Iowa Department of Natural Resources
Flood Plain Management Program

Permitting Requirements and Form: Buildings

A DNR Floodplain Permit is required for the construction of a new building in the floodplain. The term *"building"* includes all residential housing including mobile homes, cabins, factories, warehouses, storage sheds, and other walled, roofed structures constructed for occupation by people or animals or for storage of materials. The term **building** or **structure** does not include open pavilions, bleachers, carports, and similar structures that do not have at least ***two rigid walls and a roof***.

In addition to a DNR Floodplain Permit, most Iowa communities are participating in the National Flood Insurance Program (NFIP) and will require local permitting under their jurisdiction for construction of buildings located in their mapped floodplain. Be sure to start by checking with your City or County floodplain manager to see what requirements they have since many have criteria that are stricter than the DNR criteria discussed below.

Instructions and building design guidance are provided at the end of the application form.

Applicant Name: _____ PERMT Tracking Number (if known): _____

Address or Location of Property: _____

Outside of floodway (if known): ☐ Yes ☐ No ☐ Unknown

Minimum Protection Level (MPL) (if known): _____

Type of Construction: ☐ Residential ☐ Non-residential

Damage Potential (see instructions for definitions):

- ☐ Low (Fill out Part 1 only)
- ☐ High (fill out Part 2 only)
- ☐ Maximum (fill out Part 2 only)

Part 1: For Low Damage Potential buildings and accessory structures:

Building size in square feet: _____

Low damage potential uses such as vehicle parking and limited storage: ☐ Yes ☐ No

Flood resistant construction materials: ☐ Yes ☐ No

No human occupation planned: ☐ Yes ☐ No

Firmly anchored to prevent floatation: ☐ Yes ☐ No

Electric and/or utilities elevated above the minimum protection level (MPL): ☐ Yes ☐ No

Total size of flood vents or other open side areas (square feet): _____

Part 2: For High and Maximum Damage Potential buildings

Type of construction (select and fill out appropriate information below)

☐ Type A: Slab on Grade

Lowest floor elevation: _____

☐ Type B: Elevated on Piers

Lowest floor or utility elevation: _____

☐ Type C: Enclosed Foundation

☐ Crawlspace OR ☐ Basement

Crawlspace Requirements:

Lowest floor or utility elevation: _____

Flood vent opening elevation: _____

Square footage of enclosed foundation: _____

Opening area and number of flood vents: _____

Location of flood vents (which sides of structure): _____

Only flood resistant materials below MPL: ☐ Yes ☐ No

Basement Requirements:

Documentation is attached from your local community floodplain manager stating that basements are allowed in the floodplain in your community:

☐ Yes ☐ No

Basement walls and floors below the applicable minimum protection level (MPL) shall be structurally designed and constructed to be watertight to the MPL with walls and floors that are substantially impermeable to the passage of water:

☐ Yes ☐ No

All structural components must be able to withstand debris impact forces, and hydrostatic and hydrodynamic forces, including the effects of buoyancy, associated with a water table elevation equivalent to the minimum protection level:

☐ Yes ☐ No

Sanitary sewer drains below the MPL are provided with automatic closure valves to prevent backflow:

☐ Yes ☐ No

☐ Type D: Floodproofed (Nonresidential buildings only)

Certificate of floodproofing (FEMA Form 086-0-34) attached: ☐ Yes ☐ No

Lowest floor elevation: _____

Sanitary sewer drains below the MPL are provided with automatic closure valves to prevent backflow:

☐ Yes ☐ No

Instructions and Building Design Guidance

DNR's floodplain permitting criteria for the construction of a building are based on:

1. Elevation: How high must the construction be based on Building Damage Potential and Determination of the minimum protection level (MPL).
2. Location: Verification that the building is located outside the "floodway" portion of the floodplain and the building is located such that public damages are minimized (e.g., determine if the structure would be isolated during a flood event and require emergency response and/or evacuation)
3. Construction requirements: Required construction and elevation/protection methods for proper elevation and floodproofing.

This guidance is meant to provide helpful assistance in building planning and permitting, no statements in this document are meant to conflict with 567 Iowa Administrative Code Chapters 70-75 that may apply.

A. Elevation: Building Damage Potentials and Minimum Protection Level

The minimum protection level (MPL) for a building depends on the damage potential of the building and contents. The base flood elevation (BFE) is the elevation of the 100-year flood*. The DNR will provide the BFE and MPL upon request or upon submittal of a floodplain permit for a building.

