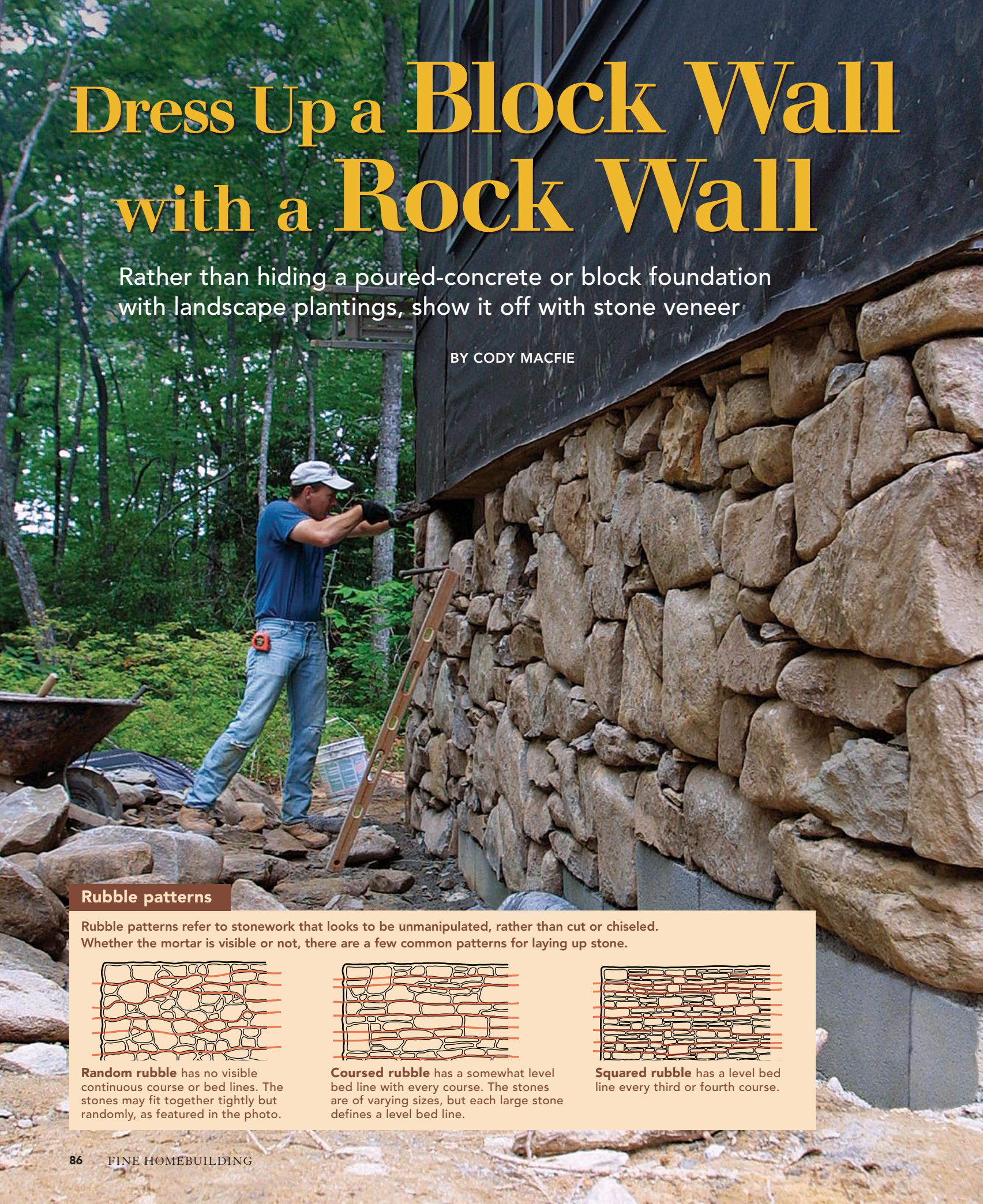


Dress Up a Block Wall with a Rock Wall

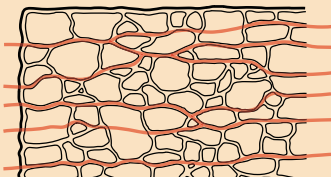
Rather than hiding a poured-concrete or block foundation with landscape plantings, show it off with stone veneer

BY CODY MACFIE

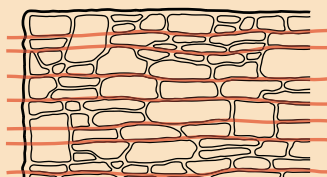


Rubble patterns

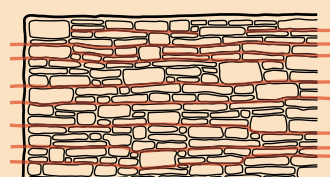
Rubble patterns refer to stonework that looks to be unmanipulated, rather than cut or chiseled. Whether the mortar is visible or not, there are a few common patterns for laying up stone.



