

- (b) Fill sites to be used for the placement of proposed structures where the applicant desires to remove the site from the special flood hazard area;
  - (c) Alteration of watercourses that result in a relocation or elimination of the special flood hazard area, including the placement of culverts; and
  - (d) Subdivision or large scale development proposals requiring the establishment of base flood elevations in accordance with Article IV.B.13.d.
- (2) It is the responsibility of the applicant to have technical data, required in accordance with Article IV.B.7, prepared in a format required for a Conditional Letter of Map Revision or Letter of Map Revision, and submitted to FEMA. Submittal and processing fees for these map revisions shall also be the responsibility of the applicant.
- (3) The Local Administrator shall require a Conditional Letter of Map Revision prior to the issuance of a floodplain development permit for:
- (a) Proposed floodway encroachments that increase the base flood elevation; and
  - (b) Proposed development which increases the base flood elevation by more than one foot in areas where FEMA has provided base flood elevations but no floodway.
- (4) Floodplain development permits issued by the Local Administrator shall be conditioned upon the applicant obtaining a Letter of Map Revision from FEMA for any development proposal subject to Article IV B.7.
- b) Right to Submit New Technical Data – The Floodplain Administrator may request changes to any of the information shown on an effective map that does not impact floodplain or floodway delineations or base flood elevations, such as labeling or planimetric details. Such a submission shall include appropriate supporting documentation made in writing by the local jurisdiction and may be submitted at any time.

## 8. Accessory Structures

- a) A detached accessory structure or garage, the cost of which is greater than \$3,000, must comply with the requirements as outlined in FEMA's Technical Bulletin 7-93 *Wet Floodproofing Requirements or be elevated in accordance with Article IV Section B(1) and B (4) or dry floodproofed in accordance with Article IV B (2).*



- b) If accessory structures of \$3,000 or less are to be placed in the floodplain, the following criteria shall be met:
- (1) Accessory structures shall not be used for any uses other than the parking of vehicles and storage,
  - (2) Accessory structures shall be designed to have low flood damage potential,
  - (3) Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters,
  - (4) Accessory structures shall be firmly anchored to prevent flotation, collapse and lateral movement of the structure,
  - (5) Service facilities such as electrical and heating equipment shall be installed in accordance with Article IV.A.5,
  - (6) Openings to relieve hydrostatic pressure during a flood shall be provided below base flood elevation in conformance with Article IV.B.4a, and
  - (7) Accessory structures shall be built with flood resistance materials in accordance with Technical Bulletin 2, *Flood Damage-Resistant Materials Requirements*, dated 8/08, and available from the Federal Emergency Management Agency. Class 4 and 5 materials, referenced therein, are acceptable flood-resistant materials.

9. **Swimming Pool Utility Equipment Rooms** – If the building cannot be built at or above the BFE, because of functionality of the equipment then a structure to house the utilities for the pool may be built below the BFE with the following provisions:

- a) Meet the requirements for accessory structures in Article IV.B.8
- b) The utilities must be anchored to prevent flotation and shall be designed to prevent water from entering or accumulating within the components during conditions of the base flood.

#### 10. Elevators

- a) Install a float switch system or another system that provides the same level of safety necessary for all elevators where there is a potential for the elevator cab to descend below the BFE during a flood per FEMA's Technical Bulletin 4-93 Elevator Installation for Buildings Located in Special Flood Hazard Areas.
- b) All equipment that may have to be installed below the BFE such as counter weight roller guides, compensation cable and pulleys, and oil buffers for traction elevators and the jack assembly for a hydraulic



elevator must be constructed using flood-resistant materials where possible per FEMA's Technical Bulletin 4-93 Elevator Installation for Buildings Located in Special Flood Hazard Areas.

11. **Fill** – An applicant shall demonstrate that fill is the only alternative to raising the building to meet the residential and non-residential construction requirements of Article IV B(1) or B (2), and that the amount of fill used will not affect the flood storage capacity or adversely affect adjacent properties. The following provisions shall apply to all fill placed in the special flood hazard area:

- a) Fill may not be placed in the floodway unless it is in accordance with the requirements in Article IV.B.5a.
- b) Fill may not be placed in tidal or non-tidal wetlands without the required state and federal permits.
- c) Fill must consist of soil and rock materials only. A registered professional geotechnical engineer may use dredged material as fill only upon certification of suitability. Landfills, rubble fills, dumps, and sanitary fills are not permitted in the floodplain.
- d) Fill used to support structures must comply with ASTM Standard D-698, and its suitability to support structures certified by a registered, professional engineer.
- e) Fill slopes shall be no greater than two horizontal to one vertical. Flatter slopes may be required where velocities may result in erosion.
- f) The use of fill shall not increase flooding or cause drainage problems on neighboring properties.
- g) Fill may not be used for structural support in the coastal high hazard areas.
- h) Will meet the requirements of FEMA Technical Bulletin 10-01, *Ensuring That Structures Built On Fill in or Near Special Flood Hazard Areas Are Reasonable Safe from Flooding*.

## 12. **Standards for Subdivision Proposals and other development**

- a) All subdivision proposals and other proposed new development shall be consistent with the need to minimize flood damage and are subject to all applicable standards in these regulations.
- b) All subdivision proposals and other proposed new development shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
- c) All subdivision proposals and other proposed new development shall have adequate drainage provided to reduce exposure to flood damage.



- d) The applicant shall meet the requirement to submit technical data to FEMA in Article IV B.7 when a hydrologic and hydraulic analysis is completed that generates base flood elevations.

