

# Town of

P.O. Drawer 519  
Zoning Department



# East Lyme

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September 17, 2021

Kirk Scott, Chairman  
East Lyme Planning Commission  
Town of East Lyme  
PO Box 519  
Niantic, CT 06357

RE: Referral/Text Amendment Proposal

Dear Mr. Scott,

I am writing to refer the following application for your review and comment in accordance with Section 8-3 a (a), (b) of chapter 124 of the Connecticut General Statutes.

1. Request of the East Lyme Zoning Commission to amend the East Lyme Zoning Regulations, Section 15, Flood Hazard Areas.

The Zoning Commission has scheduled a public hearing for October 21, 2021. Please forward any comments for inclusion into the public hearing record. If you have any questions please do not hesitate to contact the Zoning Commission staff person, Mr. Mulholland.

Sincerely,

Terence Donovan  
Secretary, East Lyme Zoning Commission

TD/jl



# SECTION 15

## FLOOD HAZARD AREAS

### 15.1 DEFINITIONS

Unless specifically defined below, words or phrases used in this section shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

APPEAL means a request for a review of the interpretation of the Zoning Official of any provision of this ordinance or a request for a variance.

AREA OF SHALLOW FLOODING means a designated AO or VO Zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and velocity flow may be evident.

AREA OF SPECIAL FLOOD HAZARD means land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year.

BASE FLOOD means the flood having a one percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION (BFE) means the elevation of the crest of the base flood or 100-year flood. The height in relation to mean sea level expected to be reached by the waters of the base flood at pertinent points in the floodplains of coastal and riverine areas.

BASEMENT means any area of the building having its floor subgrade (below ground level) on all sides.

BREAKAWAY WALLS mean any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any other suitable building material which are not part of the structural support of the building and which are so designed as to break away under abnormally high tides or wave action, without damage to the structural integrity of the building on which they are used or any buildings to which they might be carried by flood waters.

**Coastal AE Zone** – The portion of the Coastal High Hazard Area with wave heights between 1.5 feet and 3.0 feet during the base flood and seaward of the line labeled the “Limit of Moderate Wave Action” (LimWA) on a Flood Insurance Rate Map (FIRM).

**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 or seismic sources. Coastal High Hazard Areas are designated as Zones VE and Coastal AE on a Flood Insurance Rate Map (FIRM).

COASTAL HIGH HAZARD AREA means the 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 waters, including but not limited to, hurricane wave wash or tsunamis. The area is designated on a Flood Insurance Rate Map (FIRM) as Zone VE.

COST means, as related to substantial improvements, the cost of any reconstruction, rehabilitation, addition, alteration, repair or other improvement of a structure shall be established by a detailed written contractor's estimate. The estimate shall include, but not be limited to: the cost of materials (interior finishing elements, structural elements, utility and service equipment); sales tax on materials, building equipment and fixtures, including heating and air conditioning and utility meters; labor; built-in appliances; demolition and site preparation; repairs made to damaged parts of the building worked on at the same time; contractor's overhead; contractor's profit; and grand total. Items to be excluded include: cost of plans and specifications, survey costs, permit fees, outside improvements such as septic systems, water supply wells, landscaping, sidewalks, fences, yard lights, irrigation systems, and detached structures such as garages, sheds, and gazebos.

DEVELOPMENT means any man-made change to improved or unimproved real estate, including but not limited to the construction of buildings or structures; the construction of additions, alterations or substantial improvements to buildings or structures; the placement of buildings or structures; mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment; the storage, deposition, or extraction of materials; and the installation, repair or removal of public or private sewage disposal systems or water supply facilities within the area of special flood hazard.

EXISTING MANUFACTURED HOME PARK OR SUBDIVISION means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured home are to be affixed (including, as a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before June 15, 1981, the effective date of the floodplain management ordinance adopted by the community.

EXPANSION TO AN EXISTING MANUFACTURED HOME PARK OR SUBDIVISION means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufacturing homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) means the federal agency that administers the National Flood Insurance Program (NFIP).

FINISHED LIVING SPACE means, as related to fully enclosed areas below the base flood elevation (BFE), a space that is, but is not limited to, heated and/or cooled, contains finished floors (tile, linoleum, hardwood, etc.), has sheetrock walls that may or may not be painted or wallpapered, and other amenities such as furniture, appliances, bathrooms, fireplaces and other items that are easily damaged by floodwaters and expensive to clean, repair or replace.

FLOOD" OR "FLOODING, means 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 usual and rapid accumulation or runoff of surface waters from any source.

FLOOD INSURANCE RATE MAP (FIRM) means the official map on which the Federal Emergency Management Agency has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

FLOOD INSURANCE STUDY means the official report in which the Federal Emergency Management Agency has provided flood profiles, as well as the Flood Insurance Rate Map and the water surface elevation of the base flood.

FLOODWAY means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 1.0 feet.

FLOODWAY FRINGE means area between the "floodway" and the boundary of the 100 year flood area.

FUNCTIONALLY DEPENDENT USE means 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, seafood processing facilities, manufacturing, sales or service facilities.

HISTORIC STRUCTURE means any structure that is: (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historic significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either: (1) By an approved state program as determined by the Secretary of the Interior or (2) Directly by the Secretary of the Interior in states without approved programs.

Limit of Moderate Wave Action (LiMWA) – The landward limit of the 1.5 foot breaking wave within a Coastal AE Zone. These areas are seaward of the line labeled "Limit of Moderate Wave Action" (LiMWA) on a Flood Insurance Rate Map (FIRM).

LOWEST FLOOR means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area is not considered a building's lowest floor.

