Building a Timber Retaining Wall

Good drainage and a stout connection to the hillside are keys to a long-lasting wall

BY SCOTT MCBRIDE

Building durable retaining walls of 6x6 pressure-treated timbers isn't complicated (photos pp. 104-105). If you built with Lincoln Logs as a kid, you know the basics. Remember that the earth held back by retaining walls is incredibly heavy. Wooden walls rely on timber tiebacks and cross ties buried in the earth behind to resist the force exerted by the backfill.

To a degree, dry soil is self-supporting. The real test begins when water saturates the soil, making it semiliquid and less able to support itself. Freezing temperatures make the problem worse. Wet soil expands as it freezes, exerting greater pressure. Drainage is critical.

Retaining walls create terraces, and the size of the terrace is the first design decision you make. A large terrace may involve importing fill, lots of heavy-equipment time and higher walls. Higher walls mean deeper fill and greater pressure. Taller walls call for larger fasteners and more tiebacks. The methods I describe here are best for walls less than 5 ft. high. Have an engineer design higher walls.

The wall's location determines how much dirt you have to move

The second decision is whether to cut into the bank, fill on top of it or do a combination (bottom drawings, facing page). Cutting into a bank creates a recessed terrace. The wall supports the earth at the back and sides of the terrace. You'll have to excavate into the bank to install tiebacks and cross ties before building the wall, and you'll need a place to dispose of excess soil.

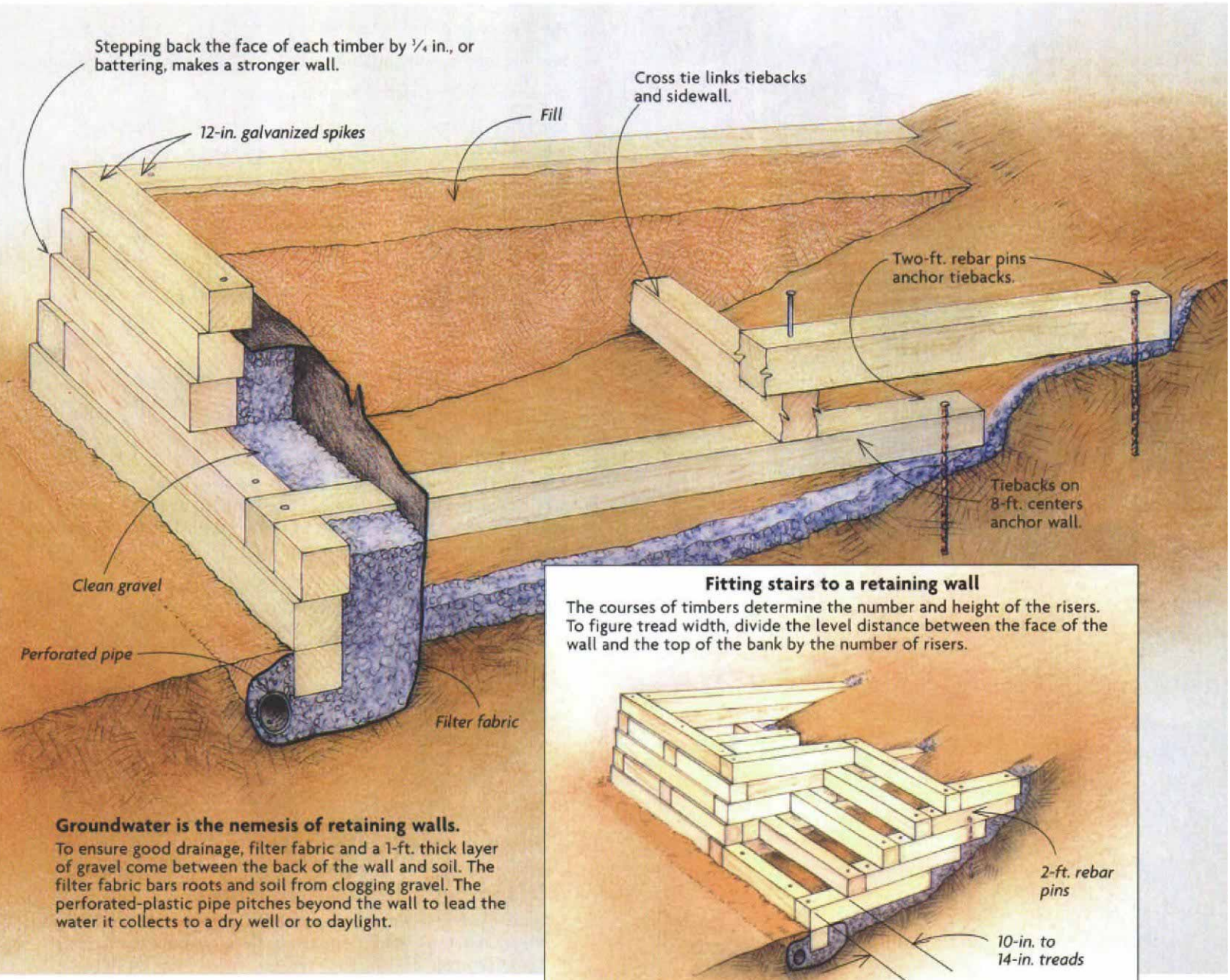
Filling on top of a bank creates a raised terrace. The front wall usually rises from near the bottom of the bank. The sidewalls of raised terraces step up the bank and link into tiebacks and cross ties behind the main wall. You'll need to bring in fill dirt.

