



How to Keep Your Basement Dry

Moisture can bring your basement to ruin. We show you ways to prevent it.
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Water is the basement's greatest adversary. Excess moisture in your home can lead to bad air quality, which in turn can lead to respiratory health problems, reports the Canadian Lung Association. Even small amounts of vapour from humid outdoor air or poorly ventilated appliances can promote the growth of mould and mildew. It can also affect the quality of your new basement.

So, before starting any work on your basement, your contractor—and even a waterproofing specialist—should thoroughly inspect the entire

basement to make sure you don't have any water infiltration problems.

"When someone wants to spend \$25,000 to create a rec room or home theatre, but refuses to spend \$4,000 or \$5,000 to prepare the area, all that money will be wasted when you have to redo it in 10 years," says Gord Westover, owner of G. Westover Management, a Vancouver custom home and renovation company.

"If you're finishing a basement, you're going to be investing anywhere from \$20,000 to \$100,000 in it," says George Cabral, president of JAGG Enterprises, a waterproofing company in Caledon, Ont. "So why

wouldn't you want to protect that investment?"

How can you tell if you have moisture issues? The Canada Mortgage and Housing Corporation suggests that mould, chalky stains on the walls or floor, decaying wood windows, moisture damage on finished walls, lifting floor tiles and damp, musty carpets should all tip you off that your basement might have a moisture problem.

If you suspect any of the above, make sure your contractor knows about the problem, investigates it thoroughly and fixes it before any construction starts.

MOISTURE MANAGEMENT

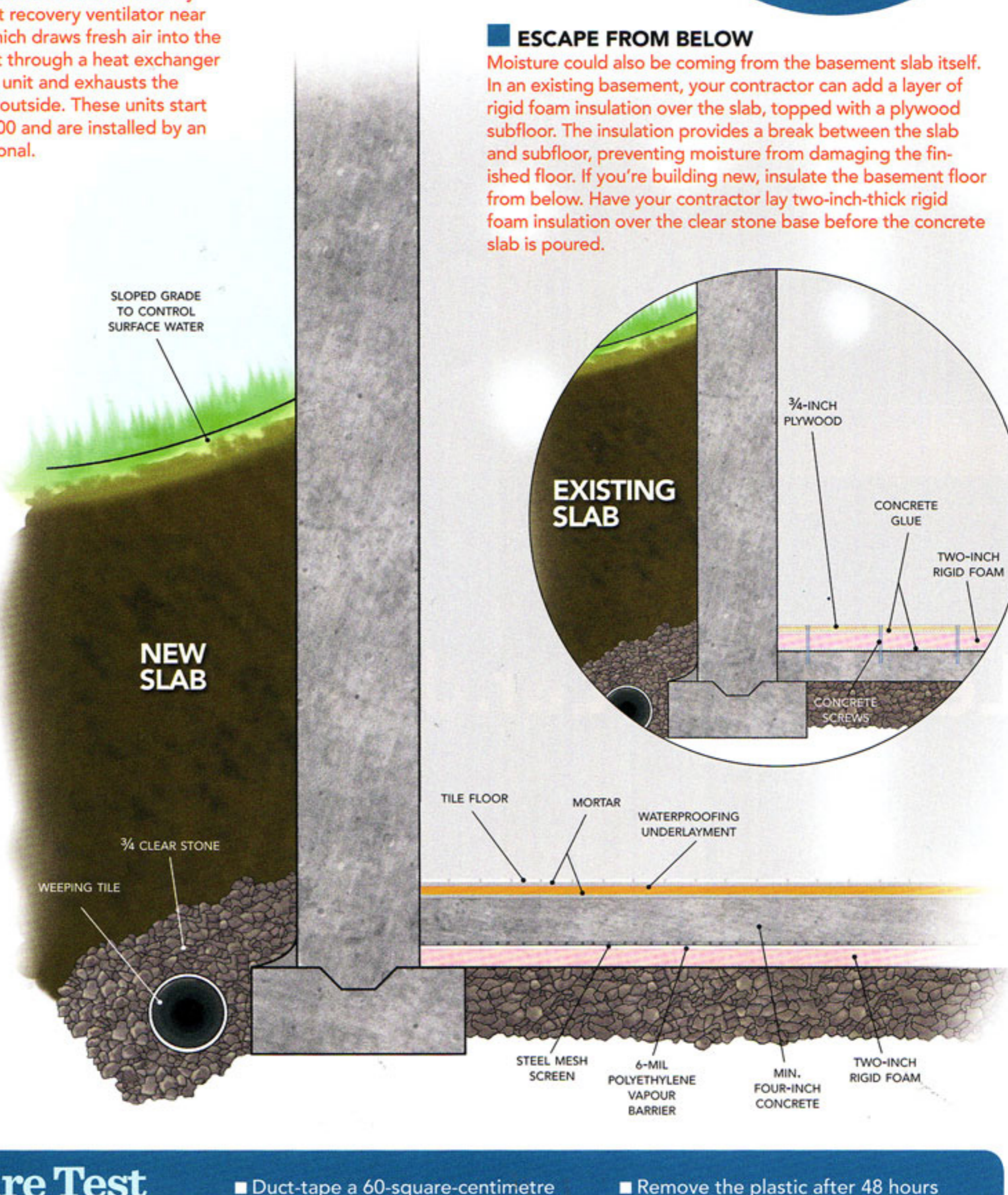
From poor drainage to a tight air seal around your home, there are plenty of ways water can enter your home and get trapped inside, damaging your new floors and walls. Here's how water can get in—and how to stop it.