**C. Standards for Streams without Established Base Flood Elevations and Floodways** – Located within the areas of special flood hazard (Zones A and V) established in Article I.D, are small streams where no base flood data has been provided and where no floodways have been identified. The following provisions apply within such areas:

1. In all areas of special flood hazard where base flood elevation data are not available, the applicant shall provide a hydrologic and hydraulic engineering analysis that generates base flood elevations for all subdivision proposals and other proposed developments containing at least 50 lots or 5 acres, whichever is less.
2. No encroachments, including fill, new construction, substantial improvements and new development shall be permitted within 100 feet of the stream bank unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
3. If Article IV.C.1 is satisfied and base flood elevation data is available from other sources, all new construction and substantial improvements within such areas shall comply with all applicable flood hazard ordinance provisions of Article IV and shall be elevated or floodproofed in accordance with elevations established in accordance with Article III.E.11.
4. Data from preliminary, draft, and final Flood Insurance Studies constitutes best available data. Refer to FEMA Floodplain Management Technical Bulletin 1-98 *Use of Flood Insurance Study (FIS) Data as Available Data*. If an appeal is pending on the study in accordance with 44 CFR Ch. 1, Part 67.5 and 67.6, the data does not have to be used.
5. When base flood elevation (BFE) data is not available from a federal, state, or other source one of the following methods may be used to determine a BFE For further information regarding the methods for determining BFEs listed below, refer to FEMA's manual *Managing Floodplain Development in Approximate Zone A Areas*:

a) Contour Interpolation

- (1) Superimpose approximate Zone A boundaries onto a topographic map and estimate a BFE.
- (2) Add one-half of the contour interval of the topographic map that is used to the BFE.



- b) Data Extrapolation – A BFE can be determined if a site within 500 feet upstream of a reach of a stream reach for which a 100-year profile has been computed by detailed methods, and the floodplain and channel bottom slope characteristics are relatively similar to the downstream reaches. No hydraulic structures shall be present.
- c) Hydrologic and Hydraulic Calculations– Perform hydrologic and hydraulic calculations to determine BFEs using FEMA approved methods and software.

**D. Standards for Streams with Established Base Flood Elevations but without Floodways** – Along rivers and streams where Base Flood Elevation (BFE) data is provided but no floodway is identified for a Special Flood Hazard Area on the FIRM or in the FIS.

- 1. No encroachments including fill, new construction, substantial improvements, or other development shall be permitted unless certification with supporting technical data by a registered professional engineer is provided demonstrating 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 within the community.

**E. Standards for Areas of Shallow Flooding (AO Zones)** – Located within the areas of special flood hazard established in Article 1.D, are areas designated as shallow flooding. The following provisions shall apply within such areas:

- 1. All new construction and substantial improvements of residential structures shall have the lowest floor elevated to at least as high as the depth number specified on the Flood Insurance Rate Map, in feet, above the highest adjacent grade. If no depth number is specified, the lowest floor shall be elevated at least three (3) feet above the highest adjacent grade.
- 2. All new construction and substantial improvements of non-residential structures shall:
  - a) Have the lowest floor elevated to at least as high as the depth number specified on the Flood Insurance Rate Map, in feet, above the highest adjacent grade. If no depth number is specified, the lowest floor shall be elevated at least three (3) feet above the highest adjacent grade; or,
  - b) Be completely flood-proofed together with attendant utility and sanitary facilities to or above that level 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. Certification is required as stated in Article III.D.
- 3. All structures on slopes must have drainage paths around them to guide water away from the structures.



- F. **Coastal High Hazard Areas (V-Zones)** – Located within the areas of special flood hazard established in Article I.D or Article III.E.11 are areas designated as coastal high hazard areas. These areas have special flood hazards associated with wave wash. The following provisions shall apply within such areas:
1. All new construction and substantial improvements shall be located landward of the reach of mean high tide, first line of stable natural vegetation and comply with all applicable Department of Health and Environmental Control (DHEC) Ocean and Coastal Resource Management (OCRM) setback requirements.
  2. All new construction and substantial improvements shall be elevated so that the bottom of the lowest supporting horizontal structural member (excluding pilings or columns) of the lowest floor is located no lower than 1foot above the base flood elevation.
  3. All buildings or structures shall be securely anchored on pilings or columns, extending vertically below a grade of sufficient depth and the zone of potential scour, and securely anchored to the subsoil strata.
  4. All pilings and columns and the attached structures shall be anchored to resist flotation, collapse, lateral movement and scour due to the effect of wind and water loads acting simultaneously on all building components.
  5. A registered professional engineer or architect shall certify that the design, specifications and plans for construction are in compliance with the provisions contained in Article IV Section F 3, 4, 6 and 9 of this ordinance.
  6. There shall be no fill used as structural support. Non-compacted fill may be used around the perimeter of a building for landscaping/aesthetic purposes provided the fill will wash out from storm surge, thereby rendering the building free of obstruction prior to generating excessive loading forces, ramping effects, or wave deflection. Only beach compatible sand may be used. The Local Administrator shall approve design plans for landscaping/aesthetic fill only after the applicant has provided an analysis by an engineer, architect, and/or soil scientist that demonstrates that the following factors have been fully considered:
    - a) Particle composition of fill material does not have a tendency for excessive natural compaction,
    - b) Volume and distribution of fill will not cause wave deflection to adjacent properties; and
    - c) Slope of fill will not cause wave run-up or ramping.
  7. There shall be no alteration of sand dunes that would increase potential flood damage.
  8. All new construction and substantial improvements have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to