(2) *Enclosures below the lowest floor* shall be constructed using *flood damage-resistant materials*.

(3) *Enclosures below the lowest floor* shall be provided with *flood openings* which shall meet the following criteria: [Note: See NFIP Technical Bulletin #1, "Openings in Foundation Walls and Walls of Enclosures Below Elevated Buildings."]

(a) There shall be a minimum of two *flood openings* on different sides of each enclosed area; if a building has more than one *enclosure below the lowest floor*, each such enclosure shall have *flood openings* on exterior walls.

(b) The total net area of all *flood openings* shall be at least 1 square inch for each square foot of enclosed area (non-engineered *flood openings*), or the *flood openings* shall be engineered *flood openings* that are designed and certified by a *licensed* professional engineer to automatically allow entry and exit of floodwaters; the certification requirement may be satisfied by an individual certification or an Evaluation Report issued by the ICC Evaluation Service, Inc..

(c) The bottom of each *flood opening* shall be 1 foot or less above the higher of the interior floor or grade, or the exterior grade, immediately below the opening.

(d) Any louvers, screens or other covers for the *flood openings* shall allow the automatic flow of floodwaters into and out of the enclosed area.

(e) If installed in doors, *flood openings* that meet requirements of paragraphs (a) through (d), are acceptable; however, doors without installed *flood openings* do not meet the requirements of this section.

5.5 Nonresidential Structures and Nonresidential Portions of Mixed Use Structures

New nonresidential *structures* and nonresidential portions of mixed use *structures*, and *substantial improvement* (including repair of *substantial damage*) of existing nonresidential *structures* and nonresidential portions of mixed use *structures* shall comply with the applicable requirements of Section 4.0 and the requirements of this section. See Section 5.6 for requirements for horizontal additions.

(A) Elevation Requirements

Elevated *structures* shall:

(1) Have the *lowest floor* (including *basement*) elevated to or above the *flood protection elevation*; or

(2) In *areas of shallow flooding* (Zone AO), have the *lowest floor* (including *basement*) elevated at least as high above the *highest adjacent grade* as the depth number specified in feet on the *FIRM* plus two (2) feet, or at least four (4) feet if a depth number is not specified; and

(3) Have *enclosures below the lowest floor*, if any, that comply with the requirements of Section 5.4(C); or

(4) If proposed to be elevated on fill, meet the limitations on fill in Section 5.4(B).

(B) **Floodproofing Requirements**

(1) *Floodproofing* of new nonresidential buildings:

(a) Is not allowed in *nontidal waters of the State* (COMAR 26.17.04.11(B)(7)).

(b) Is not allowed in *Coastal A Zones*.

(2) *Floodproofing* for *substantial improvement* of nonresidential buildings:

(a) Is allowed in *nontidal waters of the State*.

(b) Is allowed in *Coastal A Zones*.

(3) If *floodproofing* is proposed, *structures* shall:

(a) Be designed to be dry *floodproofed* such that the building or *structure* is watertight with walls and floors substantially impermeable to the passage of water to the level of the *flood protection elevation* plus 1.0 foot, or

(b) If located in an *area of shallow flooding* (Zone AO), be dry *floodproofed* at least as high above the *highest adjacent grade* as the depth number specified on the *FIRM* plus three (3) feet, or at least five (5) feet if a depth number is not specified; and

(c) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(d) Have *floodproofing* measures that are designed taking into consideration the nature of flood-related hazards; frequency, depth and duration of *flooding*; rate of rise and fall of floodwater; soil characteristics; flood-borne debris; at least 12 hours of flood warning time from a credible source; and time necessary to implement any measures that require human intervention;

(e) Have at least one door above the applicable flood elevation that allows human ingress and egress during conditions of *flooding*;

(f) Have an operations and maintenance plan that is filed with local emergency management officials and that specifies the owner/occupant's responsibilities to monitor flood potential; the location of any shields, doors, closures, tools, or other goods that are required for implementation;

maintenance of such goods; methods of installation; and periodic inspection; and

(g) Be certified by a *licensed* professional engineer or *licensed* architect, through execution of a *Floodproofing Certificate* that states that the design and methods of construction meet the requirements of this section. The *Floodproofing Certificate* shall be submitted with the construction drawings as required in Section 3.5(A)(13).

5.6 Horizontal Additions

(A) A horizontal addition proposed for a building or *structure* that was constructed after the date specified in Section 1.1 shall comply with the applicable requirements of Section 4.0 and this section.

(B) In *nontidal waters of the State* that are subject to the regulatory authority of MDE, all horizontal additions shall comply with the applicable requirements of Section 4.0 and this section and:

(1) If the addition is structurally connected to the *base building*, the requirements of paragraph (C) apply.