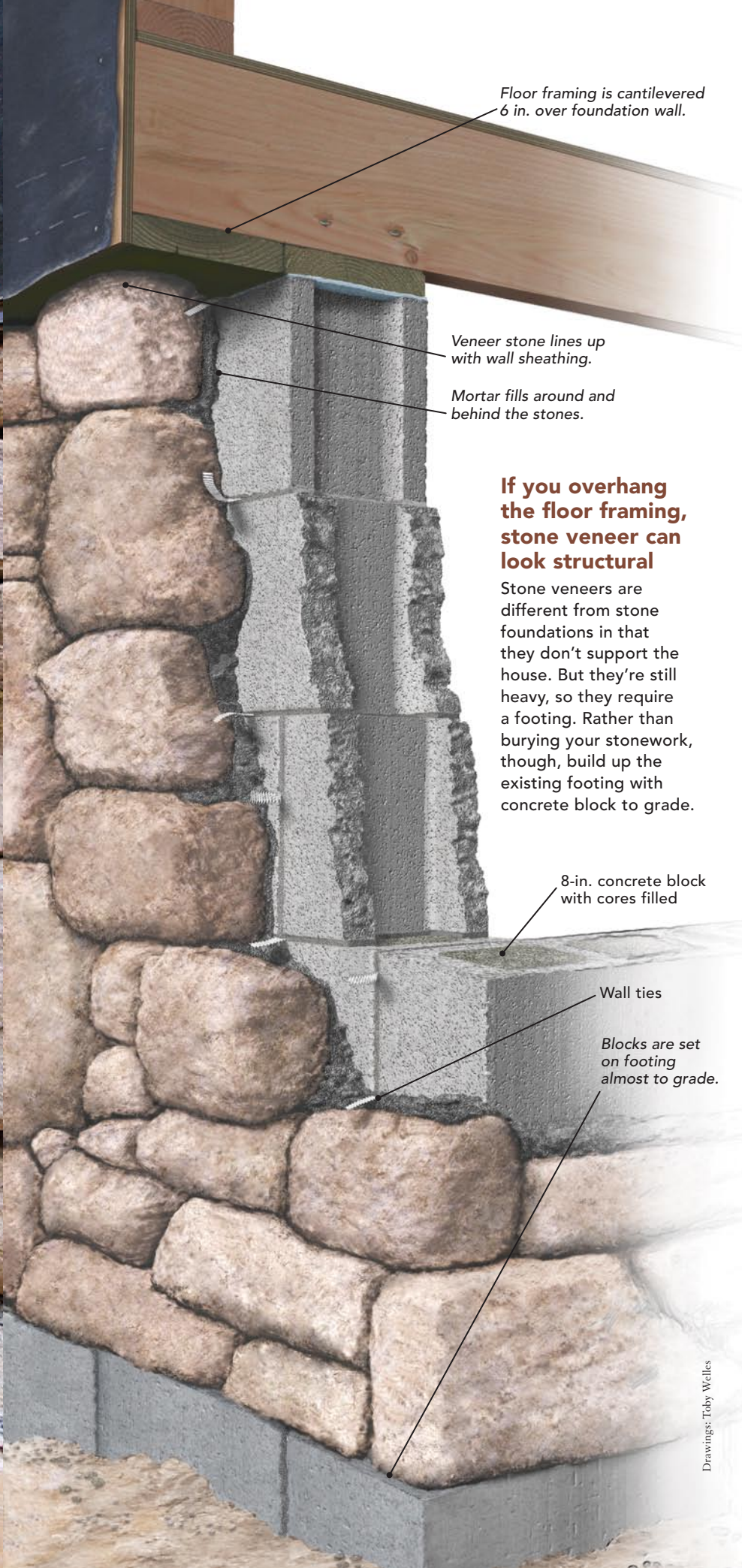
Random rubble has no visible continuous course or bed lines. The stones may fit together tightly but randomly, as featured in the photo.



