

Floodplain Management: Design and Construction Standards

New Construction: All new construction, relocation, substantial improvements, including repair of substantial damage, of residential structures must have the lowest floor, including basement, ductwork and utilities, elevated above the Base Flood Elevation plus freeboard. In West Virginia, the [floodplain management model ordinance](#) recommends an additional freeboard requirement of two feet to compensate for the many unknown factors that could contribute to how high flood waters can rise, such as constricted bridge openings, and the hydrological effect of urbanization in the watershed.

Lowest Floor: The lowest floor means “the lowest floor of the lowest enclosed area, except for unfinished or flood-resistant enclosures used solely for parking of vehicles, building access, or storage.” If the lowest enclosed area is used for anything other than vehicle parking, building access, or storage, the floor of that area is considered the lowest floor. Such prohibited use will violate NFIP requirements, resulting in drastically increased flood insurance premiums. The floor of a basement (where “basement” means the floor is below grade on all sides) will always be the lowest floor, regardless of how the space is used. Basements are prohibited from being constructed in A Zones unless the basement is elevated to or above the flood elevation or a basement exception has been granted.

Communities are required to obtain and maintain a record of the lowest floor elevations for all new and substantially improved buildings. The Elevation Certificate allows the community to comply with this requirement and provides insurers the necessary information to determine flood insurance premiums.

Basements and Enclosures: New or substantially improved buildings must be built with the lowest floor, including basement, above the base flood elevation (BFE). Areas enclosed by solid walls below the BFE (“enclosures”) can be used only for building access, parking, and storage.

Flood Vent Openings: NFIP regulations require that all enclosures below the BFE in A Zones must either be designed to allow for the equalization of hydrostatic forces during a flood event or be floodproofed. For all new construction, relocation, substantial improvements, and repair of substantial damage, those fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or meet or exceed the following minimum criteria:

- 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
- The bottom of all openings shall be no higher than one foot above grade.
- Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

Manufactured Homes: Design and construction standards in the WV Model Ordinance specify that all manufactured homes installed within the special flood hazard areas must be installed by a licensed contractor. The lowest floor, ductwork and utilities including HVAC/heat pump elevated above the Base Flood Elevation plus freeboard requirement. Elevation shall be on reinforced piers on a permanent foundation or other foundation elements of at least equivalent strength engineered for use in a flood hazard area. Installation designs incorporating dry stacked block piers shall not be used in special flood hazard areas. All manufactured homes shall be securely anchored to an adequately anchored foundation system in compliance with the West Virginia Code Permanently attached rigid skirts and perimeter wall skirts of brick or block must have openings to prevent collapse and damage to supporting piers.

Non-Conversion Agreement: A Non-Conversion Agreement shall be signed by the applicant on all flood-proofed structures and any elevated structures when the Floodplain Administrator determines that the area below the first floor could be converted to a non-conforming use (generally applies to the enclosed areas below base flood elevation that are 5 ft. high or more).

Appurtenant Structures: Accessory structures are also referred to as appurtenant structures. An accessory structure is a structure which is on the same parcel of property as a principal structure and the use of which is incidental to the use of the principal structure. For example, a residential structure may have a detached garage or storage shed for garden tools as accessory structures. Other examples of accessory structures include gazebos, picnic pavilions, boathouses, small pole barns, storage sheds, and similar buildings.

When possible, appurtenant structures shall be located out of the special flood hazard area. Where appurtenant structures not connected to the principal structure are to be located on sites below the Base Flood Elevation, flood damage reduction provisions apply that include:

- Use of the structure shall be restricted to parking or limited storage.
- Structures shall be no more than 300 square feet in size and valued at less than \$7,000. (Seven thousand dollars).
- Floors shall be at or above grade on at least one side.
- Structures shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
- Flood resistant materials as detailed in FEMA Technical Bulletin 2-93 (FIA-TB-2) shall be used in the construction of the structure from the lowest structural element to two feet above the Base Flood Elevation.
- Machinery, electric devices or appliances, and all utilities shall be located at least two feet above the Base Flood Elevation.
- Structures must have openings to equalize hydrostatic flood forces on exterior walls by allowing for automatic entry and exit of floodwaters.

Recreational Vehicle Placement: Recreational vehicles to be placed within any special flood hazard area shall either:

- 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 disconnected utilities, security devices, and has no permanently attached additions. OR,
- Be installed in accordance with the manufactured home placement requirements and all other flood reduction requirements contained in this Ordinance.

WVDHSEM Floodplain Management Resources:

- [State Floodplain Management](#)
- [Quick Guide](#) for Floodplain Management in WV