(2) If the addition has an independent foundation and is not structurally connected to the *base building* and the common wall with the *base building* is modified by no more than a doorway, the *base building* is not required to be brought into compliance.

(C) For horizontal additions that are structurally connected to the *base building*:

(1) If the addition combined with other proposed repairs, alterations, or modifications of the *base building* constitutes *substantial improvement*, the *base building* and the addition shall comply with the applicable requirements of Section 4.0 and this section.

(2) If the addition constitutes *substantial improvement*, the *base building* and the addition shall comply with all of the applicable requirements of Section 4.0 and this section.

(D) For horizontal additions with independent foundations that are not structurally connected to the *base building* and the common wall with the *base building* is modified by no more than a doorway, the *base building* is not required to be brought into compliance.

(E) A horizontal addition to a building or *structure* that is not *substantial improvement*, and is not located in *nontidal waters of the State*, is not required to comply with this section.

[Note: See "Substantial Improvement/Substantial Damage Desk Reference" (FEMA P-758).]

5.7 Accessory Structures, Additions to Accessory Structures, and Attached Garages

Accessory Stuctures

(A) *Accessory Structures and Detached garages* containing **less than 300 square feet** shall meet the requirements of Section 5.4(C). A *Declaration of Land Restriction (Nonconversion Agreement)* must be signed by the property owner.

(B) *Accessory Structures and Detached garages* **between 300 and 900 square feet** shall meet the following requirements:

(1) Not be used for human habitation.

(2) Be designed to have low flood damage potential.

(3) Be constructed and placed on the lot to offer minimum resistance to the flow of floodwaters.

(4) Be firmly anchored to prevent flotation which may result in damage to other structures.

(5) Have the floor of the structure at or above grade.

(6) Comply with the provisions of Section 5.4(C) or be floodproofed.

(7) The City must determine that the use will be accessory and not have any commercial implications.

(8) All electrical, mechanical and heating devices must be elevated in accordance with Section 4.4 of this Ordinance.

(9) A signed *Declaration of Land Restriction (Nonconversion Agreement)* shall be recorded on the property deed prior to issuance of the Certificate of Occupancy [see Section 3.5(A)(10)].

(C) *Accessory Structures and Detached garages* **over 900 square feet** must comply with the requirements of Section 5.4 as well as Section 5.7(B) above.

Additions to accessory structures

(D) Additions or the total of all successive additions of **less than 300 square feet** to accessory structures legally existing prior to the effective date of this chapter, as amended, are exempt from this section. However, the addition(s) must comply with the provisions of Sections 5.7(A) above and 5.4 or be floodproofed.

(E) Additions or the total of all successive additions of **between 300 square feet and 900 square feet** to accessory structures legally existing prior to the effective date of this chapter, as amended, are exempt from this section, provided that the addition(s) meet the requirements of Section 5.7(B) above and Section 5.4.

(F) Additions or the total of all successive additions of **over 900 square feet** to accessory structures legally existing prior to the effective date of this chapter, as amended, shall:

(1) Have the lowest floor of the addition(s) constructed at or above the base flood elevation.

(2) Provide the Department with a signed elevation certificate that the lowest floor of the addition has been built at or above the base flood elevation before the structure may be used for its intended purpose. This certificate shall be obtained from a registered surveyor or engineer after the benchmark has been established on the building site by a registered surveyor or engineer.

Attached garages

(A) A garage built during the initial construction of the principal dwelling shall be elevated to the greatest extent possible and be equipped with flood openings or water equalizing vents as in Section 5.4(C). However, garages may be permitted as an exemption to the elevation requirement if used solely for the parking of vehicles, storage or building access and the following conditions are met:

(B) The ground floor of the private garage cannot be converted to a living space. (A declaration of land restriction must be signed and recorded by the applicant.)

(C) The garage must be properly anchored with adequate footings.

(D) All mechanical, heating, and electrical equipment must be elevated above the base flood elevation.

SECTION 6.0 REQUIREMENTS IN COASTAL HIGH HAZARD AREAS (V ZONES) AND COASTAL A ZONES

6.1 General Requirements

In addition to the general requirements of Section 4.0, the requirements of this section shall:

(A) Apply in flood hazard areas that are identified as *coastal high hazard areas* (V Zones) and *Coastal A Zones* (if delineated).

(B) Apply to all *development, new construction, substantial improvements* (including repair of *substantial damage*), and placement, replacement, and *substantial improvement* (including repair of *substantial damage*) of *manufactured homes*.

