

Floodplain Management Q&A: *Utilities*

Proper elevation and connection of utilities and mechanical equipment can significantly reduce damage caused by floods, one of the most common hazards in the United States. Protecting utilities by locating them as high as the Base Flood Elevation (BFE) keeps them dry and safe, and allows owners to reoccupy their homes soon after electricity, sewer and water are restored to a neighborhood.



New construction, making repairs or purchasing replacements are ideal times to incorporate flood-resistant measures. Primary methods are elevation and component protection. Most can be put in place for little or no added cost while some require more of an investment. These proven techniques help reduce or prevent future damage, and many are small changes that make a big difference.

Utilities include HVAC (heating, ventilation and air conditioning) components including ductwork, electricity infrastructure and appliances.

What If Utilities Are Unprotected?

Utilities are vulnerable to damage from standing or moving water, floating debris, scour and floodwater erosion.

If they are inundated for even short periods, they will probably have to be replaced. Relocating HVAC ductwork is particularly important because, should it become inundated with floodwater, the following can occur:

- * The flooded ducts may be pulled from their supports after floodwaters recede because of the increased weight of the water inside the ducts.
- * Mold, mildew and fungus can grow in flooded ductwork and then be circulated throughout the house leading to serious health issues if the ducts are not removed and thoroughly cleaned.

Another serious problem is the potential for fires caused by short circuits in flooded systems. Raising electrical system components helps avoid this problem.

How Can Utilities Be Protected?

To protect utilities from floodwaters, they should be elevated to a level where they are safe from flooding. *In Nebraska, they must be raised to at least the BFE.*

First, try to discourage building in a floodplain unless the home or business is elevated and reinforced. In addition, basement walls should be sealed with waterproofing compounds. If a new air conditioner or heat pump will be outside, it should be installed on a platform at or above the

BFE. A water heater can be elevated, and an updraft furnace located in a basement can be replaced with a downdraft furnace on a floor above the BFE.

Elevation of utilities and mechanical equipment is the preferred method of protection.

Where the flood protection level (BFE plus 1 foot) is not too high, a furnace, water heater or other heavy appliance can be raised on a platform inside the house. Put the appliance on concrete blocks or a wooden platform supported by concrete blocks. Be sure appliances such as washers and dryers are secure and will not vibrate off the blocks or platform during use.

Another option is to protect the furnace, water heater, and washer and dryer from shallow flooding with a low floodwall built around the appliance. A concrete or wooden wall 1 or 2 feet high can stop low-level flooding. The wall should be waterproofed with plastic sheeting or waterproofing compounds that can be purchased at hardware stores.

A homeowner might prefer to leave the equipment where it is and build a concrete or masonry block floodwall around it. If this is done, there must be enough space in the enclosed area for repairs and routine maintenance. Also, depending on its height, the wall may have to be equipped with an opening for access. Any opening will have to have a gate that can be closed and sealed to prevent floodwaters from entering.

Who Should Do This Kind of Work?

The Federal Emergency Management Agency (FEMA) recommends complicated or large-scale changes and those affecting a home's structure or its electrical wiring and plumbing be carried out by licensed contractors. These professionals will ensure the work is done correctly and according to all applicable community ordinances and codes. Also, encourage homeowners to check with city permit officials to determine if work must be certified by a surveyor or professional engineer.

Where Can I Get More Information?

These websites can provide more in-depth information:

- * www.floodsmart.gov – Explains the risk of flooding at any address and provides flood maps.
- * www.fema.gov/hazards/floods/lib06b.shtml – Protecting Building Utilities from Flood Damage (FEMA 348).
- * www.asce.org – American Society of Civil Engineers, Flood Resistant Design and Construction (SEI/ASCE 24-98).

Who Can I Talk to at NDNR?

**Contact: Bill Jones, 402.471.3932
bill.jones@nebraska.gov**

This pamphlet was made possible through financial support provided by the Federal Emergency Management Agency through a cooperative agreement with the Nebraska Department of Natural Resources. The information contained in this pamphlet does not necessarily reflect the view of the Federal Emergency Management Agency.