

# ARTICLE 12

## FLOOD DAMAGE PREVENTION

### SECTION 12.1 AUTHORIZATION

#### 12.1.1 General

The Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3 and 4 of Article 18 of Chapter 153A; and Part 121, Article 6 of Chapter 153A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

#### 12.1.2 Findings of Fact

- 12.1.201 The flood prone areas within the jurisdiction of the County of Moore are subject to periodic inundation which results in loss of life, property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures of flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.
- 12.1.202 These flood losses are caused by the cumulative effect of obstructions in floodplains causing increases in flood heights and velocities and by the occupancy in flood prone areas of uses vulnerable to floods or other hazards.

#### 12.1.3 Purpose

It is the purpose of this Ordinance to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed to:

- 12.1.301 Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards or that result in damaging increases in erosion, flood heights or velocities;
- 12.1.302 Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- 12.1.303 Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- 12.1.304 Control filling, grading, dredging, and all other development that may increase erosion or flood damage; and
- 12.1.305 Prevent or regulate the construction of flood barriers that will unnaturally divert flood waters or which may increase flood hazards to other lands.

#### **12.1.4 Objectives**

The objective of this Article are:

- 12.1.401 To protect human life and health.
- 12.1.402 To minimize expenditure of public money for costly flood control projects.
- 12.1.403 To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.
- 12.1.404 To minimize prolonged business losses and interruptions.
- 12.1.405 To minimize damage to public facilities and utilities (i.e. water and gas mains, electric, telephone, cable and sewer lines, streets, and bridges) that are located in flood prone areas.
- 12.1.406 To help maintain a stable tax base by providing for the sound use and development of flood prone areas.
- 12.1.407 To ensure that potential buyers are aware that property is in a Special Flood Hazard Area.

#### **12.1.5 General Development Standards**

In all Special Flood Hazard Areas the following provisions are required.

- 12.1.501 All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, and lateral movement of the structure.
- 12.1.502 All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- 12.1.503 All new construction and substantial improvements shall be constructed by methods and practices that minimize flood damages.
- 12.1.504 Electrical, heating, ventilation, plumbing, 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. These include, but are not limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, appliances (washers, dryers, refrigerators, freezers, etc.), hot water heaters, and electric outlets/switches.
- 12.1.505 All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- 12.1.506 New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into flood waters.

- 12.1.507 On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
- 12.1.508 Any alteration, repair, reconstruction, or improvements to a structure, which is in compliance with the provisions of this Ordinance, shall meet the requirements of “new construction” as contained in this Ordinance.
- 12.1.509 Nothing in this Ordinance shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this Ordinance and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the regulatory flood protection elevation in the floodway, non-encroachment area, flood of record contour or stream setback, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this Ordinance.
- 12.1.510 New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted, except by variance as specified in [§3.6.5](#) (Hazardous Waste Management Facilities).
- 12.1.511 A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a Special Flood Hazard Area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified according to Article 4, Section B(3) of this Ordinance.
- 12.1.512 New critical facilities shall not be permitted, except by variance, as specified in [§3.6.5](#) (Hazardous Waste Management Facilities).
- 12.1.513 All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.
- 12.1.514 All subdivision proposals and other development proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
- 12.1.515 All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
- 12.1.516 All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.

## SECTION 12.2 STANDARDS FOR FLOODPLAINS WITH ESTABLISHED BASE FLOOD ELEVATIONS

### 12.2.1 Applicability

In all Special Flood Hazard Areas where Base Flood Elevation (BFE) data has been provided, as set forth in §3.5.2 (Basis for Establishing Special Flood Hazard Areas) or in all areas bounded by flood of record contours the following provisions, in addition to §12.1.5 (General Development Standards) are required.

### 12.2.2 Residential Construction

New construction and substantial improvement of any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation or flood of record elevation, as defined in Article 2 of this Ordinance.

### 12.2.3 Non-Residential Construction

- 12.2.301 New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation or flood of record elevation, as defined in **Article 2** (Review Bodies and Officials) of this Ordinance.
- 12.2.302 Structures located in A, AE and A1-30 Zones may be floodproofed to the regulatory flood protection elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the regulatory flood protection elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy.
- 12.2.303 For AO Zones, the floodproofing elevation shall be in accordance §12.6.2 of this Ordinance. Soil testing and compaction standards of the International Building Code shall be met.
- 12.2.304 A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Zoning Administrator as set forth in §3.5.5 (Elevation Certificate Requirements) and §3.5.6 (Additional Certificate Requirements), along with the operational and maintenance plans.

### 12.2.4 Manufactured Homes

- 12.2.401 Manufactured homes may be replaced within a Special Flood Hazard Area, **but no new placement of manufactured homes shall occur within the Special Flood Hazard Area** or within an area bounded by flood of record contours of a lot of record, except by variance.