Coursed rubble has a somewhat level bed line with every course. The stones are of varying sizes, but each large stone defines a level bed line.



Squared rubble has a level bed line every third or fourth course.



Floor framing is cantilevered 6 in. over foundation wall.

Veneer stone lines up with wall sheathing.

Mortar fills around and behind the stones.

If you overhang the floor framing, stone veneer can look structural

Stone veneers are different from stone foundations in that they don't support the house. But they're still heavy, so they require a footing. Rather than burying your stonework, though, build up the existing footing with concrete block to grade.

8-in. concrete block with cores filled

Wall ties

Blocks are set on footing almost to grade.

In the old days, foundations of rock or brick were the norm. They looked good and were fairly easy to build. Nowadays, concrete block or poured concrete is the foundation method of choice because they're much faster to build. This newfound speed, however, comes at an aesthetic cost: Concrete is ugly. But you can make a plain-looking block wall into a great-looking rock wall by veneering it with fieldstone. The tools and materials needed are few, and the payoff is huge.

The techniques for veneering are the same for block, poured concrete, or even a wood-frame wall, as are the requirements. Make sure you have sufficient support below the stone (a solid footing), and attach the veneer to the wall with wall ties. If the veneer is a retrofit, you may need to pour an additional footing, usually about 6 in. wide. And for wood-frame walls, you need to add a moisture barrier, such as peel-and-stick roofing membrane or #30 felt paper, to the wood. Wall ties are easy to install if you're laying up a new block wall. For concrete walls or existing block walls, the ties can be attached with a powder-actuated nail gun or with masonry screws.

Although veneering an entire house is best left to a professional, a short foundation veneer, such as the one featured here, is certainly bite-size enough for a non-mason to attempt.

Tight-fitting, yet unmanipulated

There are as many varieties of stonework as there are stonemasons, but most can be lumped into a few patterns (sidebar facing page). Much of my work is in a style called *dry stack*, which resembles a traditional no-mortar rock wall. When veneered in the dry-stack style, mortar is packed behind the stones as well as in a thin layer around the stones, but the mortar is not visible. While dry-stack veneer looks rough and tumble, it's rather precise. The stones fit together tightly, yet look unmanipulated. With jointed-style stonework, you don't have to be as particular because the visible mortar around the stones absorbs the bumps and irregularities.

Good-looking dry-stack veneer is all about tight joints that look natural. You can close gaps between stones by chipping away bumps, by using plugs, or by manipulating the shape of the stone with a hammer and a blunt chisel. Large gaps not only look unnatural but also can allow stones to shift, which creates a weak spot in the wall.

The most important tool is space

Being able to look at all the stones to choose the best size, shape, or face for each particular spot—especially the corners—is critical. Because stonework is a mixture of art and grunt labor, plenty of space allows you to take inventory and set aside key stones, such as corners and caps, so that you won't have to switch gears as often. Stopping the process of laying up stone to haul another load can be frustrating.

Start by dumping the stone into a large space near the work area, and shuttle small piles to the wall in a wheel-

Drawings: Toby Welles

MORTAR BINDS THE WALL

Lay stone on a bed of mortar and pack more behind. The unseen mortar below, beside, and behind the stone holds the wall together, but visible mortar in front will be scratched out.



Trim rock with a blunt hammer. Break bumps off the back and bottom to improve fit and to reduce the chances that the stone will move as rocks are piled on top of each other.



Use shims to set the stones more securely. The rock-fragment shims can be used in one of two ways: either as temporary shims until the mortar sets up or as permanent plugs to fill gaps between stones, giving a tighter appearance.



Pack mortar behind the stones. Mortar holds the stone in place, and wall ties embedded into the mortar tie the stone veneer to the block wall. Lay a mortar bed on top of each stone course for the next course.



4-ft. level

barrow. The other tools you'll need are a square shovel, a pointing trowel, a mason's trowel, a 4-ft. level, a brick hammer, a 4-lb. rock hammer, a blunt chisel, a plumb bob, a tape measure, and a garden sprayer. If the job is large, rent a cement mixer.