MANUFACTURED HOME means 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. Recreational vehicles and similar transportable structure are not considered manufactured homes unless placed on a site for 180 consecutive days or longer.

MANUFACTURED HOME PARK OR SUBDIVISION means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

MARKET VALUE means, as related to substantial improvement and substantial damage, the value of the structure shall be determined by an independent appraisal by a professional appraiser of the structure prior to the start of the initial repair or improvement, or in the case of damage, the value of the structure prior to the damage occurring.

MEAN SEA LEVEL means, for purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988 or other datum to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

NEW CONSTRUCTION means structures for which the "start of construction" commenced on or after June 15, 1981, the effective date of this ordinance and includes and includes any subsequent improvements to such structures.

NEW MANUFACTURED HOME PARK OR SUBDIVISION means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after June 15, 1981, the effective date of the floodplain management regulation adopted by the community.

RECREATIONAL VEHICLE means a vehicle which is (i) built on a single chassis, (ii) 400 square feet or less when measured at the largest horizontal projections; (iii) designed to be a self-propelled or permanently towable by light -duty truck; and (iv) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonable use. Recreational vehicles and similar transportable structures placed on a site for 180 consecutive days or longer shall be considered manufactured homes for the purpose of these regulations.

SAND DUNES mean naturally occurring accumulations of sand in ridges or mounds landward of the beach.

**Special Flood Hazard Area (SFHA)** – The land in the floodplain within a community subject to a one (1) percent or greater chance of flooding in any given year. SFHAs are determined utilizing the base flood elevations (BFE) provided on the flood profiles in the Flood Insurance Study (FIS) for a community. BFEs provided on Flood Insurance Rate Map (FIRM) are only approximate (rounded up or down) and should be verified with the BFEs published in the FIS for a specific location. SFHAs include, but are not necessarily limited to, the land shown as Zones A, AE, AO, AH, and the Coastal High Hazard Areas shown as Zones VE and Coastal AE on a FIRM. The SFHA is also called the Area of Special Flood Hazard.

START OF CONSTRUCTION includes substantial improvement and means the date that the building permit was issued, provided the actual start of construction, repair, reconstruction, 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, grade and filing; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, 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 means a walled and roofed building manufactured home, or including a gas or liquid storage tank or mobile home that is principally above ground.

SUBSTANTIAL DAMAGE means damage of any origin sustained by a structure, whereby the cost of restoring the structure to its pre-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. "Substantial damage" also means flood-related damages sustained by a structure on two separate occasions during a 2-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT means any repair, reconstruction, or improvement of a structure, taking place over a two-year period, the cumulative cost of which equals or exceeds 50 percent of the market value of the structure either:

1. Before the start of construction of the improvement or repair, or
2. If the structure has been damaged and is being restored to its condition before the damage occurred. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. For the purposes of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified previously identified and documented by the local code enforcement official 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".

VARIANCE means a grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.

VIOLATION means a failure of a structure or other development to be fully compliant with the community's floodplain management ordinance. A structure or other development without required permits, lowest floor elevation documentation, flood-proofing certificates or required floodway encroachment calculations is resumed to be in violation until such time as that documentation is provided.

WATER SURFACE ELEVATION means the height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

15.2 GENERAL PROVISIONS

15.2.1 LANDS TO WHICH THIS ORDINANCE APPLIES - This ordinance shall apply to all areas of special flood hazards within the jurisdiction of East Lyme, Connecticut.

15.2.2 BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD - The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in its Flood Insurance Study (FIS) for New London County, Connecticut, dated April 3, 2020, and accompanying Flood Insurance Rate Maps (FIRM), dated August 5, 2013, (Panels 09011C0459J, 09011C0467J, 09011C0477J, 09011C0478J, 09011C0479J, 09011C0481J, 09011C0483J, 09011C0486J, 09011C0487J) and July 18, 2011 (Panels 09011C0309G, 09011C0316G, 09011C0317G, 09011C0318G, 09011C0319G, 09011C0328G, 09011C0336G, 09011C0337G, 09011C0338G, 09011C0339G, 09011C0457G, 09011C0476G) and other supporting data applicable to the Town of East Lyme, and any subsequent revisions thereto, are adopted by reference and declared to be a part of this regulation. Since mapping is legally adopted by reference into this regulation it must take precedence when more restrictive until such time as a map amendment or map revision is obtained from FEMA. **The area of special flood hazard includes any area shown on the FIRM as Zones A, AE, AO, AH, Coastal AE and VE, including areas designated as a floodway on a FIRM. Zones VE and Coastal AE are also identified as Coastal High Hazard Areas.** Areas of special flood hazard are determined utilizing the base flood elevations (BFE) provided on the flood profiles in the Flood Insurance Study (FIS) for a community. BFEs provided on a Flood Insurance Rate Map (FIRM) are only approximate (rounded up or down) and should be verified with the BFEs published in the FIS for a specific location. The FIRM and FIS are on file in the Town Hall, East Lyme, Connecticut.

15.2.3 COMPLIANCE - No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations.

15.2.4 ABROGATION AND GREATER RESTRICTIONS - This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where these regulations and any other ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

15.2.5 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.



15.2.6 WARNING AND DISCLAIMER OF LIABILITY -The degree of flood protection required by these regulations are considered reasonable for regulatory purposes and are based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. These regulations do not imply that land outside the areas of special flood hazard or uses permitted within such areas will be free from flooding or flood damages. These regulations shall not create liability on the part of the Town of East Lyme, Connecticut, any officer or employee thereof or the Federal Emergency Management Agency, for any flood damages that Management Agency, for any flood damages that result from reliance on these regulations or any administrative decision lawfully made thereunder.