Exception: In *Coastal A Zones*, the requirements of Section 5.0 shall apply to *substantial improvements* (including repair of *substantial damage*), and *substantial improvement* of *manufactured homes* (including repair of *substantial damage*) and replacement *manufactured homes.*

[Note: See "Coastal Construction Manual" (FEMA P-55).]

6.2 Location and Site Preparation

(A) The placement of structural fill for the purpose of elevating buildings is prohibited.

(B) Buildings shall be located landward of the reach of mean high tide.

(C) Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways.

(D) Site preparations shall not alter sand dunes unless an engineering analysis demonstrates that the potential for flood damage is not increased.

6.3 Residential and Nonresidential Structures

New *structures* and *substantial improvement* (including repair of *substantial damage*) of existing *structures* shall comply with the applicable requirements of Section 4.0 and the requirements of this section.

(A) Foundations

(1) *Structures* shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. Pilings shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water loading values used shall be those associated with the *base flood*. Wind loading values shall be those required by applicable *building codes*. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling.

(2) Slabs, pools, pool decks and walkways shall be located and constructed to be structurally independent of *structures* and their foundations to prevent transfer

of flood loads to the *structures* during conditions of *flooding*, scour, or erosion from wave-velocity flow conditions, and shall be designed to minimize debris impacts to adjacent properties and public infrastructure.

(B) Elevation Requirements

(1) The bottom of the lowest horizontal structural member that supports the *lowest floor* shall be located at or above the *flood protection elevation*.

(2) *Basement* floors that are below grade on all sides are prohibited.

(3) The space below an elevated building shall either be *free-of-obstruction* or, if enclosed by walls, shall meet the requirements of paragraph (D). [Note: See NFIP Technical Bulletin #5, "Free-of-Obstruction Requirements."]

(C) Certification of Design

As required in Section 3.5(A)(13), the applicant shall include in the application a certification prepared by a *licensed* professional engineer or a *licensed* architect that the design and methods of construction to be used meet the requirements of paragraph (A), paragraph (B), paragraph (D), and the *building code*.

(D) Enclosures Below the Lowest Floor

(1) *Enclosures below the lowest floor* shall be used solely for parking of vehicles, building access or limited storage.

(2) *Enclosures below the lowest floor* shall be less than 299 square feet in area (exterior measurement).

(3) Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are designed to break away under flood loads and are not part of the structural support of the building or *structure*. [Note: See NFIP Technical Bulletin #9, "Design and Construction Guidance for Breakaway Walls."]

(4) Electrical, mechanical, and plumbing system components shall not be mounted on or penetrate through walls that are designed to break away under flood loads.

(5) Walls intended to break away under flood loads shall be constructed with insect screening or open lattice, or shall be designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than 10 pounds per square foot and no more than 20 pounds per square foot; or

(6) Where wind loading values of the *building code* exceed 20 pounds per square foot, the applicant shall submit a certification prepared and sealed by a *licensed* professional engineer or *licensed* architect that:

(a) The walls and partitions below the *lowest floor* have been designed to collapse from a water load less than that which would occur during the *base flood*.

(b) The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the *base flood;* wind loading values used shall be those required by the *building code*.

(c) In *Coastal A Zones*, in addition to the requirements of this section, walls below the *lowest floor* shall have *flood openings* that meet the requirements of Section 5.4(C)(3).

6.4 Horizontal Additions to Structures

(A) A horizontal addition proposed for a building or *structure* that was constructed after the date specified in Section 1.1 shall comply with the applicable requirements of Section 4.0 and this section.

(B) For horizontal additions, whether structurally connected or not structurally connected, to the *base building*:

(1) If the addition combined with other proposed repairs, alterations, or modifications of the *base building* constitutes *substantial improvement*, the *base building* and the addition shall comply with the applicable requirements of Section 4.0 and this section.

(2) If the addition constitutes *substantial improvement*, the *base building* and the addition shall comply with all of the applicable requirements of Section 4.0 and this section. [Note: The *base building* is required to comply otherwise it is an obstruction that does not comply with the *free-of-obstruction* requirement that applies to the elevated addition, see Section 6.3(B)(3).]

(C) A horizontal addition to a building or *structure* that is not *substantial improvement* is not required to comply with this section.

6.5 Accessory Structures

(A) *Accessory structures* shall be limited to not more than 300 square feet in total floor area.