- 12.2.402 Replacement manufactured homes shall be elevated so that the reference level of the manufactured home is no lower than the regulatory flood protection elevation or flood of record elevation, as defined in **Article 18** (Definitions and Word Interpretations) of this Ordinance.
- 12.2.403 Manufactured homes shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement, either by engineer certification, or in accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes adopted by the Commissioner of Insurance pursuant to NCGS §143-143.16. Additionally, when the elevation would be met by an elevation of the chassis thirty-six (36) inches or less above the grade at the site, the chassis shall be supported by reinforced piers or engineered foundation. When the elevation of the chassis is above thirty-six (36) inches in height, an engineering certification is required.
- 12.2.404 All enclosures or skirting below the lowest floor shall meet the requirements of **§12.2.5** (Elevated Buildings)
- 12.2.405 An evacuation plan must be developed for evacuation of all residents of all new, substantially improved or substantially damaged manufactured home parks or subdivisions located within flood prone areas. This plan shall be filed with and approved by the floodplain administrator and the local Emergency Management coordinator.
- 12.2.406 Manufactured homes shall not be placed in a regulatory floodway or Non-Encroachment Area except for replacement structures in accordance with the provisions of **§12.5.3** (Manufactured Homes in Floodway and Non-Encroachment Areas).

### **12.2.5 Elevated Buildings**

Fully enclosed area, of new construction and substantially improved structures, which is below the lowest floor:

- 12.2.501 Shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises.
- 12.2.502 Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).
- 12.2.503 The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas.
- 12.2.504 Shall be constructed entirely of flood resistant materials below the regulatory flood protection elevation.

- 12.2.505 Shall include, in Zones A, AO, AE, and A1-30 and within the flood of record contour, flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters designed in accordance with §12.2.6 (Flood Opening Design Standards) of this Ordinance.

### **12.2.6 Flood Opening Design Standards**

Flood openings must be certified by a professional engineer or architect or meet or exceed the following design criteria.

- 12.2.601 A minimum of two flood openings on different sides of each enclosed area subject to flooding;
- 12.2.602 The total net area of all flood openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding;
- 12.2.603 If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;
- 12.2.604 The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;
- 12.2.605 Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and
- 12.2.606 Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.

### **12.2.7 Additions and Improvements to Pre-FIRM Structures**

Additions and/or improvements to pre-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:

- 12.2.701 Not a substantial improvement, the addition and/or improvements must be designed to minimize flood damages and must not be any more non-conforming than the existing structure.
- 12.2.702 A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
- 12.2.703 Where an independent perimeter load-bearing wall is provided between the addition and the existing building, the addition(s) shall be considered a separate building and only the addition must comply with the standards for new construction

### **12.2.8 Additions and Improvements to Post-FIRM Structures**

- 12.2.801 Additions to post-FIRM structures with no modifications to the existing structure other than a standard door in the common wall shall require only the addition to comply with the standards for new construction.
- 12.2.802 Additions and/or improvements to post-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction.
- 12.2.803 Additions and/or improvements to post-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are a substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
- 12.2.804 Where an independent perimeter load-bearing wall is provided between the addition and the existing building, the addition(s) shall be considered a separate building and only the addition must comply with the standards for new construction.

### **12.2.9 Recreational Vehicles (RV's)**

Recreational vehicles shall be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use (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 has no permanently attached additions).

### **12.2.10 Temporary Non-Residential Structures**

Prior to the issuance of a floodplain development permit for a temporary structure, the applicant must submit to the floodplain administrator a plan for the removal of such structure(s) in the event of a hurricane, flash flood or other type of flood warning notification. The following information shall be submitted in writing to the floodplain administrator for review and written approval:

- 12.2.1001 A specified time period for which the temporary use will be permitted. Time specified may not exceed three months, renewable up to one year;
- 12.2.1002 The name, address, and phone number of the individual responsible for the removal of the temporary structure;
- 12.2.1003 The time frame prior to the event at which a structure will be removed (i.e., minimum of 72 hours before landfall of a hurricane or immediately upon flood warning notification.
- 12.2.1004 A copy of the contract or other suitable instrument with the entity responsible for physical removal of the structure; and

- 12.2.1005 Designation, accompanied by documentation, of a location outside the Special Flood Hazard Area, to which the temporary structure will be moved.

### **12.2.11 Accessory Structures**

When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area, the following criteria shall be met:

- 12.2.1101 Accessory structures shall not be used for human habitation (including working, sleeping, living, cooking or restroom areas);
- 12.2.1102 Accessory structures shall not be temperature-controlled;
- 12.2.1103 Accessory structures shall be designed to have low flood damage potential;
- 12.2.1104 Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;
- 12.2.1105 Accessory structures shall be firmly anchored in accordance with [§12.1.501](#) (General Development Standards).
- 12.2.1106 All service facilities such as electrical shall be installed in accordance with [§12.1.504](#) (General Development Standards) and
- 12.2.1107 Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below regulatory flood protection elevation or flood of record elevation in conformance with [§12.2.6](#) (Flood Opening Design Standards).
- 12.2.1108 An accessory structure with a footprint less than 150 square feet that satisfies the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with [§3.5.5](#) (Elevation Certificate Requirements) and [§3.5.6](#) (Additional Certificate Requirements).