### 15.3 ADMINISTRATION

15.3.1 ESTABLISHMENT OF DEVELOPMENT PERMIT - A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 15.2.2.

Application for a development permit shall be made on forms furnished by the ~~Building Official and~~ Zoning Official and may include, but not be limited to: Plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; ~~the limit of moderate wave action (LiMWA) boundary line~~, existing or proposed structures, fill, storage or materials, drainage facilities; and the location of the foregoing. Specifically, the following information is required:

- A. Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures;
- B. Elevation in relation to mean sea level to which any structure has been flood proofed;
- C. Certification by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice and the flood proofing criteria in Section 15.5.2.B;
- D. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development; and
- E. Plans for any walls to be used to enclose space below the base flood level.
- F. ~~limit of moderate wave action (LiMWA)~~,

15.3.2 DESIGNATION OF THE ~~BUILDING OFFICIAL AND ZONING OFFICIAL~~ - The ~~Building Official and~~ Zoning Official are hereby appointed to administer and implement this ordinance by granting or denying development permit applications in accordance with its provisions.

15.3.3 DUTIES AND RESPONSIBILITIES OF THE ~~BUILDING OFFICIAL AND ZONING OFFICIAL~~ - Duties of the ~~Building Official and~~ Zoning Official shall include, but not be limited to:

- A. PERMIT REVIEW

1. Review all development permits to determine that the permit requirements of this ordinance have been satisfied and whether proposed building sites will be reasonably safe from flooding.
2. Review all development permits to determine that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.
3. Review all development permits in the area of special flood hazard except in the coastal high hazard area to determine if the proposed development adversely affects the flood carrying capacity of the area of special flood hazard. For the purposes of this ordinance, "adversely affects" means that the cumulative effect of the proposed development when combined with all other existing and anticipated development will not increase the water surface elevation of the base flood more than one foot at any point.
4. Review all development permits in the coastal high hazard area or the area of special flood hazard to determine if the proposed development alters mangrove stands or sand dunes so as to increase potential flood damage.
5. Review plans for walls to be used to enclose space below the base flood level in accordance with Section 15.5.3.B.4.

**B. USE OF OTHER BASE FLOOD DATA**

When base flood elevation data has not been provided in accordance with Section 15.2.2, the ~~Building Official~~ and Zoning Official shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state or other source, in order to administer these regulations.

**C. INFORMATION TO BE OBTAINED AND MAINTAINED**

1. Obtain and record the actual elevation (in relation to mean sea level) of the lowest habitable floor (including basement) of all new or substantially improved structures.
2. For all new and substantially improved flood proofed structures:
  - i. Verify and record the actual elevation (in relation to mean sea level), and
  - ii. Maintain the flood proofing certifications required in Section 15.3.1 (C).
3. In coastal high hazard areas, (VE and Coastal AE Zones) certification shall be obtained from a registered professional engineer or architect that the structure is designed to be securely anchored to adequately anchored pilings or columns in order to withstand velocity waters and hurricane wave wash.
4. Maintain for public inspection all records pertaining to the provisions of this ordinance.

D. ALTERATION OF WATERCOURSES

1. Notify adjacent communities, the Department of Energy and Environmental Protection (Land and Water Resource Division) and the Southeastern Connecticut Council of Governments (SCCOG) prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency.
2. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

- E. INTERPRETATION OF FIRM BOUNDARIES - Make interpretations where needed, as to the exact location of the boundaries of the areas of special flood hazards, for example, where there appears to be a conflict between a mapped boundary and actual field conditions. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation.

15.4 VARIANCE AND APPEALS PROCEDURE

15.4.1 APPEAL BOARD

- A. The Zoning Board of Appeals shall hear and decide appeals and requests for variances from the requirements of flood hazard areas regulations.
- B. The Zoning Board of Appeals shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the Zoning Official ~~and Building Official~~ in the enforcement or administration of this ordinance.
- C. Anyone aggrieved by the decision of the Zoning Board of Appeals or any taxpayer, may appeal such decision to the Superior Court as provided in the Connecticut General Statutes.
- D. In passing upon such applications, the Zoning Board of Appeals shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and:
  1. The danger that materials may be swept onto other lands to the injury of others;
  2. The danger to life and property due to flooding or erosion damage;
  3. The susceptibility of the proposed facility and its contents to flood damage on the individual owner;
  4. The importance of the services provided by the proposed facility to the community.
  5. The necessity to the facility of a waterfront location, where applicable;

6. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
7. The compatibility of the proposed use with existing and anticipated development;
8. The relationship of the proposed use to the comprehensive plan and flood plain management program of that area;
9. The safety of access to the property in times of flood for ordinary and emergency vehicles;
10. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and,
11. The costs of providing governmental services during the after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges.

E.

F. Variances may be issued for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the other variance criteria are met and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

G. Upon consideration of the factors of Section 15.4.1 (D) and the purposes of these regulations, the Board of Selectmen may attach such conditions to the granting of variances, as it deems necessary to further the purposes of these regulations.

H. The Zoning Official shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency in its biennial report.

#### 15.4.2 CONDITIONS FOR VARIANCES IN FLOOD HAZARD AREAS

A. Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in the remainder of this section.

B. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

C. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard to afford relief.

D. Variances shall only be issued upon:

1. A showing of good and sufficient cause;

2. A determination that failure to grant the variance would result in exceptional hardship to the applicant; and,
  3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
- E. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the lowest floor elevation up to amounts as high as \$25 for \$100 of insurance coverage.