(B) *Accessory structures* shall comply with the elevation requirements and other requirements of Section 6.3 or, if not elevated, shall:

(1) Be useable only for parking of vehicles or limited storage;

(2) Be constructed with *flood damage-resistant materials* below the *base flood elevation*;

(3) Be constructed and placed to offer the minimum resistance to the flow of floodwaters;

(4) Be anchored to prevent flotation;

(5) Have electrical service and mechanical equipment elevated to or above the *base flood elevation*; and

(6) If larger than 100 square feet in size, have walls that meet the requirements of Section 6.3(D)(3) through (6), as applicable for the *flood zone*; and if located in *Coastal A Zones*, walls shall have *flood openings* that meet the requirements of Section 5.4(C)(3).

6.6 Other Structures and Development

[Note: See NFIP Technical Bulletin #5, "Free-of-Obstruction Requirements."]

(A) Decks and Patios

In addition to the requirements of the *building code* or the residential code, decks and patios shall be located, designed, and constructed in compliance with the following:

(1) A deck that is structurally attached to a building or *structure* shall have the bottom of the lowest horizontal structural member at or above the *flood protection elevation* and any supporting members that extend below the design flood elevation shall comply with the foundation requirements that apply to the building or *structure*, which shall be designed to accommodate any increased loads resulting from the attached deck.

(2) A deck or patio that is located below the *flood protection elevation* shall be structurally independent from *structures* and their foundation systems, and shall be designed and constructed either to remain intact and in place during *base flood* conditions or to break apart into small pieces that will not cause structural damage to adjacent elevated *structures*.

(3) A deck or patio that has a vertical thickness of more than 12 inches or that is constructed with more than the minimum amount of fill that is necessary for site

drainage shall not be approved unless an analysis demonstrates no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent elevated *structures*.

(4) A deck or patio that has a vertical thickness of 12 inches or less and that is at natural grade or on fill material that is similar to and compatible with local soils and is the minimum amount necessary for site drainage may be approved without requiring analysis of the impact on diversion of floodwaters or wave runup and wave reflection.

(B) Other Development

Other *development* activities shall be permitted only if located outside the footprint of, and not structurally attached to, *structures*, and only if an analysis demonstrates no harmful diversion of floodwaters or wave runup and wave reflection onto adjacent elevated *structures*. Other *development* includes but is not limited to:

(1) Bulkheads, seawalls, retaining walls, revetments, and similar erosion control structures;

(2) Solid fences, privacy walls, and fences prone to trapping debris, unless designed and constructed to fail under *base flood* conditions; and

(3) Mounded septic systems.

SECTION 7.0 VARIANCES

7.1 General

The Board of Zoning Appeals shall have the power to consider and authorize or deny *variances* from the strict application of the requirements of these regulations. A *variance* shall be approved only if it is determined to not be contrary to the public interest and where, owing to special conditions of the lot or parcel, a literal enforcement of the provisions of these regulations, an unnecessary hardship would result.

Upon consideration of the purposes of these regulations, the individual circumstances, and the considerations and limitations of this section, the Board of Zoning Appeals may attach such conditions to *variances* as it deems necessary to further the purposes of these regulations.

The Board of Zoning Appeals shall notify, in writing, any applicant to whom a *variance* is granted to construct or substantially improve a building or *structure* with its *lowest floor* below the elevation required by these regulations that the *variance* is to the floodplain management requirements of these regulations only, and that the cost of Federal flood insurance will be commensurate with the increased risk, with rates up to $25 per $100 of insurance coverage.

A record of all *variance* actions, including justification for issuance shall be maintained pursuant to Section 3.2(K) of these regulations.

7.2 Application for a Variance

(A) The owner of property, or the owner's authorized agent, for which a *variance* is sought shall submit an application for a *variance* to the Floodplain Administrator.

(B) At a minimum, the application shall contain the following information: name, address, and telephone number of the applicant and property owner; legal description of the property; parcel map; description of the existing use; description of the proposed use; site map showing the location of flood hazard areas, designated *floodway* boundaries, *flood zones*, *base flood elevations*, and *flood protection setbacks*; description of the *variance* sought; and reason for the *variance* request. *Variance* applications shall specifically address each of the considerations in Section 7.3.

(C) If the application is for a *variance* to allow the *lowest floor* (A Zones) or bottom of the lowest horizontal structural member (V Zones and *Coastal A Zones*) of a building or *structure* below the applicable minimum elevation required by these regulations, the application shall include a statement signed by the owner that, if granted, the conditions of the *variance* shall be recorded on the deed of the property.

7.3 Considerations for Variances

The Floodplain Administrator shall request comments on *variance* applications from MDE (NFIP State Coordinator) and shall provide such comments to the Board of Zoning Appeals .

In considering *variance* applications, the Board of Zoning Appeals shall consider and make findings of fact on all evaluations, all relevant factors, requirements specified in other sections of these regulations, and the following factors:

(A) The danger that materials may be swept onto other lands to the injury of others.

