

Basement BLUES

Untamed runoff can sink your house. Fight back.

BY MERLE HENKENTUS

If you have trouble with basement water, you're not alone. We spoke with Douglas Pencille, a Minnesota housing inspector with first-hand experience. "I visit 1300 to 1500 houses per year and 30 to 40 percent of them have basement water damage. It's a big problem, often requiring corrective action." What kinds of corrective action? It all depends on the source of the water.

Water From Above ...

The most common cause of basement water is unmanaged rain runoff. Rainwater from the roof flows down through the soil and collects at the bottom of the original foundation excavation. While the weight of the saturated earth alone can break a wall, the situation worsens when the water freezes and exerts a lateral force that can cause cracks and buckling. How do you know when water damage is from runoff? When leaks follow substantial rains and when the soil around the foundation appears settled.

The solution is a well-maintained gutter system that uses downspout extensions to carry roof runoff at least 4 ft. from the foundation wall. Also, the grade next to the wall must be sloped to direct surface water away from the house.

... And Below

Groundwater problems can result from a high water table or an underground spring. Sometimes the problem is seasonal, coinciding with spring snowmelts and heavier rains, but it can occur at any time. Groundwater doesn't usually break walls, but it can flood the basement floor.

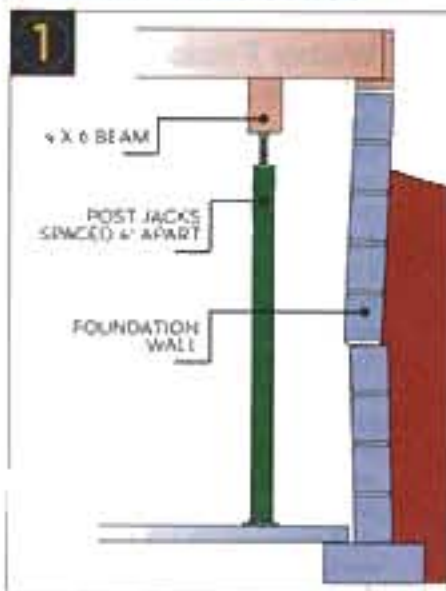
Exterior drain-tiles around the perimeter of the foundation footing are the first line of defense against groundwater. The simplest retrofit solution is to install a sump pump that carries the water away from the house. An interior drain-tile system is effective in routing water from the entire basement to the sump.



Foundation Repairs: If your foundation walls have cracks or they've buckled, you can do much of the repair work yourself or hire a contractor to handle the

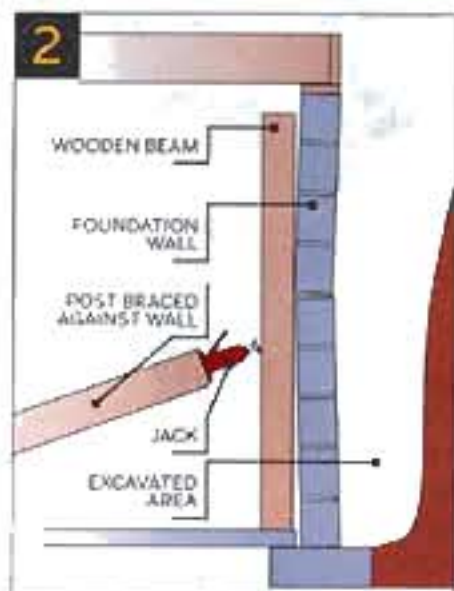
job. The newer techniques that use high-tech materials and sophisticated hardware require specialized skills so you'll need to hire a professional.

> Traditional Fixes



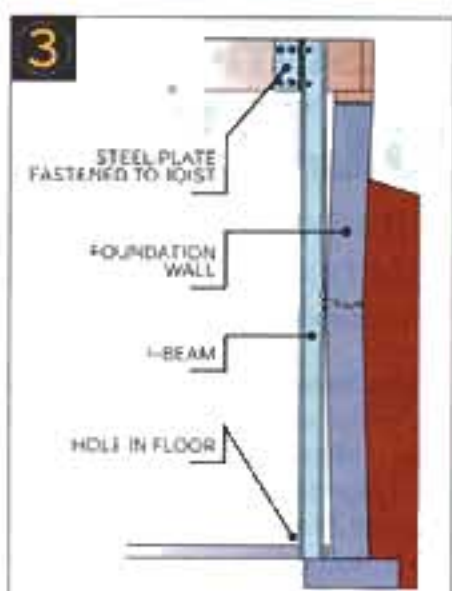
WALL REBUILD

One solution to a buckled block wall is to replace it. You can do this without excavating. First, use post jacks and a 4 x 6 beam to take the load from the wall. Then, remove the damaged section down to the footing. After rebuilding the wall, wait several days before removing the jacks.