## 15.5 PROVISIONS FOR FLOOD HAZARD REDUCTION

15.5.1 GENERAL STANDARDS - In all areas of special flood hazards, the following standards are required:

### A. ANCHORING

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
2. New construction, substantial improvements, and repair to structures that have sustained substantial damage shall be constructed with materials and utility equipment that are flood-damage resistant and conform to the provisions of FEMA Technical Bulletin 2, Flood Damage-Resistant Material Requirements. This includes, but is not limited to, flooring, interior and exterior walls, wall coverings and other materials installed below the base flood elevation plus one (1.0) foot.
2. All manufactured homes to be placed, or substantially improved, shall be elevated so that the lowest floor is above the base flood elevation and shall be anchored to resist flotation, collapse, or lateral movement by providing over-the-top and frame ties to ground anchors. This includes manufactured homes located outside a manufactured home park or subdivision, in a new manufactured home park or subdivision, in an existing manufactured home park or subdivision, in an expansion to an existing manufactured home park or subdivision, or on a site in an existing manufactured home park in which a manufactured home has incurred substantial damage as a result of a flood. Specific requirements shall be that:
  - i. Over-the-top ties be provided at each of the four corners of the manufactured home, with two additional ties per side at intermediate locations, with mobile homes less than 50 feet long requiring one additional tie per side;

- ii. Frame ties be provided at each corner of the home with five additional ties per side at intermediate points, with manufactured homes less than 50 feet long requiring four additional ties per side; and  
  
(iii) All components of the anchoring system be capable of carrying a force of 4,800 pounds.
3. All manufactured homes, as specified in part (2) above, shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement, and hydrostatic and hydrodynamic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties to ground anchors.

B. CONSTRUCTION MATERIALS AND METHODS

1. All new construction and substantial improvements shall be constructed with materials resistant to flood damage.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
3. Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

C. UTILITIES

1. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;
2. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and
3. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.
4. The bottom of all electrical, heating, plumbing, ventilation and air conditioning equipment, appliances, fixtures and components, HVAC duct work and duct systems, and any other utility service equipment, facilities, machinery, or connections servicing a structure shall be elevated one (1.0) foot above the base flood elevation (BFE). This includes, but is not limited to, furnaces, oil or propane tanks, air conditioners, heat pumps, hot water heaters, ventilation duct work, washer and dryer hook-ups, electrical junction boxes, and circuit breaker boxes. Systems, fixtures, equipment and components shall not be mounted on or penetrate through breakaway walls intended to fail under flood loads. Connections or other equipment that must be located below the BFE plus 1.0 foot elevation are permitted only when no other elevation alternative is available and 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 the base flood event. Electrical wiring systems that must be located below the BFE plus 1.0 foot shall conform to the standards for wet locations.

D. SUBDIVISION PROPOSALS

1. All subdivision proposals shall be consistent with the need to minimize flood damage;
2. All subdivision proposals shall have public utilities and facilities such as sewers, gas, electrical and water systems located and constructed to minimize flood damage;
3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood; and
4. Base flood elevation data shall be provided for subdivision proposals and other proposed development which contain at least 50 lots or 5 acres (whichever is less).

E. STANDARDS FOR STREAMS WITHOUT ESTABLISHED BASE FLOOD ELEVATIONS, FLOODWAYS AND/OR FLOOD MAPPING

1. The ~~Building Official and~~ Zoning Official shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State or other source, including data developed pursuant to 15.3.3. (b) or 15.5.1. (d) (4) of these regulations or section 6-6-1 (7) of the Town's Subdivision Regulations, as criteria for requiring that new construction, substantial improvements or other development in A, or AE Zones on the Community's FIRM meet the standards in Section 15.5.2.
2. In AE Zones where base flood elevations have been determined, but before a floodway is designated, no new construction, substantial improvement, or other development (including fill) shall be permitted which will increase base flood elevations more than one (1) foot at any point along the watercourse when all anticipated development is considered cumulatively with the proposed development.
3. The ~~Building Official and~~ Zoning Official may request or accept floodway data of an applicant for watercourses without FEMA-published floodways. When such data is provided by an applicant or from any other source, the Town shall adopt a regulatory floodway. The floodway shall be based on only the principle that the floodway must be able to convey the waters of the base flood without increasing the water surface elevation more than one (1) foot at any point along the watercourse.
4. Where no base flood elevation (BFE) or floodway data is available, the ~~Building Official and~~ Zoning Enforcement Official shall obtain, review and reasonably utilize any base flood elevation and

floodway data available from a Federal, State, or other source, as criteria for requiring that new construction, substantial improvements, or other development in any area of potential, demonstrable or historical flooding within the community meet the standards in Section 15.5.2. A registered professional engineer must determine the BFE in accordance with accepted hydrologic and hydraulic engineering practices and document the technical methods used. Studies, analyses and computations shall be submitted in sufficient detail to allow thorough review and approval

15.5.2 SPECIFIC STANDARDS - In all areas of special flood hazards zones A and AE, the following standards are required;

A. RESIDENTIAL CONSTRUCTION - New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to one (1) foot above base flood elevation. All new construction, substantial improvements, and repair to structures that have sustained substantial damage which are residential structures shall have the bottom of the lowest floor, including basement, elevated one (1.0) foot above the base flood elevation (BFE). Electrical, plumbing, machinery or other utility equipment that service the structure must be elevated one (1.0) foot above the BFE

B. NON-RESIDENTIAL CONSTRUCTION - New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to the one (1) foot above level of the base flood elevation; or together with attendant utility and sanitary facilities, shall:

- ~~1. Be flood proofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water;~~
- ~~2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and~~
- ~~3. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice. Such certifications shall be provided to the Zoning Official~~

