



Protecting Your Property From Flooding

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARE YOU AT RISK?

If you aren't sure whether your house is at risk from flooding, check with your local floodplain manager, building official, city engineer, or planning and zoning administrator. They can tell you whether you are in a flood hazard area. Also, they usually can tell you how to protect yourself and your house and property from flooding.

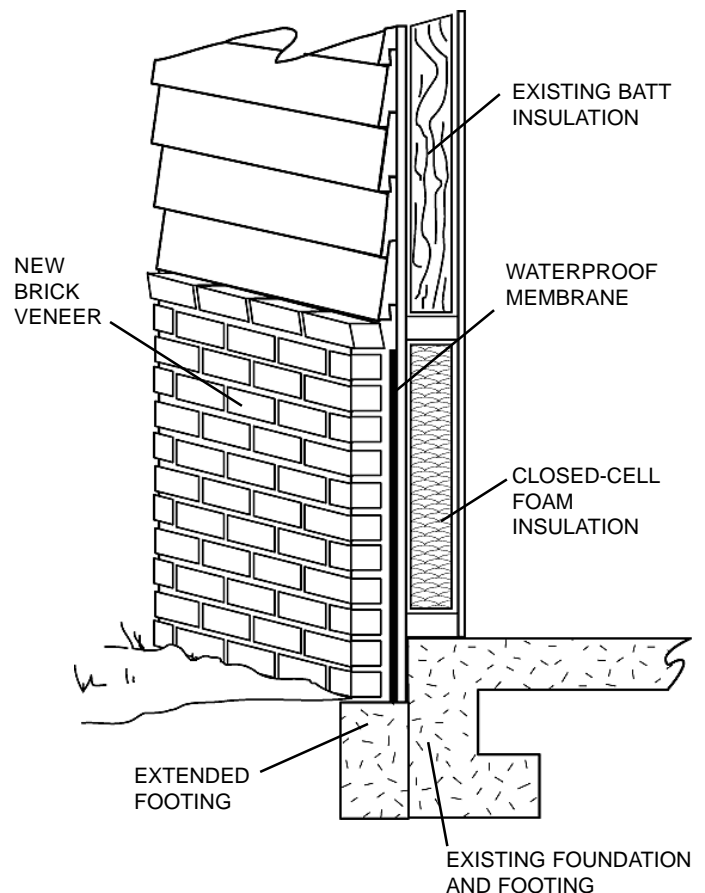
WHAT YOU CAN DO

Flood protection can involve a variety of changes to your house and property – changes that can vary in complexity and cost. You may be able to make some types of changes yourself. But complicated or large-scale changes and those that affect the structure of your house or its electrical wiring and plumbing should be carried out only by a professional contractor licensed to work in your state, county, or city. One example of flood protection is adding a waterproof veneer to the exterior walls of your house. This is something that only a licensed contractor should do.

ADD A WATERPROOF VENEER TO EXTERIOR WALLS

Even in areas where flood waters are less than 2 feet deep, a house can be severely damaged if water reaches the interior. The damage to walls and floors can be expensive to repair, and the house may be uninhabitable while repairs are underway.

One way to protect a house from shallow flooding is to add a waterproof veneer to the exterior walls and seal all openings, including doors, to prevent the entry of water. As shown in the figure, the veneer can consist of a layer of brick backed by a waterproof membrane. Before the veneer is applied, the siding is removed and replaced with exterior grade plywood sheathing. If necessary, the existing foundation footing is extended to support the brick. Also, because the wall will be exposed to flood water, changes are made to the interior walls as well so that they will resist moisture damage. In the area below the flood level, standard batt insulation is replaced with washable closed-cell foam insulation, and any wood blocking added inside the wall cavity is made of exterior grade lumber.



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Add a Waterproof Veneer to Exterior Walls

TIPS

Keep these points in mind if you plan have a waterproof veneer added to the exterior walls of your house:

- ✓ Adding a waterproof veneer is appropriate in areas where the flood depth is less than 2 feet. When flood depths exceed 2 feet, the pressure on waterproofed walls increases greatly, usually beyond the strength of the walls. If greater flood depths are expected, consult with a licensed civil or structural engineer before using this method.
- ✓ Changes to the foundation of your house must be done by a licensed contractor, who will ensure that the work is done correctly and according to all applicable codes. This is important for your safety.
- ✓ If your house is being remodeled or repaired, consider having the veneer added as part of the remodeling or repair work. It will probably be cheaper to combine these projects than to carry them out separately.
- ✓ If your house has brick walls, you can still use this method. The new brick veneer and waterproof membrane are added over the existing brick.
- ✓ If your house is flooded by groundwater entering through the floor, this method will not be effective.

ESTIMATED COST

If you have a contractor add a waterproof brick veneer to your house, you can expect to pay about \$10 per square foot of exterior wall. For example, a 3-foot-high brick veneer on a house measuring 60 feet by 30 feet would cover about 540 square feet and would cost about \$5,400. This figure does not include the cost of sealing doors and other openings or extending the foundation.

OTHER SOURCES OF INFORMATION

Protecting Your Home from Flooding, FEMA, 1994

Repairing Your Flooded Home, FEMA-234, 1992

Flood Emergency and Residential Repair Handbook, FIA-13, 1986

Retrofitting Flood-Prone Residential Structures, FEMA-114, 1986

To obtain copies of these and other FEMA documents, call FEMA Publications at 1-800-480-2520. Information is also available on the World Wide Web at <http://www.fema.gov>.