To avoid importing or exporting fill, you can recess a retaining wall halfway into a bank and use the excavated dirt to fill behind the wall. This option is practical for small terraces with limited access for heavy equipment and is the most practical option when digging with a shovel. It involves moving the least dirt the shortest distance.

Steps can be readily woven into timber retaining walls (drawing facing page). Landscaping timbers, either 6x6s or 8x8s, are well dimensioned for risers. Stair width should be at least 3 ft., and the treads a uniform breadth between 10 in. and 14 in. □

Scott McBride is the author of *Landscaping with Wood* (The Taunton Press, 1999), from which this article is adapted. Photos by the author.

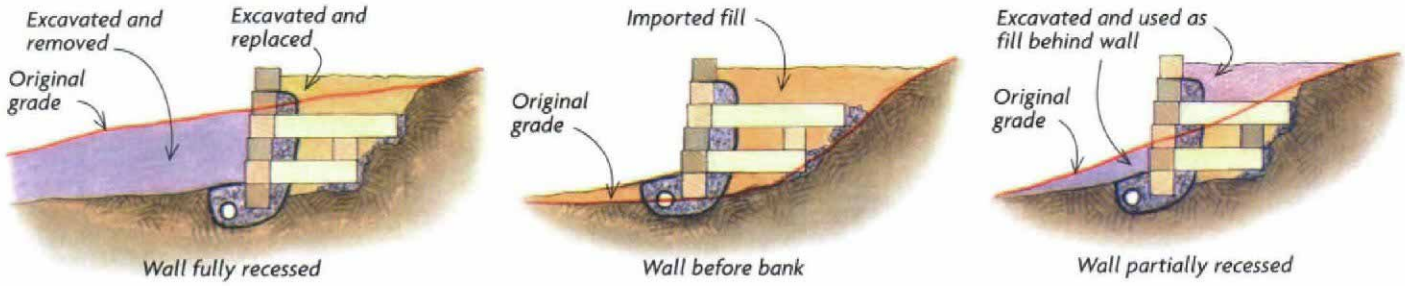
DETAILS FOR A DURABLE RETAINING WALL



Groundwater is the nemesis of retaining walls.
To ensure good drainage, filter fabric and a 1-ft. thick layer of gravel come between the back of the wall and soil. The filter fabric bars roots and soil from clogging gravel. The perforated-plastic pipe pitches beyond the wall to lead the water it collects to a dry well or to daylight.

Fitting stairs to a retaining wall
The courses of timbers determine the number and height of the risers. To figure tread width, divide the level distance between the face of the wall and the top of the bank by the number of risers.

Position of the wall determines how much dirt has to be moved.
Recessing the wall into a bank creates waste fill to be taken away. Building the wall forward of a bank means bringing in fill from somewhere. Recessing the wall halfway into a bank allows earth excavated from in front of the wall to fill behind the wall.



Drawings: Christopher Clapp

BUILDING A RETAINING WALL

The delivery truck has gone, leaving a diesel stink and a banded stack of 6x6s. Here's a primer on turning this leaning pile of timbers into a wall capable of holding back tons of earth. The preservatives in treated lumber may be toxic. Consider handling it with gloves, and wear a respirator while cutting it.

1. Dig a trench about 1 ft. deep where the wall will go. Line the trench with filter fabric, leaving enough extra fabric inside the wall to wrap the gravel backfill (drawing p. 103). Lay the pipe below and before the wall, and fill the trench with gravel to at least 1 in. or 2 in. above the pipe.

2. Tamp the gravel and lay the first timbers level. Then fold the fabric over the gravel in front of the wall, fill over the fabric with soil and tamp. The first course of timber is buried below grade to keep the wall from sliding forward.

3. Spray paint marks where to dig for stringers and tiebacks. Stringers must extend far enough back to support the front of the next stringer. Set the first tieback low enough so that it's deeply backfilled to help brace the wall.

4. Gravel below the stringers and tiebacks ensures drainage. It also eases leveling the timbers. Filter fabric will cover the gravel before the stringer is permanently set.

5. Galvanized spikes join riser to stringer. These ⅜-in. by 12-in. spikes call for predrilling and a heavy hammer. Because the preservative salts in the timbers corrode steel, it's best to use galvanized spikes.

6. A maul drives the ⅝-in. by 24-in. rebar that pins the tiebacks to the bank. Rebar is cut to length using an abrasive wheel in a circular saw. Notice that the tieback's front edge is set back from the first timber's face, beginning the wall's batter.

7. Cross tie connects sidewalls and tieback. Finishing the wall is now a commonsense matter of cutting, stacking and spiking timbers together log-cabin style. Fill behind the wall, alternating lifts of soil behind the filter fabric and 1 ft. of gravel between the wall and the fabric. Fill stairs with gravel.