

**CHAPTER 4A****FLOOD PLAIN MANAGEMENT REGULATIONS****Authority**

N.J.S.A. 13:17-1 et seq., specifically 13:17-6(i),  
and N.J.A.C. 19:4-6.27.

**Source and Effective Date**

R.2003 d.9, effective December 9, 2002.  
See: 34 N.J.R. 2539(a), 35 N.J.R. 258(a).

**Chapter Expiration Date**

Chapter 4A, Flood Plain Management Regulations, expires on December 9, 2007.

**Chapter Historical Note**

Chapter 4A, Flood Plain Management Regulations, was adopted as R.1983, d.143, effective May 2, 1983. See: 15 N.J.R. 18(a), 15 N.J.R. 697(d).

Pursuant to Executive Order No. 66(1978), Chapter 4A, Flood Plain Management Regulations, expired on May 2, 1988, and was subsequently adopted as new rules by R.1988 d.281, effective June 20, 1988. See: 20 N.J.R. 743(a), 20 N.J.R. 1467(b).

Pursuant to Executive Order No. 66(1978), Chapter 4A, Flood Plain Management Regulations, was readopted as R.1993 d.176, effective March 29, 1993. See: 24 N.J.R. 4503(a), 25 N.J.R. 1887(a).

Pursuant to Executive Order No. 66(1978), Chapter 4A, Flood Plain Management Regulations, was readopted as R.1998 d.77, effective January 5, 1998. See: 29 N.J.R. 3704(a), 30 N.J.R. 566(a).

Chapter 4A, Flood Plain Management Regulations, was readopted as R.2003 d.9, effective December 9, 2002. See: Source and effective date.

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**SUBCHAPTER 1. TITLE****19:4A-1.1 Chapter title**

This chapter shall be known and may be referred to as the Flood Plain Management Regulations of the Hackensack Meadowlands District.

**SUBCHAPTER 2. PURPOSE****19:4A-2.1 Purposes enumerated**

This chapter sets forth procedures, engineering and planning standards, rules and regulations in accordance with which the Commission shall review and approve or disapprove applications for the development or use of land within the District. It is designed to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed: To protect human life and health; to minimize expenditure of public money for costly flood control projects; to minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; to minimize prolonged business interruptions; to minimize damage to new and existing construction; to minimize damage to public and private facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard; to help maintain a stable tax base by providing for the second use and development of areas of special flood hazard so as to minimize future flood blight areas; to insure that potential buyers are notified that property is in an area of special flood hazard; to ensure that those who own or occupy the areas of special flood hazard assume responsibility for their actions; and generally to provide for the exercise of the powers regarding the review and regulation of land use and development conferred upon the Commission by Chapter 404 of the Laws of 1968. In order to accomplish its purpose, this chapter

includes methods and provisions for: Restricting or prohibiting uses which are dangerous to health, safety and property due to water hazards, or which result in damaging increases in flood heights; requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; controlling the alteration of natural flood plains, stream channels, and natural protective barriers which help accommodate or channel flood waters; controlling filling, grading, dredging and other development which may increase flood damage; and, preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

### SUBCHAPTER 3. DEFINITIONS

#### 19:4A-3.1 Words and phrases defined

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

"Appeal" means a request for a review of the Commission's interpretation of any provision of this chapter 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 the land in the flood plain within a community subject to a one percent or greater change of flooding in any given year.

"Base flood" means the flood having a one percent chance of being equalled or exceeded in any given year.

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

"Breakaway wall" means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or supporting foundation system.

"Chief engineer" means a professional engineer registered in the State of New Jersey appointed by the Commission having responsible charge of all matters carried out by the Office of the Chief Engineer as expressed or implied in accordance with Chapter 404 of the Laws of 1968.

"Commission" means the New Jersey Meadowlands Commission or any board, body, commission, department, or officer succeeding to the principal functions thereof or to whom the powers and duties conferred upon the Commission shall be given by law.

"Development" means any man-made change to improved or unimproved real estate, including but not limited to building or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations within the area of special flood hazard.

"District" means the Hackensack Meadowlands District as defined in Chapter 404 of the Laws of 1968.