Before you start, look up and down

Although stone veneer doesn't support weight, a footing must support it. Because the footing is below final grade, stacking 6-in. or 8-in. concrete blocks to just below the final grade line and laying stones on the blocks makes sense. Blocks need to be secure to make a solid seat for the first course of stones, so set them in mortar. If dirt has covered the footing, dig it out until the footing is exposed.

Verify that the wall to which you are veneering is plumb. A plumb wall speeds the veneering process



Carpenter's dog

Cost of materials

The total area of this cabin's foundation was 400 sq. ft. I expected about 40% of the stone to be egg-shaped or too dense to break, so I ordered extra. I sell leftover to my landscaper at a discount.

16 tons stone: \$1,040

8 yards sand: \$240

35 bags cement: \$245

1,000 wall ties: \$68

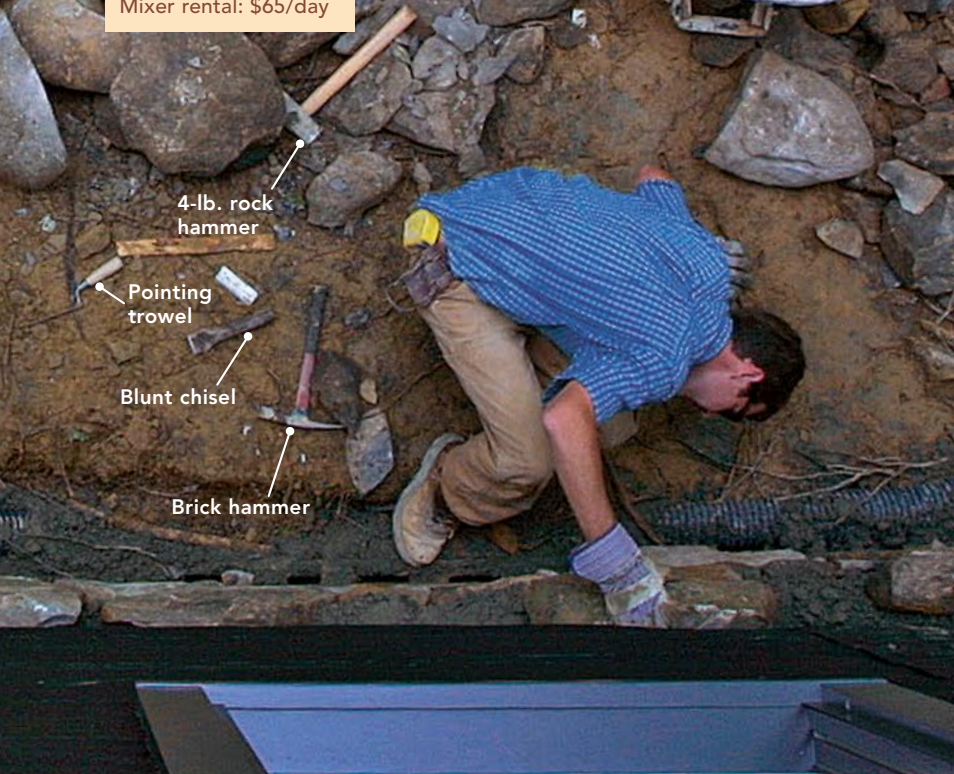
2 gallons sealer: \$86

Total: \$1,679

Mixer rental: \$65/day



Mason's trowel



4-lb. rock hammer

Pointing trowel

Blunt chisel

Brick hammer

because you can simply measure the same distance from the wall to the face of the stone as you lay them. If the wall is not plumb, then use a level to make sure the stone faces are plumb.

Mortar holds the stone together

I measure mortar in batches, or the amount that my mixer can mix, that my wheelbarrow can hold, and that I can maneuver around the site. A full batch fills my mixer. I mix either a full batch or a half-batch depending on the weather, my crew size, and proximity to quittin' time. Regardless of whether you use a mixer or a wheelbarrow, the recipe is the same: a 3-to-1 mixture of sand to portland cement. A full batch in my mixer is a half-bag of portland cement and 14 shovelfuls of sand. If you mix in a wheelbarrow, small batches make the mixing much easier. Whether mixer or wheelbarrow, mix the dry ingredients well before adding the water.