Damage Potential	Description	Minimum Protection Level
Maximum Damage	Hospitals and like institutions; buildings or building complexes containing documents, data, or instruments of great public value; buildings or building complexes containing materials dangerous to the public or fuel storage facilities; power installations needed in emergency or buildings or building complexes similar in nature or use to those listed above.	1 foot above 500-year flood*
High Damage	1. Habitable residential buildings and building complexes which include seasonal residential buildings; or 2. Industrial, commercial, agricultural, recreational and other similar buildings or building complexes, which, if inundated by flooding, would result in high public damages as determined by the department or which contain high-value equipment or contents that are not easily removed; or 3. Public buildings or building complexes, which, if inundated by flooding, would result in high public damages as determined by the department	1 foot above the 100-year flood*
Low Damage	Buildings, building complexes or flood plain uses not defined as maximum or high damage potential where such structures are designed in a manner that inundation by flood waters results in minimal damage to the structure and its contents. Such structures include but are not limited to the following: detached residential garages, sheds, park shelters, buildings used for storage of equipment or items that can be easily removed, and buildings used as temporary shelter for livestock.	None

*500-year and 100-year floods are those having an annual chance of occurrence of 0.2% and 1%, respectively. They will be determined by the DNR if not already provided by the community's Flood Insurance Study.

B. Location

Every floodplain can be divided into a floodway and a floodplain fringe. The floodway is an area designated for conveying the flood flows. The location of the building must be outside the floodway or hydraulic documentation from a licensed engineer must be submitted to document a "no-rise" impact on the floodplain. The DNR will determine the floodway when a minimum protection level or BFE is requested.

Buildings must be located to minimize public damages associated with isolation due to flooding or the surrounding ground. Generally, structures used as dwellings shall be provided with an access which will remain passable by wheeled vehicles during the 100-year flood unless the DNR and local community determines that this access is not required for effective protection of life and property on the basis of expected duration of flooding and/or flood warning times.

C. Construction Requirements

The lowest floor of all new and substantially improved buildings must be protected to at least the MPL. (If there are any utility ducts below the lowest floor, those must also be above the MPL.) Elevating a building above the MPL is the most common and secure way to protect it from flood damage. And, *it is the only method allowed for residential buildings.*

Elevation of buildings can be accomplished in one of three ways:

- Elevation on fill (where permissible);
- Elevation on piles, posts, or columns; or
- Elevation on walls or a crawlspace (enclosed foundation).

Important Considerations

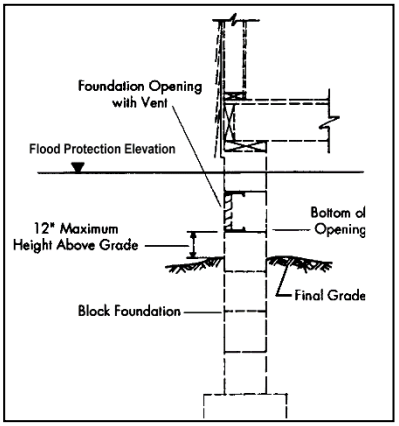
Basements

The definition of the **lowest floor** includes basements and the definition of **basement** includes any floor level below grade on all sides. Note that "walkout basements," "daylight basements," or "terrace levels" are usually sub grade on only three sides, with the downhill side at or above grade. Thus, they are not considered basements for either floodplain management or flood insurance rating purposes (but they are still the lowest floor of a building for floodplain management and insurance rating purposes).

Enclosed foundation requirements

Enclosures, as referenced here, are areas created by continuous foundation walls below the flood protection elevation. Allowable uses of lower enclosures:

- Building access;
- Vehicle parking; and
- Storage of materials that have low flood damage potential.



Due to the potential hydrostatic and hydrodynamic forces on the enclosed foundation, the enclosed area must be designed to equalize hydrostatic pressure during floods by providing 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. The openings may be equipped with screens, louvers, valves, or other coverings or devices provided they permit the automatic entry and exit of floodwaters. Windows and doors are not considered acceptable openings under this requirement because they require manual operation. The bottom of all openings shall be no higher than one foot above the adjacent grade.