All new construction, substantial improvements, and repair to structures that have sustained substantial damage which are commercial, industrial or non-residential structures shall:

- (a) Have the bottom of the lowest floor, including basement, elevated one (1.0) foot above the base flood elevation (BFE); or
- (b) In lieu of being elevated, non-residential structures may be dry flood-proofed to one (1.0) foot above the BFE provided that together with all attendant utilities and sanitary facilities the areas of the structure below the required elevation are watertight with walls substantially impermeable to the passage of water, and provided that such structures are composed of structural components having the capability of resisting hydrostatic and hydrodynamic loads and the



effects of buoyancy. A registered professional engineer or architect shall review and/or develop structural design specifications and plans for the construction, and shall certify that the design and methods of construction are in accordance with acceptable standards of practice for meeting the provisions of this section. Such certification shall be provided to the [title of local administrator] on the FEMA Floodproofing Certificate, Form 81-65.

- (e) Electrical, plumbing, machinery or other utility equipment that service the structure must be elevated one (1.0) foot above the BFE.

C. FULLY ENCLOSED AREAS BELOW THE BASE FLOOD ELEVATION OF ELEVATED BUILDINGS – ~~New construction, substantial~~

~~improvements, whether residential or non-residential, that include fully enclosed areas formed by a foundation and other exterior walls shall have the lowest floor elevated to one (1.0) foot above the base flood elevation (BFE). The elevated building shall be designed to preclude finished living space below the lowest floor and be designed to allow for the entry and exit of flood waters to automatically equalize hydrostatic flood forces on exterior walls (wet flood proofing). Designs for complying with this requirement must either be certified by a registered professional engineer or architect as meeting the requirements of ASCE 24 Section 2.6.2.2, or meet the following minimum criteria listed in sections (a) (h) below:~~

- (a) ~~Provide a minimum of two (2) openings (hydraulic flood vents) having a total net area of not less than one square inch for every one square foot of enclosed area subject to flooding. The enclosed area is measured on the exterior of the enclosure walls. These hydraulic openings must be located on at least two different exterior walls of each enclosed area. If the structure has more than one enclosed area, openings must be installed in the exterior walls of each enclosed area so that flood waters can enter directly from the outside;~~
- (b) ~~The bottom of all openings shall be no higher than one (1.0) foot above the higher of either the final interior grade or floor elevation, or the finished exterior grade adjacent to the outside of the foundation wall. At least one entire side of the structure's fully enclosed area must be at or above grade. Fill placed around the foundation walls must be graded so that the elevation inside the enclosed area is equal to or higher than the adjacent outside elevation on at least one side of the building. The finished floor of the enclosed area shall be no lower than the bottom of the foundation openings. The foundation slab of a residential structure, including the slab of a crawlspace, must be set equal to the outside finished grade on at least one side of the building;~~
- (c) ~~The openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic entry and exit of flood waters in both directions without any external influence or control such as human intervention, including the use of electrical and other non-automatic mechanical means. These coverings must not block or impede the automatic flow of floodwaters into and out of the enclosed area. Other coverings may be designed and certified by a registered professional engineer or approved by the Zoning Official;~~
- (d) ~~Openings shall not be less than three (3) inches in any direction in the plane of the wall;~~

- ~~(e) The area cannot be used as finished living space. Use of the enclosed area shall be the minimum necessary and shall only be used for the parking of vehicles, building access or limited storage. Access to the enclosed area shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator). The enclosed area shall not be used for human habitation;~~
- ~~(f) All interior walls, floor, and ceiling materials located below one (1.0) foot above the BFE shall be unfinished and flood damage resistant in accordance with FEMA Technical Bulletin 2, Flood Damage Resistant Requirements.~~
- ~~(g) Electrical, plumbing, HVAC duct work, machinery or other utility equipment and connections that service the structure (including, but not limited to, furnaces, oil or propane tanks, air conditioners, heat pumps, hot water heaters, ventilation, washer and dryer hook ups, electrical junction boxes, circuit breaker boxes and food freezers) are prohibited in the fully enclosed area below the BFE plus one (1.0) foot. Utilities or service equipment located in this enclosed area, even if elevated to one (1.0) foot above the BFE in the space, may subject the structure to increased flood insurance rates.~~
- ~~(h) A residential building with a structurally attached garage having the floor slab below the BFE is considered an enclosed area below the BFE and must meet the standards of Sections 15.5.2.C (a) (g). A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters in both directions. Flood openings or vents are required in the exterior walls of the garage or in the garage doors. Garage doors that must be manually opened do not meet the flood vent opening requirements in Section 15.5.2 C (a) (e). In addition to the automatic entry of floodwaters, the areas of the garage below BFE plus one (1.0) foot must be constructed with flood damage resistant materials per the requirements of FEMA Technical Bulletin 2. Garages attached to non-residential structures must also meet the aforementioned requirements or be dry floodproofed as per the requirements of Section 15.5.2.B.~~

All new construction, substantial improvements, or repair to structures that have sustained substantial damage, whether residential or non-residential, that include fully enclosed areas formed by a foundation and other exterior walls shall have the lowest floor elevated to one (1.0) foot above the base flood elevation (BFE). The elevated building shall be designed to preclude finished living space below the lowest floor and be designed to allow for the entry and exit of flood waters to automatically equalize hydrostatic flood forces on exterior walls (wet flood-proofing). Designs for complying with this requirement must either be certified by a registered professional engineer or architect as meeting the requirements of ASCE 24 Section 2.6.2.2, or meet the following minimum criteria listed in sections (a)-(h) below:

- (a) Provide a minimum of two (2) openings (hydraulic flood vents) having a total net area of not less than one square inch for every one square foot of enclosed area subject to flooding. The enclosed area is measured on the exterior of the enclosure walls. These hydraulic openings must be located

- on at least two different exterior walls of each enclosed area. If the structure has more than one enclosed area, openings must be installed in the exterior walls of each enclosed area so that flood waters can enter directly from the outside;
- (b) The bottom of all openings shall be no higher than one (1.0) foot above the higher of either the final interior grade or floor elevation, or the finished exterior grade adjacent to the outside of the foundation wall. At least one entire side of the structure's fully enclosed area must be at or above grade. Fill placed around the foundation walls must be graded so that the elevation inside the enclosed area is equal to or higher than the adjacent outside elevation on at least one side of the building. The finished floor of the enclosed area shall be no lower than the bottom of the foundation openings. The foundation slab of a residential structure, including the slab of a crawlspace, must be set equal to the outside finished grade on at least one side of the building;
  - (c) The openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic entry and exit of flood waters in both directions without any external influence or control such as human intervention, including the use of electrical and other non-automatic mechanical means. These coverings must not block or impede the automatic flow of floodwaters into and out of the enclosed area. Other coverings may be designed and certified by a registered professional engineer or approved by the [title of local administrator];
  - (d) Openings shall not be less than three (3) inches in any direction in the plane of the wall;
  - (e) The area cannot be used as finished living space. Use of the enclosed area shall be the minimum necessary and shall only be used for the parking of vehicles, building access or limited storage. Access to the enclosed area shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator). The enclosed area shall not be used for human habitation;
  - (f) All interior walls, floor, and ceiling materials located below one (1.0) foot above the BFE shall be unfinished and flood damage-resistant in accordance with FEMA Technical Bulletin 2, Flood Damage-Resistant Requirements.
  - (g) Electrical, plumbing, HVAC duct work, machinery or other utility equipment and connections that service the structure (including, but not limited to, furnaces, oil or propane tanks, air conditioners, heat pumps, hot water heaters, ventilation, washer and dryer hook-ups, electrical junction boxes, circuit breaker boxes and food freezers) are prohibited in the fully enclosed area below the BFE plus one (1.0) foot. Utilities or service equipment located in this enclosed area, even if elevated to one (1.0) foot above the BFE in the space, may subject the structure to increased flood insurance rates.
  - (h) A residential building with a structurally attached garage having the floor slab below the BFE is considered an enclosed area below the BFE and must meet the standards of Sections 5.3.1.3 (a)-(g). A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters in

both directions. Flood openings or vents are required in the exterior walls of the garage or in the garage doors. Garage doors that must be manually opened do not meet the flood vent opening requirements in Section 5.3.1.3 (a)-(c). In addition to the automatic entry of floodwaters, the areas of the garage below BFE plus one (1.0) foot must be constructed with flood damage-resistant materials per the requirements of FEMA Technical Bulletin 2. Garages attached to non-residential structures must also meet the aforementioned requirements or be dry floodproofed as per the requirements of Section 5.3.1.2.

Upon completion of the applicable portion of construction, the applicant shall provide verification to the **Zoning Official** of the following as is applicable:

Lowest floor elevation shall be verified for:

- (a) A structure in Zones A, AE, AO or AH is the top of the lowest floor including basement);
- (b) A structure in Zones VE **and Coastal AE** is the lowest horizontal structural member (excluding pilings or columns);
- (c) A non-residential structure that has been dry flood-proofed is the elevation to which the flood-proofing is effective. (Note: For insurance purposes, a dry flood-proofed, non-residential structure is rated based on the elevation of its lowest floor unless it is floodproofed to one foot above the BFE.);

#### D. MANUFACTURED HOMES

~~1. Shall be elevated so that the lowest floor is above the base floor elevation;~~

~~All new manufactured homes must comply with the following:~~

~~i. Stands or lots are elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the base flood level;~~

~~ii. Adequate surface drainage and access for a hauler are provided; and~~

~~iii. In the instance of elevation on pilings, that:~~

~~• Lots are large enough to permit steps;~~

~~• Piling foundations are placed in stable soil no more than ten feet apart, and~~

~~• Reinforcement is provided for pilings more than six feet above the ground level.~~

~~2. Shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement, and hydrostatic and hydrodynamic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties.~~

~~3. No manufactured home shall be placed in a floodway.~~

1. In Special Flood Hazard Areas (SFHA) with Zones A and AE, any manufactured (mobile) home to be newly placed, undergoing a substantial improvement or repaired as a result of substantial damage, shall be elevated so that the bottom of the frame is located one (1.0) foot above the base flood elevation (BFE). The manufactured home must also meet all the construction standards for Zones A and AE as per Section 5.3.1. The foundation and anchorage of manufactured homes to be located in floodways shall be designed and constructed in accordance with ASCE 24. This includes SFHAs outside a manufactured home park or subdivision, in a new manufactured home park or subdivision, in an existing manufactured home park or subdivision, in an expansion to an existing manufactured home park or subdivision, or on a site in an existing manufactured home park in which a manufactured home has incurred substantial damage as a result of a flood.
2. In Special Flood Hazard Areas (SFHA) with Zones VE and Coastal AE, any manufactured (mobile) home to be newly placed, undergoing a substantial improvement or repaired as a result of sustained substantial damage, shall be elevated so that the bottom of the lowest horizontal structural member located one (1.0) foot above the base flood elevation (BFE). The manufactured home must also meet all the construction standards for Zones VE and Coastal AE as per Section 5.3.2. This includes SFHAs outside a manufactured home park or subdivision, in a new manufactured home park or subdivision, in an existing manufactured home park or subdivision, in an expansion to an existing manufactured home park or subdivision, or on a site in an existing manufactured home park in which a manufactured home has incurred substantial damage as a result of a flood.
3. All manufactured (mobile) homes within SFHA shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement and hydrostatic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties to ground anchors.
4. All manufactured (mobile) homes within SFHA shall be installed using methods and practices that minimize flood damage. Adequate access and drainage should be provided. Elevation construction standards include piling foundations placed no more than ten (10) feet apart, and reinforcement is provided for piers more than six (6) feet above ground level.
5. Recreational vehicles placed on sites within Zones A and AE in