SEAL THE DEAL

High humidity from a tight air seal around the home can cause moisture problems in the basement. This can be solved by installing a heat recovery ventilator near the furnace, which draws fresh air into the home, warms it through a heat exchanger core inside the unit and exhausts the stale air to the outside. These units start at around \$2,500 and are installed by an HVAC professional.

GOOD GRADES

A good place to start your home inspection is with the slope of your property. Be sure the soil around your home is graded for positive drainage, which means it directs surface water away from the house and paved areas; otherwise, water may penetrate and weaken the supporting soil and foundation.



ESCAPE FROM BELOW

Moisture could also be coming from the basement slab itself. In an existing basement, your contractor can add a layer of rigid foam insulation over the slab, topped with a plywood subfloor. The insulation provides a break between the slab and subfloor, preventing moisture from damaging the finished floor. If you're building new, insulate the basement floor from below. Have your contractor lay two-inch-thick rigid foam insulation over the clear stone base before the concrete slab is poured.

WET WOE
 Canada Mortgage and Housing Corporation studies show that, in various parts of Canada, up to 50 percent of basements have signs of moisture entry or damage from high humidity, and basement flooding-related claims are estimated to add up to \$140 million each year.

Moisture Test

Your contractor should be able to test for excess moisture in concrete with a calcium chloride kit or a relative-humidity meter. Meanwhile, try this method to get a general idea:

- Duct-tape a 60-square-centimetre piece of plastic sheeting to the concrete floor.
- Repeat this in a few areas in the room—next to walls and in corners, as well as in the centre of the room.

- Remove the plastic after 48 hours and check to see whether moisture has accumulated.

If there's excessive moisture on the plastic, you may have a problem. Don't install flooring until you've solved it.