Floodproofing (for non-residential structures)

Non-residential buildings must be elevated or floodproofed. If they are elevated, they must meet the same standards as the residential buildings. Elevation is the preferred method because it is more dependable. Elevated commercial and industrial buildings can often be designed so that they can continue to operate during a flood, reducing or eliminating business disruptions.

Floodproofing requirements:

- Walls are watertight (substantially impermeable to the passage of water)
- Structural components can resist hydrostatic and hydrodynamic loads and effects of buoyancy; and
- Utilities are protected from flood damage.

Most floodproofing is appropriate only where floodwaters are less than three feet deep, since walls and floors may collapse under higher water levels. A licensed professional engineer or architect must prepare the building plans and certify the floodproofing measures, preferably using the FEMA Floodproofing Certificate

Anchoring
Both elevated and floodproofed buildings must be properly anchored to stabilize them against flood forces. This means anchoring the building to its foundation and ensuring that the foundation won't move. Therefore, you need to make sure there is adequate protection against hydrostatic and hydrodynamic forces and erosion and scour that can undercut the foundation.

Flood-resistant material
Whether a building is elevated or floodproofed, it is important that all building materials exposed to floodwaters be made of flood-resistant materials.

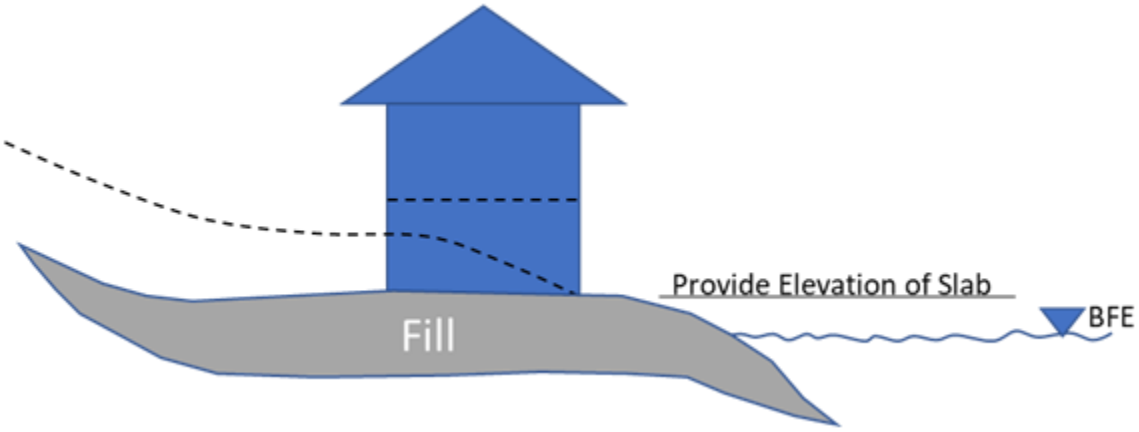
"Flood-resistant materials" include any building product capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage. "Prolonged contact" means at least 72 hours, and "significant damage" is any damage requiring more than low-cost cosmetic repair (such as painting).

Low damage potential buildings
Detached garages, sheds, and similar structures that are incidental to a residential use are exempt from the MPL elevation requirements where the following criteria are satisfied:

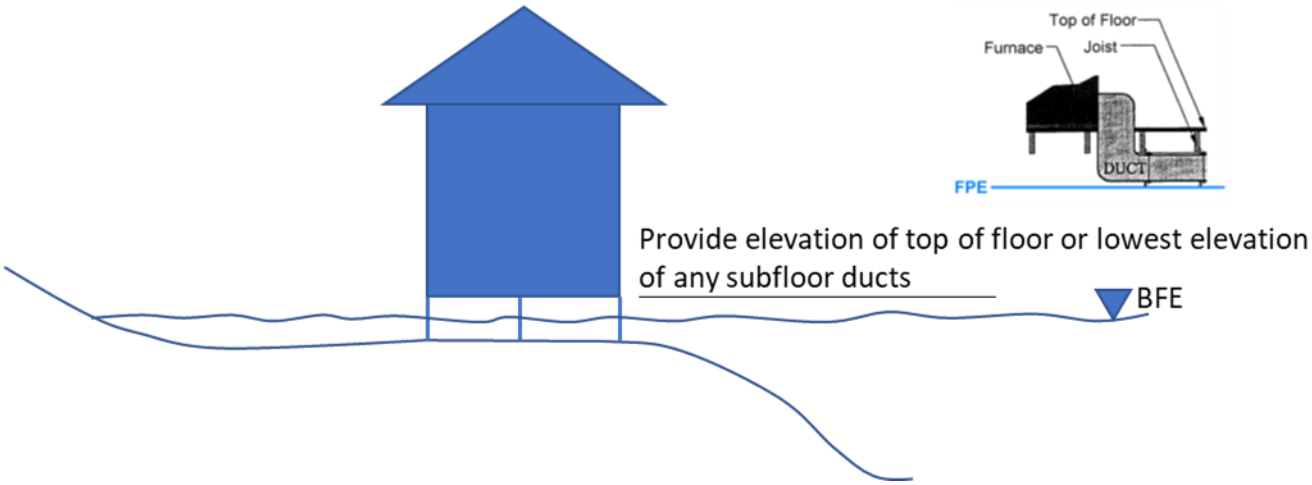
a. The structure shall be designed to have low flood damage potential. Its size shall not exceed 600 sq. ft. in size. Those portions of the structure located less than 1 foot above the base flood elevation must be constructed of flood-resistant materials.
b. The structure shall be used solely for low flood damage potential purposes such as vehicle parking and limited storage. The structure shall not be used for human habitation.
c. The structure shall be constructed and placed on the building site so as to offer minimum resistance to the flow of floodwaters.
d. The structure shall be firmly anchored to resist flotation, collapse and lateral movement.
e. The structure's service facilities such as electrical and heating equipment shall be elevated or floodproofed to at least one foot above the base flood elevation.
f. The structure's walls shall include openings that satisfy the provisions of enclosed foundations.

Types of Construction

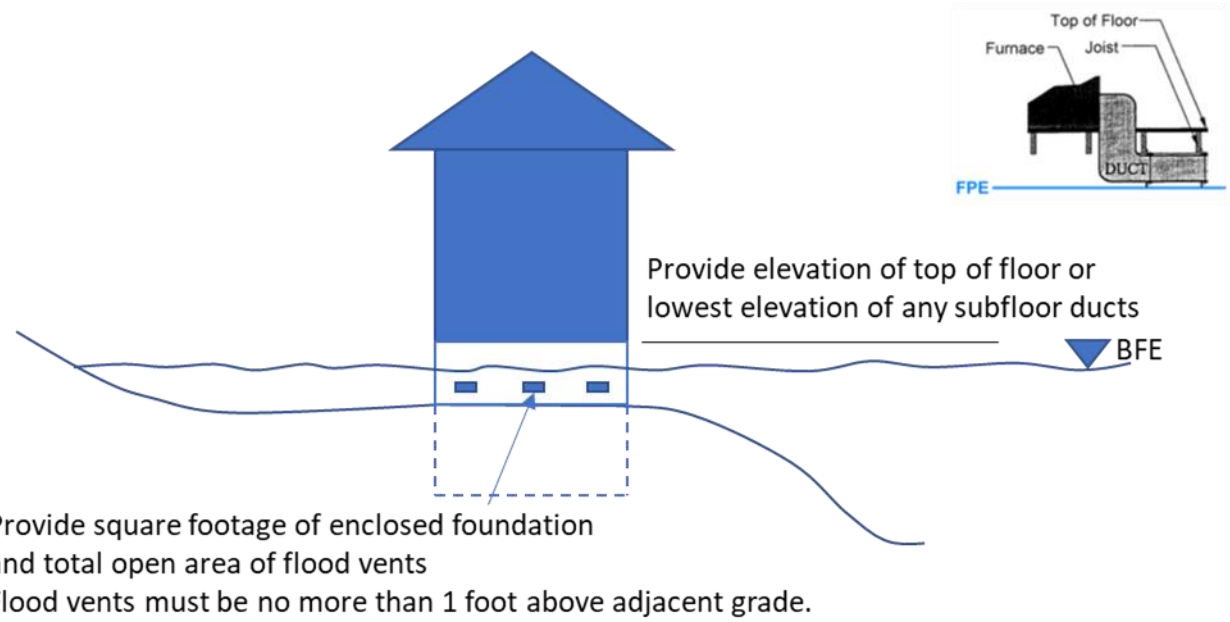
Type A: Slab on grade construction (as long as lowest floor has at least one side where floor is above grade and MPL).



Type B: Elevated on piers construction.



Type C: Enclosed Foundation



Type D: Floodproofed Construction (only allowed for non-residential structures).