the SFHA shall either be on the site for fewer than 180 consecutive days, and be fully licensed and ready for highway use, or meet all the general standards of Section 5.1 and the elevation and anchoring requirement of Section 5.3.3.1, 5.3.3.3, and 5.3.3.4. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

6. Recreational vehicles placed on sites within Zone VE and Coastal AE in the SFHA shall either be on the site for fewer than 180 consecutive days, and be fully licensed and ready for highway use, or meet all the general standards of Section 5.1, the VE and Coastal AE Zone construction requirements of Section 5.3.2, and the elevation and anchoring requirement of Section 5.3.3.2, 5.3.3.3, and 5.3.3.4. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

E. RECREATIONAL VEHICLES Recreational vehicles placed on sites within Zones A, AE and VE shall either be on the site for fewer than 180 consecutive days,

1. Be fully licensed and ready for highway use, (A recreational vehicle is ready for highway use if it is on wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.), or
2. Meet all the general standards of Section 15.5.1 and the elevation and anchoring requirements of Section 15.5.2. (C). Additionally, all recreational vehicles in Zone VE shall meet the construction requirements for coastal high hazard areas provided in Section 15.5.3.

15.5.3 COASTAL HIGH HAZARD AREA - Coastal high hazard areas (VE and Coastal AF Zones) are located within the areas of Special Flood Hazard. These Areas have special flood Hazards associated with high velocity waters from tidal surges and hurricane wave wash; therefore, the following provisions shall apply;

A. LOCATION OF STRUCTURES

1. All buildings or structures shall be located landward of reach of the mean high tide.
2. The placement of manufactured homes shall be prohibited, except in an existing manufactured home park or subdivision. Manufactured homes placed or substantially improved in an existing manufactured home park must meet the construction requirements for coastal high hazard areas provided in section 15.5.3. All manufactured homes

within VE zones shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement and hydrostatic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties to ground anchors. All manufactured homes within VE zones shall be installed using methods and practices that minimize flood damage. Adequate access and drainage should be provided.

B. CONSTRUCTION METHODS

1. ELEVATION All buildings or structures shall be elevated on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level with all space below the lowest supporting member open so as not to impede that flow of water.
  1. All new construction, substantial improvement and repair to structures that have sustained substantial damage shall be elevated so that the bottom of the lowest horizontal structural member (excluding pilings, pile caps, and columns) is elevated at least one (1.0 foot) above the base flood elevation (BFE), with all space below the lowest horizontal supporting member open and free of obstruction so as not to impede the flow of water. Basement floors that are below ground on all sides are prohibited.
  2. The bottom of all electrical, plumbing, machinery or other utility equipment that service the structure must be elevated one (1.0) foot above the BFE and cannot be located below the structure. Any service equipment that must be located below the BFE must be floodproofed to prevent water from entering during conditions of flooding. Electrical, mechanical and plumbing system components are not to be mounted on or penetrate through walls designed to breakaway under flood loads.
2. STRUCTURAL SUPPORT Pilings or columns used as structural support and the structure attached thereto shall be designed and anchored so as to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.
  - a. There shall be no fill used for structural support. Minor grading and the placement of minor quantities of non-compacted fill shall be permitted for landscaping and drainage purposes under and around buildings, and for support of parking slabs, pool decks, patios and walkways installed at current grade. The fill must wash out from storm surge, thereby rendering the building free of obstruction, prior to generating excessive loading forces, ramping effects, or wave deflection.

3. CERTIFICATION A registered professional engineer or architect shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of Sections 15.5.3 (b)(1) and 15.5.3 (b)(2).
4. SPACE BELOW THE LOWEST FLOOR
  - i. Any alteration, repair, reconstruction or improvement to a structure started after the enactment of these regulations shall not enclose the space below the lowest floor unless breakaway walls open wood lattice work, or insect screening are used as provided for in these regulations.
  - ii. Non-supporting breakaway walls, open wood lattice work, or insect screening shall be allowed below the lowest floor provided they are intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.
  - iii. Areas enclosed by breakaway walls shall contain hydraulic flood vents per the requirements of Section 5.3.1.3  

For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or state codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

    - a. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and
    - b. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Maximum wind and water loading values to be used in the determination shall each have a one percent chance of being equaled or exceeded in any given year (100 year mean recurrence interval).
  - iv. If Breakaway walls are utilized, such enclosed space shall not be used for human habitation but solely for parking of vehicles, building access, or storage.



- v. Prior to construction, plans for any structure that will have breakaway walls must be submitted to the Zoning Official for approval.

C. SAND DUNES - There shall be no alteration of sand dunes which could increase potential flood damage.

15.5.4 FLOODWAY - located within areas of special flood hazard are areas designated as floodways. Since the flood way is in an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions apply:

- A. Prohibit encroachments, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless certification, with supporting technical data, by a Connecticut registered professional engineer is provided demonstrating, through hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that encroachments shall not result in any (0.00 feet) increase in flood levels during occurrence of the base flood discharge published by FEMA. Buildings and structures meeting the standard above and located in whole or in part in the floodway shall be designed and constructed in accordance with ASCE 24. Fences in the floodway must be aligned with the flow and be of an open design.