## **SECTION 12.3 STANDARDS FOR FLOODPLAINS WITHOUT ESTABLISHED BASE FLOOD ELEVATIONS**

### **12.3.1 Applicability**

Within the Special Flood Hazard Areas designated as Approximate Zone A and established in [§3.5.2](#) (Basis for Establishing Special Flood Hazard Areas) where no Base Flood Elevation (BFE) data has been provided by FEMA, the following provisions, in addition to [§12.1.5](#) (General Development Standards) and [§12.2](#) (Standards for Floodplains with Established Base Flood Elevations), shall apply.

### **12.3.2 Base Flood Elevation (BFE) Determination**

The BFE used in determining the regulatory flood protection elevation shall be determined based on one of the following criteria set in priority order:

- 12.3.201 If Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this Ordinance and shall be elevated or floodproofed in accordance with standards in [§2.1.217](#) and [§2.1.208](#).
- 12.3.202 All subdivision, manufactured home park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference per [§3.5.2](#) (Basis for Establishing Special Flood Hazard Areas) to be utilized in implementing this Ordinance.
- 12.3.203 When Base Flood Elevation (BFE) data is not available from a Federal, State, or other source as outlined above, the reference level shall be elevated to or above the regulatory flood protection elevation or flood of record elevation, as defined in [Article 18](#) (Definitions and Word Interpretations).

### **12.3.3 Construction Standards**

No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of twenty (20) feet each side from top of bank or five times the width of the stream, whichever is greater, 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.

## **SECTION 12.4 STANDARDS FOR RIVERINE FLOODPLAINS WITH ESTABLISHED BASE FLOOD ELEVATIONS BUT WITHOUT ESTABLISHED FLOODWAYS OR NON-ENCROACHMENT AREAS**

### **12.4.1 Applicability**

Along rivers and streams where BFE data is provided but neither floodway nor non-encroachment areas are identified for a Special Flood Hazard Area on the FIRM or in the FIS report, the following requirements shall apply to all development within such areas.

### **12.4.2 General Standards**

- 12.4.201 All standards and requirements listed in [§12.2](#) (Standards for Floodplains with Established Base Flood Elevations) and [§12.3](#) (Standards for Floodplains Without Established Base Flood Elevations) of this Article shall apply.
- 12.4.202 Until a regulatory floodway or non-encroachment area is designated, 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.

## SECTION 12.5 FLOODWAYS AND NON-ENCROACHMENT AREAS

### 12.5.1 Applicability

Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas established in §3.5.2 (Basis for Establishing Special Flood Hazard Areas). The floodways and non-encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The following provisions, in addition to standards outlined in §12.1.5 (General Development Standards) and §12.2 (Standards for Floodplains with Established Base Flood Elevations), shall apply to all development within such areas.

### 12.5.2 Encroachment Restrictions

No encroachments, including fill, new construction, substantial improvements and other developments shall be permitted unless:

- 12.5.201 It is demonstrated that the proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator prior to issuance of floodplain development permit or,
- 12.5.202 A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment.
- 12.5.203 If this subsection is satisfied, all development shall comply with applicable flood hazard reduction provisions of this Ordinance.

### 12.5.3 Manufactured Homes in Floodway and Non-Encroachment Areas

No manufactured homes shall be permitted, except replacement manufactured home park or subdivision, provided the following provisions are met:

- 12.5.301 The anchoring and the elevation standards of §12.1.501;
- 12.5.302 The no encroachment standard of §12.5.202.

## SECTION 12.6 STANDARDS FOR AREAS OF SHALLOW FLOODING (ZONE AO)

### 12.6.1 Applicability

- 12.6.101 Located within the Special Flood Hazard Areas established in §3.5.2 (Basis for Establishing Special Flood Hazard Areas), are areas designated as shallow flooding areas.
- 12.6.102 These areas have special 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.
- 12.6.103 In addition to §12.1.5 (General Development Standards), all new construction and substantial improvements shall meet the requirements of this section.

### 12.6.2 General Standards for AO Zones

- 12.6.201 The reference level shall be elevated at least as high as the depth number specified on the Flood Insurance Rate Map (FIRM), in feet, plus a freeboard of three (3) feet, above the highest adjacent grade; or at least two feet above the highest adjacent grade plus a freeboard of one (1) foot if no depth number is specified.
- 12.6.202 Non-residential structures may, in lieu of elevation, be floodproofed to the same level as required in §3.5.601 so that the structure, together with attendant utility and sanitary facilities, below that level shall be 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 per §3.5.6 (Additional Certificate Requirements)
- 12.6.203 Adequate drainage paths shall be provided around structures on slopes, to guide floodwaters around and away from proposed structures.