(B) The danger to life and property due to *flooding* or erosion damage.

(C) The susceptibility of the proposed *development* and its contents (if applicable) to flood damage and the effect of such damage on the individual owner.

(D) The importance of the services to the *community* provided by the proposed *development*.

(E) The availability of alternative locations for the proposed use which are not subject to, or are subject to less, *flooding* or erosion damage.

(F) The necessity to the facility of a waterfront location, where applicable, or if the facility is a *functionally dependent use*.

(G) The compatibility of the proposed use with existing and anticipated *development*.

(H) The relationship of the proposed use to the comprehensive plan and hazard mitigation plan for that area.

(I) The safety of access to the property in times of flood for passenger vehicles and emergency vehicles.

(J) The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.

(K) The costs of providing government services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

(L) The comments provided by MDE (NFIP State Coordinator).

7.4 Limitations for Granting Variances

The Board of Zoning Appeals shall make an affirmative decision on a *variance* request only upon:

(A) A showing of good and sufficient cause. Good and sufficient cause deals solely with the physical characteristics of the property and cannot be based on the character of the improvement, the personal characteristics of the owner/inhabitants, or local provision that regulate standards other than health and public safety.

(B) A determination that failure to grant the *variance* would result in exceptional hardship due to the physical characteristics of the property. Increased cost or inconvenience of meeting the requirements of these regulations does not constitute an exceptional hardship to the applicant.

(C) A determination that the granting of a *variance* for *development* within any designated *floodway*, or flood hazard area with *base flood elevations* but no designated *floodway*, will not result in increased flood heights beyond that which is allowed in these regulations.

(D) A determination that the granting of a *variance* will not result in additional threats to public safety; extraordinary public expense, nuisances, fraud or victimization of the public, or conflict with existing local laws.

(E) A determination that the building, *structure* or other *development* is protected by methods to minimize flood damages.

(F) A determination that the *variance* is the minimum necessary to afford relief, considering the flood hazard.

SECTION 8.0 ENFORCEMENT

8.1 Compliance Required

(A) No building, *structure* or *development* shall hereafter be located, erected, constructed, reconstructed, improved, repaired, extended, converted, enlarged or altered without full compliance with these regulations and all other applicable regulations.

(B) Failure to obtain a permit shall be a *violation* of these regulations and shall be subject to penalties in accordance with Section 8.3.

(C) Permits issued on the basis of plans and applications approved by the Floodplain Administrator authorize only the specific activities set forth in such approved plans and applications or amendments thereto. Use, arrangement, or construction of such specific activities that are contrary to that authorization shall be deemed a *violation* of these regulations.

8.2 Notice of Violation and Stop Work Order

If the Floodplain Administrator determines that there has been a *violation* of any provision of these regulations, the Floodplain Administrator shall give notice of such *violation* to the owner, the owner's authorized agent, and the *person* responsible for such *violation*, and may issue a stop work order. The notice of *violation* or stop work order shall be in writing and shall:

(A) Include a list of *violations*, referring to the section or sections of these regulations that have been violated;

(B) Order remedial action which, if taken, will effect compliance with the provisions of these regulations;

(C) Specify a reasonable period of time to correct the *violation*;

(D) Advise the recipients of the right to appeal; and

(E) Be served in person; or

(F) Be posted in a conspicuous place in or on the property and sent by registered or certified mail to the last known mailing address, residence, or place of business of the recipients.

8.3 Violations and Penalties

Violations of these regulations or failure to comply with the requirements of these regulations or any conditions attached to a permit or *variance* shall constitute a misdemeanor. Any *person* responsible for a *violation* shall comply with the notice of *violation* or stop work order. Any person who violates this chapter or who fails to comply with any of its requirements shall upon conviction thereof, be fined not more than $1000.00 or be imprisoned for not more than 30 days, or both. Each day a violation continues shall be considered a separate offense. Nothing herein contained shall prevent the City of Cambridge from taking such other lawful action as is necessary to prevent or remedy any *violation*.

SECTION 9.0 SUBSEQUENT AMENDMENTS AND EFFECTIVE DATE

9.1 Subsequent Amendments

All ordinances or parts of ordinances that are inconsistent with the provisions of this ordinance are hereby repealed to the extent of such inconsistency. This ordinance shall be amended as required by the Federal Emergency Management Agency, Title 44, Code of Federal Regulations. All subsequent amendments to this ordinance are subject to the approval of the Federal Emergency Management Agency and the Maryland Department of the Environment.

9.2 Effective Date

And be it further enacted, that this Ordinance shall take effect on March 16, 2015.