#### 15.5.5 Standards for Development in Areas of Shallow Flooding (Zones AO and AH)

Located within the Special Flood Hazard Areas (SFHA) are areas designated as shallow flooding areas (AO and AH Zones). These areas have flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate. In AO and AH zones, the following provisions apply:

- 5.3.5.1 For residential structures, all new construction, substantial improvements and repair to structures that have sustained substantial damage shall have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as one (1.0) foot above the depth number specified on the Flood Insurance Rate Map (FIRM). If no depth number is specified, the lowest floor, including basement, shall be elevated at least three (3.0) feet above the highest adjacent grade.
- 5.3.5.2 For non-residential structures, all new construction, substantial improvements and repair to structures that have sustained substantial damage shall:
  - (a) Have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as one (1.0) foot above the depth number specified on the Flood Insurance Rate Map (FIRM). If no depth number is specified, the lowest floor, including basement, shall be elevated at least three (3.0) feet above the highest adjacent grade; or
  - (b) Together with attendant utility and sanitary facilities be completely

flood-proofed to above the highest adjacent grade at least as high as one (1.0) foot above the depth number specified on the FIRM, or if no depth number is specified at least three (3.0) feet above the highest adjacent grade, so that any space below that level is 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. Designs for complying with this requirement must either be certified by a registered professional engineer or architect.

- 15.5.5 EQUAL CONVEYANCE - Within the floodplain, except those areas which are tidally influenced, as designated on the Flood Insurance Rate Map (FIRM) for the community, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure, are prohibited unless the applicant provides certification by a registered professional engineer demonstrating, with supporting hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that such encroachments shall not result in any (0.00 feet) increase in flood levels (base flood elevation). Work within the floodplain and the land adjacent to the floodplain, including work to provide compensatory storage shall not be constructed in such a way so as to cause an increase in flood stage or flood velocity.
- 15.5.6 COMPENSATORY STORAGE - The water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain. storage shall be provided on-site, unless easements have been gained from adjacent property owners; it shall be provided within the same hydraulic reach and a volume not previously used for flood storage; it shall be hydraulically comparable and incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Compensatory storage can be provided off-site if approved by the municipality.

To protect the building envelope, an exterior door shall be installed at the top of the stairs that provides access to the lowest (habitable) floor of the structure.

The base of a chimney or fireplace shall not extend below the BFE plus one foot. When vertical support is required, a chimney or fireplace shall be vertically supported on pile or column foundations embedded at least as deep as the rest of the structure foundation or deeper where needed to support the chimney against water and wind loads. The chimney and fireplace system shall be designed to minimize transfer of water and wind loads to the structure or structure foundation.

~~15.5.7 ABOVE GROUND STORAGE TANKS - Above-ground storage tanks (oil, propane, etc.) which are located outside or inside of the structure must either be elevated above the base flood elevation (BFE) on a concrete pad, or be securely anchored with tie-down straps to prevent flotation or lateral movement, have the top of the fill pipe extended above the BFE, and have a screw fill cap that does not allow for the infiltration of flood water.~~

In all flood zones, underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. In VE and Coastal AE zones, above-ground storage tanks which are located outside or inside of a structure must be elevated one (1.0) foot above the base flood elevation (BFE). Where elevated on platforms, the platforms shall be cantilevered from or knee braced to the building or shall be supported on elevated foundations that conform to the standards for the particular flood zone as described in Section 5.3. In A and AE zones, above-ground storage tanks which are located outside or inside of a structure shall be elevated one (1.0) foot above the base flood elevation (BFE) or shall be securely anchored to prevent flotation, collapse or lateral movement under conditions of the base flood. Anchored tanks must have the top of the fill pipe located at least one (1.0) foot above the BFE and have a screw fill cap that does not allow for the infiltration of flood water

~~15.5.8 PORTION OF STRUCTURE IN FLOOD ZONE - If any portion of a structure lies within the Special Flood Hazard Area (SFHA), the entire structure is considered to be in the SFHA. The entire structure must meet the construction requirements of the flood zone. The structure includes any attached additions, garages, decks, sunrooms, or any other structure attached to the main structure. Decks or porches that extend into a more restrictive flood zone will require the entire structure to meet the standards of the more restrictive zone.~~

If any portion of a structure lies within the Special Flood Hazard Area (SFHA), the entire structure is considered to be located within the SFHA and must meet the construction requirements of the flood zone. The structure includes any structurally attached additions, garages, decks, porches, sunrooms, patios or any other structure attached to the main structure.

~~15.5.9 STRUCTURES IN TWO FLOOD ZONES - If a structure lies within two or more flood zones, the construction standards of the most restrictive zone apply to the entire structure (i.e., V zone is more restrictive than A zone; structure must be built to the highest BFE). The structure includes any attached additions, garages, decks, sunrooms, or any other structure attached to the main structure. (Decks or porches that extend into a more restrictive zone will require the entire structure to meet the requirements of the more restrictive zone.)~~

If a structure lies within two or more flood zones, the construction standards of the most restrictive zone apply to the entire structure (i.e., VE zone is more restrictive than AE zone; structure must be built to the highest BFE). The structure includes any structurally attached additions, garages, decks, porches, patios, sunrooms, or any other structure attached to the main structure.

15.5.10 NO STRUCTURES ENTIRELY OR PARTIALLY OVER WATER - New construction, substantial improvements and repair to structures that have sustained substantial damage cannot be constructed or located entirely or partially over water unless it is a functionally dependent use or facility.