"Elevated building" means a non-basement building which is:

1. In the case of a building in an Area of Special Flood Hazard, built to have the top of the elevated floor; or in the case of a building in a Coastal High Hazard Area, built to have the bottom of the lowest horizontal structural member of the elevated floor elevated above the ground level by means of piling, columns (posts and piers), or shear walls parallel to the flow of the water; and

2. Adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood.

In an Area of Special Flood Hazard "elevated building" also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters. In Areas of Coastal High Hazard "elevated building" also includes a building otherwise meeting the definition of "elevated building" even though the lower area is enclosed by means of breakaway walls.

"Expansion to an existing mobile home park or mobile home subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including the installation utilities, either final site grading or pouring of concrete or the construction of streets).

"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 water and/or;
2. The unusual 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 provided in which the Federal Emergency Management Agency has provided flood profiles, as well as the Flood Insurance

Rate Maps and the water surface elevation to the base flood.

"Lowest floor" means the lowest floor of the lowest enclosed area, including basement, cellar, crawl space, garage, and utility room. An unfinished or flood resistant enclosure, usable solely for the parking of vehicles, building access or storage in an area other than a basement is not considered a building's lowest floor provided that such enclosure is not built so as to render the structure in violation of other applicable non-elevation design requirements.

"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. For flood plan management purposes, the term "manufactured home" also includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term "manufactured home" does not include park trailers, travel trailers and other similar vehicles.

"Manufactured home park or manufactured home subdivision" means a parcel, or contiguous parcels, of land divided into two or more manufactured home lots for rent or sale.

"New construction" means structures for which the "start of construction" commenced on or after the effective date of this regulation.

"New mobile home park or mobile home subdivision" means a parcel (or contiguous parcels) of land divided into two or more mobile home lots for rent or sale for which the construction of facilities for servicing the lot (including, at a minimum, the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of streets) is completed on or after the effective date of this chapter.

"Office of the Chief Engineer" means the Office of the Chief Engineer of the New Jersey Meadowlands Commission.

"Secretary" means the Secretary of the New Jersey Meadowlands Commission.

"Start of construction" for other than new construction or substantial improvements under the Coastal Barrier Resources Act (P.L. 97-348), includes substantial improvement and means the date 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 a 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 clearings, grading, and filling, nor

does it include the excavation for a basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on property of accessory buildings, such as garages or sheds not occupied as dwelling units or not as part of the main structure.

"Structure" means a walled and roofed building, a manufactured home or a gas or liquid storage tank, that is principally above ground.

"Substantial improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either:

1. Before the improvements or repair is started; or
2. If the structure has been damaged and is being restored, before the damage occurred.

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 comply with existing State or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

"Variance" means a grant of relief from the requirement of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter.

Amended by R.1994 d.16, effective January 3, 1994.  
See: 25 N.J.R. 3949(a), 26 N.J.R. 252(a).  
Administrative change.  
See: 33 N.J.R. 3454(a).

## SUBCHAPTER 4. GENERAL PROVISIONS

### 19:4A-4.1 Lands to which this chapter applies

This chapter shall apply to all areas of special flood hazards within the boundaries of the Hackensack Meadowlands District.

### 19:4A-4.2 Basis for establishing the areas of special flood hazard

The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in a scientific and engineering report entitled "Flood Insurance Study, Hackensack Meadowlands District, New Jersey, Bergen and

Hudson Counties" dated June 15, 1982, with accompanying Flood Insurance Rate Maps, Number 340570, is hereby adopted by reference and declared to be a part of this chapter. The Flood Insurance Study is on file in the Office of the Chief Engineer, New Jersey Meadowlands Commission, One DeKorte Park Plaza, Lyndhurst, New Jersey 07071.

Administrative change.  
See: 33 N.J.R. 3454(a).

#### 19:4A-4.3 Fees

Any requests for flood hazard certification or variances and appeals, and copies of the regulations, study, or maps submitted to the Office of the Chief Engineer shall be accompanied by such fee as shall be specified from time to time by resolution of the Commission.

#### 19:4A-4.4 Penalties and enforcement

(a) No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of this chapter and other applicable regulations. Any person who violates the provisions of this chapter or fails to comply with any of its requirements shall be subject to a civil penalty of not less than \$200.00 or more than \$5,000. Each day such violation or failure to comply is permitted to exist after notification thereof shall constitute a separate offense. In addition to the foregoing, the Commission may, in the case of any such violation or threat of such violation, institute civil action.

1. For injunctive relief;
2. To set aside and invalidate any conveyance or lease made pursuant to contract or sale or otherwise in violation of this chapter;
3. To prevent such unlawful sale or lease;
4. To restrain, correct, or abate such violation;
5. To prevent occupancy of land; and
6. To prevent any illegal act, conduct, business, or use in or about such premises.