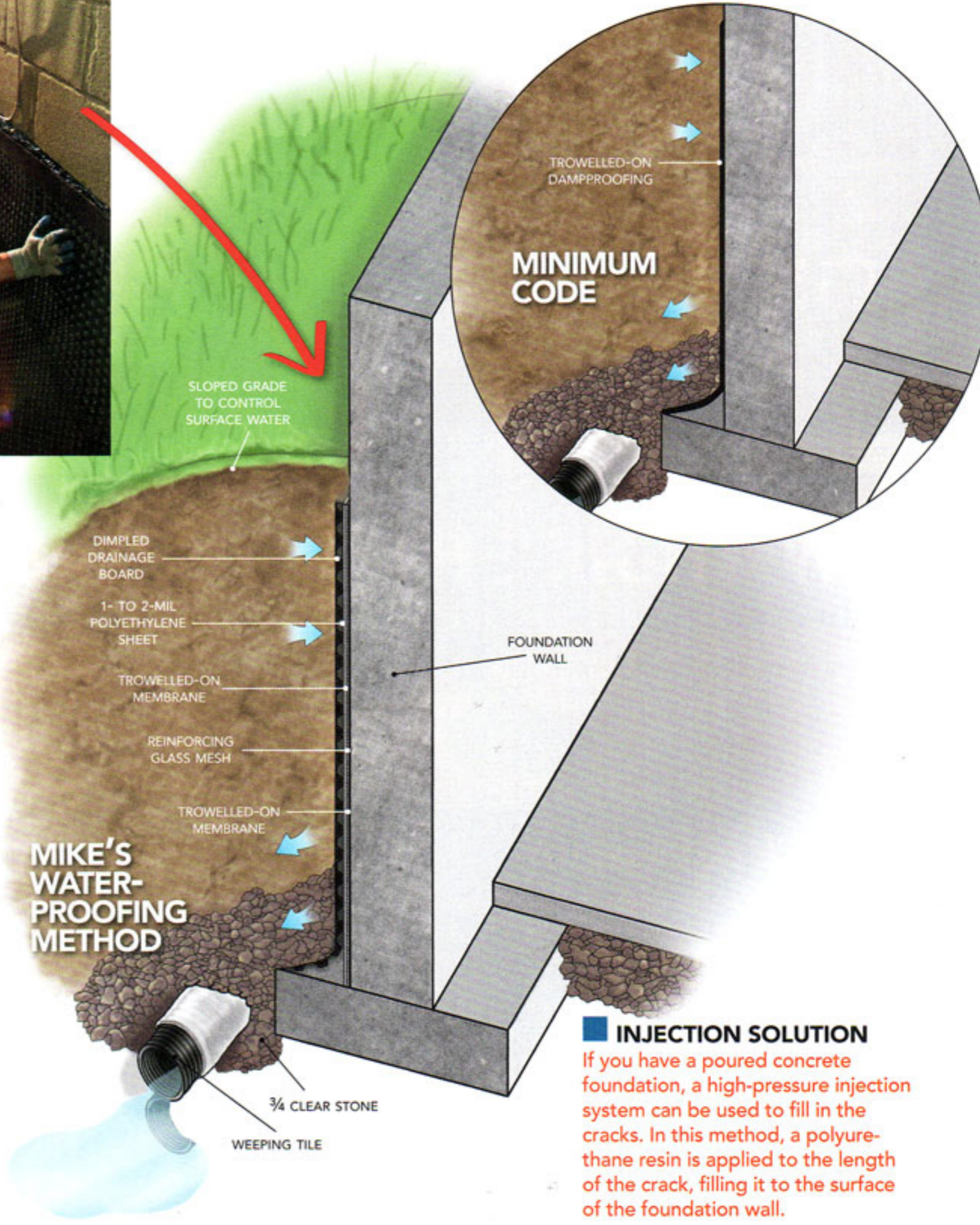
LEAK BE GONE

Moisture in your basement could also be coming from a cracked foundation wall or a failed drainage system. A poured concrete foundation wall can be fixed from the outside by excavating or from the inside by injecting the leak with a resin that seals it—just make sure you resolve the problem at its source.



DOWN AND AROUND

To seal a crack in the foundation wall from the exterior, your contractor will excavate around the perimeter of the house to access the problem area. A flexible waterproof membrane can then be trowelled on.



ON THE OUTSIDE

If a clogged weeping tile is causing moisture problems, your contractor will have to dig down to the base of your foundation to fix the problem. A weeping tile is a four-inch-diameter perforated plastic pipe that runs the perimeter of your foundation. Its job is to collect groundwater around your home and drain it to a storm sewer or a sump pit. These can become clogged by dirt or tree roots. Before you dig around the foundation to repair your property's drainage system (costing from \$10,000 to \$25,000, depending on the size of your home), it may be possible—and much less expensive—to remove clogs by snaking the pipe.

EXTRA PROTECTION Wet soil causes lateral pressure against waterproofing walls, and can lead to leaks. A wrap system—a soil dimpled membrane placed over the waterproofing walls—will direct groundwater into the weeping tile system, keeping it away from the wall.

