

## BASEMENT WATERPROOFING SOLUTIONS

The cause of a wet or damp basement can be minor, readily apparent, and easily corrected. Here are some probable causes and possible solutions:

**Problem:** The source of water in the basement can not be identified.

**Solution:** To determine whether the water is seeping in from the outside or condensing inside, tape a twelve-inch square of aluminum foil to a wall that is prone to dampness, sealing all four sides as airtight as possible. In a day or two, if the side of the foil that was against the wall is wet, the problem is seepage. If the outside is wet, it's condensation.

**Problem:** Lawns that are flat or slope toward the house permit surface water (rain and melting snow) to drain down against basement walls. Water enters through cracks or other openings in the walls and causes wet spots on the walls or standing water on the floor.

**Solution:** Slope the ground away from the outside foundation (about one inch per foot). Extend the slope for at least ten feet. Seed it with a good lawn grass. Sodding is a common practice and prevents the washing away of newly graded areas during heavy rains. Where a large area of land slopes toward the house, surface drainage should be intercepted and redirected some distance from the house. Dig a shallow, half-round drainage ditch or depression designed to route the water around the house. Sod the ditch or plant grass in it. If even a shallow ditch is objectionable, drainage tiles, with one or more catch basins at low spots, may be installed.

**Problem:** Defective, clogged, or nonexistent gutters and **downspouts** allow roof water to form puddles, or wet the soil near or against basement walls, and enter through cracks or openings in the masonry.

**Solution:** Install gutters and **downspouts** wherever needed. Keep them free of debris. Where leaves and twigs from nearby trees may collect in a gutter, install a basket-shaped wire strainer over the **downspout** outlet or place screening across the length of the gutter. Repair gutters and downspouts as soon as the need appears.

To prevent concentration of water at the point of discharge, use a concrete gutter or splash block to carry the water away at a slope of one inch per foot. Also, consider extending **downspouts** from rain gutters away from the outside foundation.

Roof water can also be piped underground to a storm drain, dry well, or surface outlet, fifteen feet or more from the house.

**Problem:** Dense shrubbery and other plantings around the basement walls prevent good ventilation.

**Solution:** Trim heavy growths of shrubbery so that soil gets more sunlight and dries quicker. When digging up the plantings, remove any pieces of masonry, mortar, or other material buried near the house after the basement was excavated.

**Problem:** Unprotected basement window wells act like cisterns during heavy storms, permitting water to seep in around window frames and below windows.

**Solution:** Windows or parts of windows below grade should be protected by metal or masonry window wells, with bottoms consisting of gravel to permit good drainage. Clear plastic bubbles are available to cover the entire window well like an awning.

**Problem:** Atmospheric moisture produces condensation ("sweating") on cool surfaces in the basement, particularly walls, floors, and cold water pipes.

**Solution:** Insulate the water pipes. Promote good ventilation--sunlight and free movement of air can quickly dry out a basement. Ventilation should be regulated according to the weather conditions. During hot, humid weather or long rainy spells, windows should be closed because the outside air will probably contain more moisture than the basement air. Heat the basement during the winter. During hot weather, use air conditioning to cool and dehumidify the air.

**Problem:** Leaky plumbing or other sources of moisture--such as clothes hung to dry on basement lines--increase humidity in the air, causing condensation.

**Solution:** Repair plumbing promptly, open windows or dry clothes in an automatic dryer vented outdoors. If the problem persists, experiment with using a large-capacity dehumidifier to eliminate condensation. Try borrowing one from a friend or neighbor before investing in what may turn out to be the wrong remedy.

### Concentrate On The Source Of Persistent Problems

If every apparent, logical way of eliminating wetness fails to produce a dry basement, do not waste time or money on random potential solutions. Finding the cause of the problem is absolutely essential to its cure. The hardest type of water problem to correct is one created by faulty construction practices at the time the house was built. Proper drainage is a crucial consideration in selecting the site for a new house. This includes not only the drainage of surface water but also drainage of any subsurface or ground water that may already be present, or that may accumulate over a period of time and be blocked from its normal course of flow by the new construction.

If the subsurface or ground water level is close to the underside of the basement floor slab, water rises through the slab by capillary action, producing dampness. If the subsurface or ground water level is higher than the basement floor, water leaks in through the walls and floor or enters by capillary action, causing standing water in the basement and, at times, dampness in the rooms above.

Under ideal conditions, a house should be situated so that even during rainy seasons the subsurface or ground water level is at least ten feet below the finished grade--well below the average basement floor.

In some cases, it is impossible to completely eliminate dampness from a basement whose construction did not take into consideration the basic principles of good drainage. Only after soil borings have been done can anyone knowledgeably predict which, if any, course of action has a chance for success.

### Weigh Alternative Methods Of Treatment

An accurate diagnosis of the main cause of persistent basement wetness may lead to a recommendation of one or more of the following actions:

#### Redirect Water Away From Foundation

The various exterior waterproofing barriers have varying levels of effectiveness in protecting the outside wall areas. But wall anti-leaking barriers do not affect water penetration due to water accumulation at the footer or floor level. The ideal solution to this problem lies in directing the accumulation of water away from the foundation or into drainage or pumping systems.

#### Install An Interior Drainage System

To control leakage in the basement, you may install a drainage system on the inner side of the foundation. The floor is broken up along the perimeter of the basement wall and drain tile is placed in a trench that carries the water to a discharge point, or sump pump, which takes the water away from the house.

With hollow block walls, holes may be drilled at the bottom to allow the water to pass into the drain pipe and relieve the water pressure. The trench may then be filled with gravel and the floor replaced or recemented.

If installed correctly this system will remove basement leakage water. Channels may also be installed on the basement floor to take the water away through a sump pump.

#### Apply Waterproofing Compounds To Interior Walls

Only in cases where mild and occasional capillary seepage occurs are applications of waterproofing paint or other interior compounds likely to provide any lasting degree of improvement in achieving a dry basement.

Capillary waterproofing materials can be applied to either exterior or interior wall and floor surfaces. If properly applied, they will penetrate several inches into concrete and close off capillaries or minor cracks by forming crystals in the presence of water.