Amended by R.1994 d.16, effective January 3, 1994.  
See: 25 N.J.R. 3949(a), 26 N.J.R. 252(a).

#### 19:4A-4.5 Other permits

No building permit, zoning certificate, occupancy certificate, subdivision plat approval, or implementation plan approval shall be issued by any official or agency of the Commission on any land that is within an area of special flood hazard until there has been compliance with all of the provisions of this chapter. Any approvals issued in conflict with this chapter shall be null and void.

#### 19:4A-4.6 Abrogation and greater restrictions

This chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter and other regulations conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

#### 19:4A-4.7 Warning and disclaimer of liability

The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is 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. This chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of the New Jersey Meadowlands Commission, any officer or employee thereof, or the Federal Emergency Management Agency for any flood damages that result from reliance on this chapter or any administrative decision lawfully made thereunder.

Administrative change.  
See: 33 N.J.R. 3454(a).

### SUBCHAPTER 5. ADMINISTRATION

#### 19:4A-5.1 Development permit required

(a) No structure or land shall hereafter be constructed, located, extended, converted or altered within any area of special flood hazard established in N.J.A.C. 19:4A-4.2 unless a zoning certificate, construction permit, occupancy certificate, subdivision plat approval, implementation plan approval, sanitary landfill approval or other development permit approvals as required by Chapter 404 of the Laws of 1968 shall first have been obtained from the Commission certifying that the proposed construction, use or development complies with the applicable provisions of this chapter.

(b) Notwithstanding exemption from a zoning certificate requirement pursuant to N.J.A.C. 19:4-3.2(b), these flood plain regulations shall apply.

#### 19:4A-5.2 Administration

The administration and implementation of this chapter in accordance with its provisions is vested in the Office of the Chief Engineer except for the granting of variances pursuant to N.J.A.C. 19:4A-5.4.

#### 19:4A-5.3 Duties and responsibilities of the Office of the Chief Engineer

(a) The Office of the Chief Engineer shall administer the provisions of this chapter in the manner set forth herein and in furtherance of such authority, shall, but not be limited to:

1. Maintain permanent and current records with respect to this regulation, including amendments thereto;

2. Review and approve or disapprove all development permits after determining that the requirements of this regulation have or have not been satisfied;

3. Review all development permits to determine if the proposed development adversely affects the flood carrying capacity of the area of special flood hazard.

i. If it is determined that there is no adverse effect, then the permit shall be granted consistent with the provisions of this regulation.

ii. If it is determined that there is an adverse effect, then flood damage mitigation measures shall be made a condition of the permit; if such mitigation cannot be accomplished, the permit shall be denied.

4. Maintain for public inspection all records pertaining to development permits, including: obtaining and recording the actual elevation (in relation to mean sea level) of the lowest habitable floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement; verifying and recording the actual elevation (in relation to mean sea level) and maintaining flood proofing certifications for all new or substantially improved flood proofed structures;

5. Notify adjacent communities and the State Coordinating Agency for the National Flood Insurance Program prior to any alteration or relocation of a watercourse, and submit evidence of such notification to FEMA; require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

6. When base flood elevation data has not been provided in accordance with N.J.A.C. 19:4A-4.2, Basis for establishing the areas of special flood hazard, the Office of the Chief Engineer shall obtain, review, and reasonably utilize any base flood data available from a Federal, State, or other source, in order to administer N.J.A.C. 19:4A.

7. 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 as provided in N.J.A.C. 19:4A-5.8.

Amended by R.1994 d.16, effective January 3, 1994.  
See: 25 N.J.R. 3949(a), 26 N.J.R. 252(a).

#### 19:4A-5.4 Variances

(a) In cases in which there is exceptional hardship in carrying out the literal provision of this chapter, whether because of conflicting requirements or otherwise, the Office of the Executive Director may authorize a variance from such provision. In passing upon requests for variances, the Executive Director shall consider all technical evaluations,

all relevant factors, standards specified in other sections of this chapter, 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 and the effect of such damage to 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 and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

(b) The procedure to be followed in an application for a variance from this chapter shall be the same as the procedure specified in N.J.A.C. 19:4-4.142, Variance of the NJMC Zoning Regulations.

#### 19:4A-5.5 Standards for the granting of variances

(a) Variances may be issued for new construction and substantial improvements to be erected on a lot contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items in N.J.A.C. 19:4A-5.4(a)1-11 have been fully considered.

