



STORM WATER MANAGEMENT

How to Protect Home Foundations from Storm Water

Measures to control surface water and measures to waterproof basements work hand-in-hand. Here are some examples to share with residents.

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Every year, water intrusion causes damage to homes. According to the [Federal Emergency Management Agency \(FEMA\)](#) , “just 1 inch of water pooled in a single-story, 1,000 square-foot home can cause close to \$11,000 worth of damage; 1 foot of water in a 2,500 square-foot single-story home can cause more than \$29,000 in damage.”

There are different ways that stormwater can invade a home. Many homeowners fear of floodwaters coming from the surface, such as from overflowing storm drains and nearby rivers. But even without surface flooding, flooding in the home can occur within the basement because of foundation problems caused by water.

Measures to control surface water and measures to waterproof your basement work hand-in-hand. Both improve your home’s chances of keeping water out and ensure that water runs to the nearest storm drain or body of water as it should.

The Relationship Between Surface Water Control and Waterproofing

Whenever it rains, it is important to continually move that water to a safe location away from your home. But not all rain takes the form of **stormwater** on the surface—much of it can soak into the soil and add to a rising water table. Whether it is surface water running to the foundation or the water table rising up, above and below, there is the threat of water.

As water builds against the foundation, it generates what is known as hydrostatic pressure. This water pressure is what can cause water to leak through the cold joints of a foundation, or even create cracks for water to eventually leak through.

Along with the costs of replacing any water-damaged belongings in your basement, water intrusion in the basement can result in a variety of other costly problems:

- Mold growth
- Wood rot
- Increased humidity in the basement and the rest of the home
- The potential attraction of pests including termites, dust mites, and rodents

Wood rot and termites can cause a great amount of damage to your home's wooden support structures, leading to high repair costs and a high chance of needing to replace those supports.

Prolonged exposure to dust mites and mold spores can agitate allergies and worsen asthma symptoms. But mold growth can also lead to other potential health problems related to mold. Some mold species that tend to appear in wet basements and in the living spaces of humid homes include black mold, *Penicillium*, and *Aspergillus*.

To prevent these various problems and their associated repair costs, it is crucial to have protective measures in place to keep water from entering the home in the first place. To help keep surface water from running to the foundation, consider the following.

Surface Water Control

Outside your home, there are several factors at play that can either contribute or **prevent stormwater** from reaching your home's foundation:

- The grading of your landscape
- Nearby vegetation, especially trees
- The condition of your gutters and downspout

The grading of your landscape should be sloping away from your foundation. This will encourage surface water to move away from your foundation and hopefully towards a storm drain or a nearby body of water. The surrounding land should be dropping at least one inch for every foot away from your home.

Your gardens and trees should not be too close to the foundation either. Properly distanced gardens with proper grading will help make sure that garden hose water will not run off towards the foundation. Meanwhile, keeping trees away from the foundation will help keep their roots from reaching the foundation in search of water. Tree roots can provide easier ways for surface water to seep down and towards the foundation wall.

Gutters and downspouts should be regularly maintained. Ensure that no leaves or other debris are blocking the way for rainwater to drain properly out and away from the home. Any clogging can potentially lead to gutters overflowing. Damaged downspouts can also lead to water leaking onto the soil next to the foundation. Along with maintenance, consider extending your downspout to improve the chances of stormwater flowing away from your foundation.

Along with controlling surface water around your home, you will want to make sure that your home has a proper basement waterproofing system in place to help reduce hydrostatic pressure while moving groundwater away from your home.

Drainage and Waterproofing Systems

The kind of basement waterproofing that will be discussed is also known as interior basement waterproofing. This involves installing drainage channels around the perimeter of your basement beneath the floor slab.

These **drainage** channels may either sit on top of the footer or beside the footer. As the water table rises, water will enter the drainage channels and begin running towards a sump pit with a sump pump and a discharge pipe for the water to be evacuated from the house.

The sump pump and the discharge pipe will be crucial in ensuring continual protection from a rising water table during a storm.

Discharge Pipes and Storm Drains

Some discharge pipes will guide water to a drywell. But if a drywell is not what your home has, your discharge pipe should terminate outside in a location where the evacuated water may flow easily down towards a storm drain or a body of water.

Your discharge pipe should be protected with a grate that can keep it from getting clogged by outside debris.

Sump Pumps: Maintenance and Horsepower

For basement waterproofing sump pumps, homeowners usually have a submersible pump, a water-powered sump pump, or a pedestal pump. There

are also battery backup sump pumps, which are invaluable in keeping a waterproofing system running in the event of a power outage.

But whichever is being used, you'll want to make sure that you have your sump pump regularly maintained to ensure that it operates well during a storm.

Different sump pumps offer different levels of horsepower as well. More horsepower means a greater ability to move more water faster. More horsepower will also help ensure that water flow is not hindered if your discharge pipe has a high vertical distance to travel from the sump pump.

Getting the Right Contractor For the Job

Depending on what parts of your home, landscaping, or drainage that you'll need to address, you may have to call upon one or more different contractors. During your research, it may be hard to choose the ones that will be best for you. Fortunately, there are ways to improve your chances of choosing a contractor that's both reliable and knowledgeable. While considering a **contractor**, see if you can find the answers to the following questions:

- Is the contractor licensed and insured?
- How long has the contractor been in business? Their longevity can speak to their quality and success.
- Do they offer a strong warranty?
- Do they have a lot of positive reviews that are easy enough to find?

Even if you find a contractor that offers a positive answer to each of these questions, you will want to also see how knowledgeable they are when answering any questions or concerns you may have. Take your time to investigate each contractor, and you feel better about the outcomes of your waterproofing and surface drainage.

Sources:

FEMA, Flood Insurance and the NFIP

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