EXCAVATION AND REPAIR

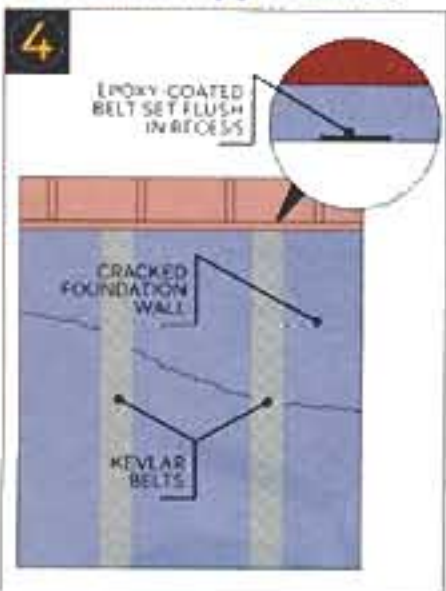
To keep the original wall, excavate the area outside. Then, use a jack and a few wooden beams to nudge the wall back into position. Repair any bad mortar joints, and consider improving your drainage system to reduce hydrostatic pressure and to direct water away from the house.



WALL BRACING

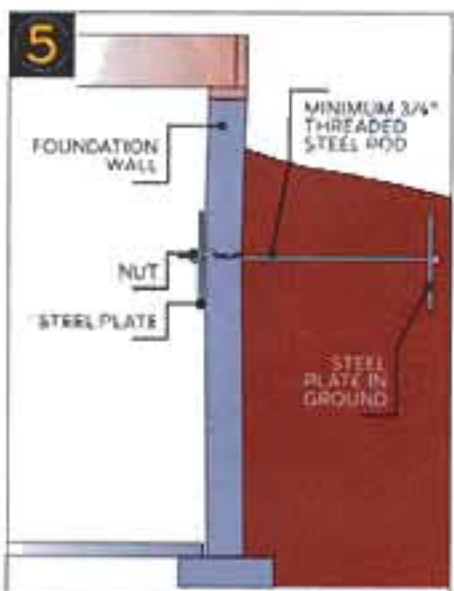
If you don't want to replace the wall or excavate, try bracing. Vertical steel I-beams set in holes in the floor and fastened to steel braces at the ceiling joists can keep a wall in place. Local building codes vary, though, so make sure this approach is approved in your area.

> Modern Approaches



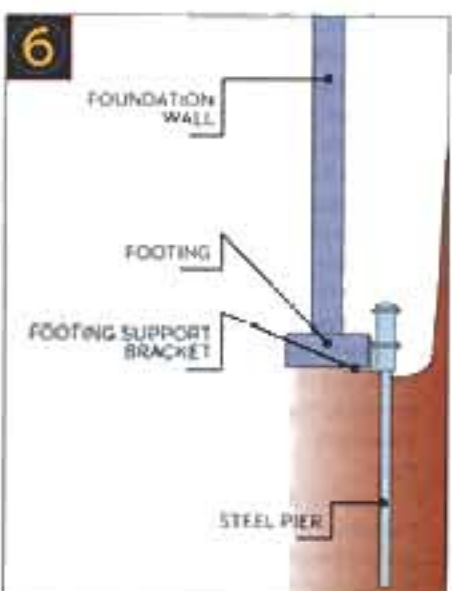
BRACING WITH BELTS

This system replaces I-beams with carbon-fiber/Kevlar belts (Fortress Stabilization Systems, 800-207-6204; www.fortress-stabilization.com). A contractor grinds 1/2-in. recesses across the cracks. The belts are coated with epoxy and set in place, and the epoxy is trimmed flush with the wall.



WALL-ANCHOR REPAIR

Wall anchors (Grip-Tite Manufacturing, 315-462-1313; www.griptite.com) consist of two steel plates, one located on the inside of the wall and the other buried in the ground outside, and a threaded rod connecting the plates. Tightening a nut on the rod draws the wall flat.



LIFTING WALLS

When footings settle they can be repositioned with push piers (Foundation Pier System, Grip-Tite Manufacturing). Hydraulic drivers placed around 3 to 6 ft. apart push steel piers down to the bedrock while support brackets restore the footing to its original level.