(b) 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.

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

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

(e) 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 as identified in N.J.A.C. 19:4A-5.4(a)1-11 or conflict with existing local laws or ordinances.

(f) 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 reduced lowest floor elevation.

#### 19:4A-5.6 Conditions

Upon consideration of the factors of N.J.A.C. 19:4A-5.4(a)1-11 and the purposes of this chapter, the Office of the Chief Engineer may attach such conditions to the granting of variances as it deems necessary to reduce or minimize any potentially injurious effect of such variance upon other property in the neighborhood, and to carry out the general purpose and intent of this chapter. Failure to comply with any of the conditions or restrictions placed on a variance shall constitute a violation of this chapter.

#### 19:4A-5.7 Written decision and records

A written decision on an application for a variance shall be rendered within eight weeks of the date of the public hearing. The Office of the Chief Engineer shall maintain complete records of all actions with respect to applications for variances, including technical information, and shall report any variances to the Federal Emergency Management Agency upon request.

Amended by R.1994 d.16, effective January 3, 1994.  
See: 25 N.J.R. 3949(a), 26 N.J.R. 252(a).

#### 19:4A-5.8 Appeals

An appeal from an adverse decision of the Chief Engineer made pursuant to this chapter may be taken to the Commission, by any one adversely affected by such decision. Appeals shall be taken within 15 days after the date of notification of an adverse decision by filing a notice of appeal, by certified mail, with the Office of the Chief Engineer. The notice of appeal shall specify the grounds for such appeal. Upon receipt of a notice of appeal, the Secretary of the Commission shall transmit to the Office of Administrative Law all of the papers constituting the record upon which the decision being appealed was based. An appeal shall stay all proceedings in furtherance of the action in respect to which the decision appealed from was made and shall toll all applicable time limits. The Commission shall decide each appeal within 45 days of receipt of the decision of the administrative law judge.

## SUBCHAPTER 6. DESIGN STANDARDS

### 19:4A-6.1 Scope

In all areas of special flood hazards the standards in this subchapter are required.

### 19:4A-6.2 Buildings

(a) Residential construction: New construction and substantial improvement of any residential structure shall have the lowest floor elevated to a minimum of one foot above the base flood elevation.

(b) Non-residential construction: New construction and substantial improvement of any commercial, industrial or other non-residential structure shall either have the lowest floor elevated a minimum of one foot above the base flood elevation, or together with utilities shall:

1. Be floodproof, so that below the elevation equal to one foot above the base flood elevation, the structure is water tight with walls impermeable to the passage of water;
2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and the effect 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 for meeting the applicable provisions of this subsection. Such certification shall be provided to the Chief Engineer.

(c) Manufactured homes shall be anchored in accordance with N.J.A.C. 19:4A-6.5. All manufactured homes shall be anchored to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

(d) All manufactured homes to be placed or substantially improved within an area of special flood hazard shall be elevated on a permanent foundation such that the top of the lowest floor is elevated to a minimum of one foot above the base flood elevation.

Amended by R.1994 d.16, effective January 3, 1994.  
See: 25 N.J.R. 3949(a), 26 N.J.R. 252(a).

### 19:4A-6.3 Building sites

(a) All building site construction, including but not limited to parking lots, driveways, sidewalks, truck maneuvering areas, and landscaped areas, shall be consistent with the need to minimize flood hazards and damage.

(b) All building site construction shall have public utilities and facilities such as sewer, gas, electric, and water systems located and constructed to minimize flood hazards and damage.

(c) Base flood elevation data shall be provided for building site proposals which contain at least three acres.

#### 19:4A-6.4 Subdivision improvements

(a) All subdivision proposals, including roads, culverts, bridges, and tide gates shall be consistent with the need to minimize flood hazards and damage.

(b) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electric, and water systems located and constructed to minimize flood hazards and damage.

(c) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

(d) Base flood elevation data shall be provided for subdivision proposals which contain at least three lots or three acres (whichever is less).

#### 19:4A-6.5 Anchoring

(a) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

(b) All manufactured homes shall be anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

#### 19:4A-6.6 Construction material and methods

(a) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(b) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

#### 19:4A-6.7 Utilities

(a) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

(b) 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.

(c) On-site water disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

(d) 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.

#### 19:4A-6.8 Enclosure openings

(a) For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

1. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;
2. The bottom of all openings shall be no higher than one foot above grade; and
3. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of flood waters.