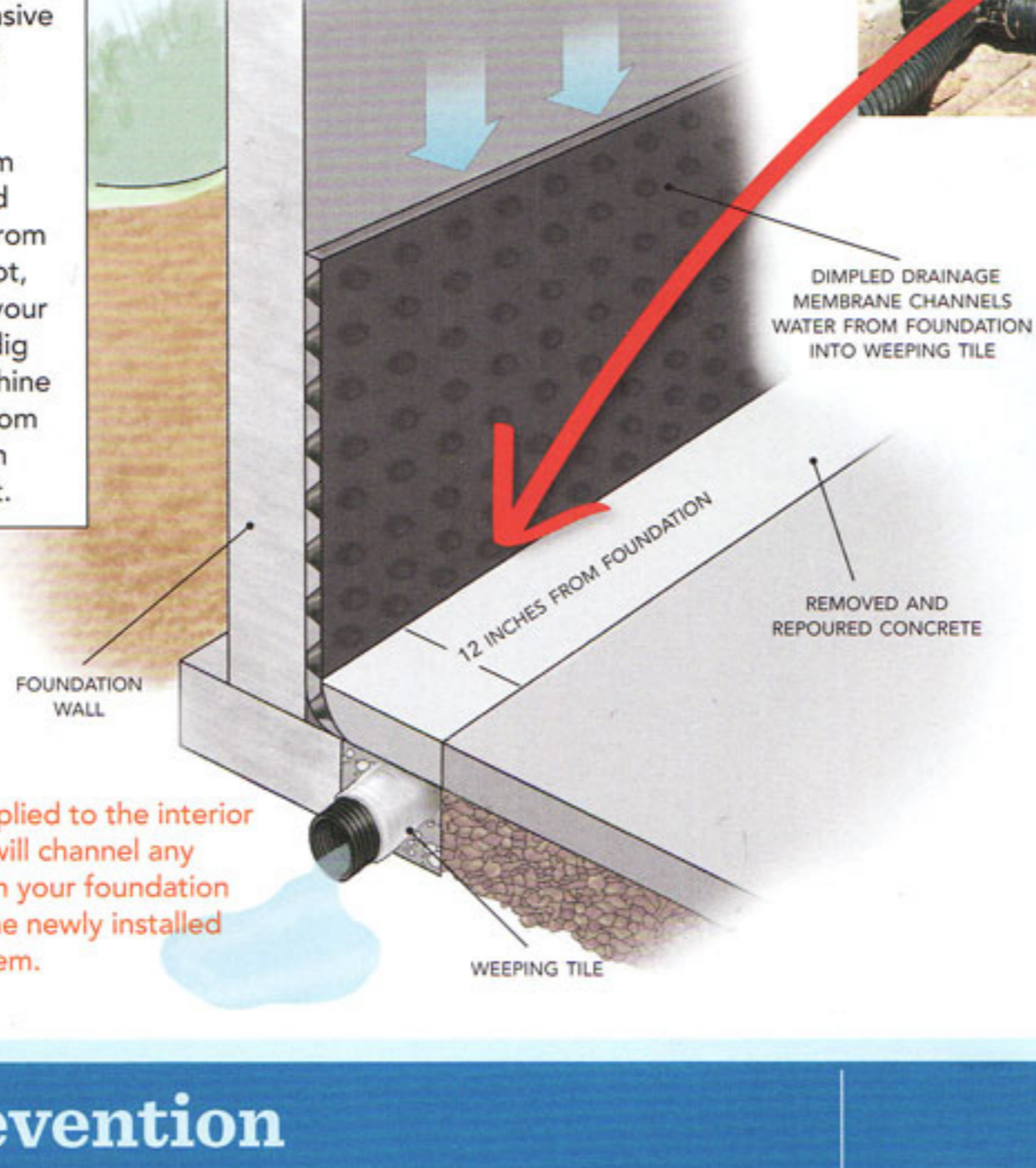
INSIDE JOB

If digging around the exterior of the home is not an option (perhaps there's not enough room, or you have expensive landscaping you don't want to disturb), your contractor could install an interior weeping tile system. This is not a commonly recommended method and should only be done as a last resort.

GOING DOWN

To do this, the basement floor has to be removed about a foot from the wall, and then a six-by-six-inch area is excavated down to the footings to allow for the new weeper. The weeping tile is connected to the sump pit. If there is an existing storm line it may be possible to connect to it, but these connection lines are restricted in many areas.

BUDGET BREAKERS
 Although critical, solving your basement's water issues won't come cheap. While high-pressure injections are the least expensive way to fix a crack (about \$500 per crack), you will achieve more value per dollar by excavating from the outside. This method will cost you anywhere from \$100 to \$400 a linear foot, depending on whether your contractor will need to dig by hand or can fit a machine into the area. Digging from the inside costs between \$60 to \$150 a linear foot.



MIKE SAYS
 "An interior weeping tile system can seem very attractive. There are plenty of homes where the space is tight around the exterior, and in these cases it's a hassle to get down to the exterior foundation to do the work. But I prefer to stop the moisture from the outside in. Spend the money and do it right."

CATCH SYSTEM

A backwater valve will channel any water that comes through your foundation down the wall and into the newly installed interior weeping tile system.

Flood Prevention

If the storm sewers in your neighbourhood become overwhelmed with rainwater or sewerage, you can prevent a basement flood by installing one or more flood-proofing devices such as a sump pump or backwater valve.

The sump pit, located below the basement floor, collects water from the weeping tile system. When that system becomes overloaded by excessive rainwater, the sump (from \$50 to \$280) pumps water into a pipe that discharges the water onto your property, away from the foundation wall. A backup system (from \$500 to \$3,000) that kicks in if your primary pump fails is strongly recommended.

A backwater valve (from \$1,500 to \$2,500) automatically closes when it detects sewage from an overloaded sewer line backing up into your basement. Make a habit of having it tested by a licensed drain contractor every few years to make sure sewage doesn't block the valve. Be sure to check with your municipality whether this device is approved for use in your area.