Dry-stack mortar can be mixed a bit wetter than jointed style; it should be slightly sticky. To test, take a handful, form it into a loose ball, and throw it into the air. If it stays in a ball, you're ready to go. If it crumbles and doesn't stay in a ball, slowly add water. Be conservative. There is probably more water in the mix than you realize, and if the mix becomes too soupy, you'll need to add more sand and cement. On hot days, mix the mortar a little wet because it tends to dry quickly, especially when sitting in the sun.

A fast-drying variation of this 3-to-1 recipe is to change the cement mix from 100% portland to half portland and half type S. Type-S cement is stickier and sets up faster. I use this recipe when I need to be able to build a wall higher than 4 ft. or 5 ft. in a single day. The stickier mortar adheres well to the stone, and it dries within a couple of hours.

The craft of stonework: cutting and shaping

The difference between a good-looking wall and a monster has a lot to do with your ability to manipulate a rock. The tighter the stones fit together, the neater the overall wall will look. Good masons know how and where to hit a stone, then where to place it.

To trim the edges of large stones, use a blunt chisel; keep the brick hammer sharp for trimming the edges of smaller stones. If you are unhappy with how the stone looks on the wall, take it down and trim it the way you want it, or simply find another stone.

For a rustic look, minimize surface chiseling; don't trim the textured faces you want exposed. On this job, the homeowners wanted an organic, native stone with a lot of texture, natural weathered color, rigid lines, and shadowed indentations, so I left the faces alone. The sides and tops of the rocks, however, aren't exposed, so I was fairly liberal in trimming around the edges.

Without surface chiseling, the face of the wall will vary somewhat. I set the face of each stone roughly 6 in. from the block wall. Some surface lumps or dimples will be

ALTERNATE THE CORNERSTONES

Because cornerstones have two faces exposed, pick them carefully. To make a corner strong, the stones should alternate directions. Build up the corners, then work sideways into the field.



Keep the rocks plumb. Regardless of how thick the rocks are, the faces should be in the same plane. If the foundation wall is plumb, you can measure to the face of the rocks consistently.



Rake out the semidry mortar. After a few hours, the mortar is dry enough to remove all that is visible. Use a pointing trowel and go deep. There should be no visible mortar in a dry-stack veneer wall.



The capstone takes a little planning. Select the capstones before you place the preceding course. Because the siding will hang down an inch or so, there's some wiggle room that can be filled with mortar.

closer or farther. The main body of the stone aligns, and the surface irregularities provide texture.

Because cornerstones have two exposed faces, it's a good idea to choose them first. And because the corners dictate the course lines, that's where I start. After setting a couple of alternating cornerstones, I lay a long base of horizontal stones before building up. I never build more than 4 ft. or 5 ft. high in one day without using fast-setting (type S) mortar. Portland-cement-based mortar won't cure enough to hold the weight. When placing each stone, orient it so that the thickest part is on the bottom, which keeps it from kicking out when weight is stacked on top. Make sure the stone doesn't shift before you fill in with cement. And don't trim rocks while they are resting on the wall; trimming can loosen surrounding stones before they are set.

Long stones make the wall look stronger

Stones often are packaged in similar shapes: long horizontal stones, nuggets, rounded fieldstones, etc. A pattern that I like is a mixture of 20% to 40% fieldstones and 60% to 80% horizontal stones, but the final pattern is somewhat dependent on how the stoneyard packages the stone. For this job, I bought the stone for the project in bulk to get a more random selection of rock shapes

because the homeowners didn't want the wall to have a formal pattern. Even for a random pattern, though, I follow a couple of rules.

Rule #1: Always bridge vertical joints with the stones in the next course. Running vertical joints are not pleasing to the eye and eventually can crack if the foundation settles or shifts.

Rule #2: Alternate corners to the left and right as you set each course. Even with a rustic pattern such as this one, structure demands that the quoins, or large cornerstones, alternate. Although I didn't pull strings from the wall ends for a straight corner, I did take care to choose cornerstones with faces at right angles to one another.

Cap the wall

Because this veneering project tucks under cantilevered framing, a perfect cap isn't as critical. However, if a veneer projects beyond the siding, a flat cap with the same type of stone gives the wall a finished look and allows it to shed water.

If you know the veneer will need a finished cap, make sure you leave enough room for it. Up to 2 in. more than the thickness of the capstones is enough space to angle the stone away from the house to shed water. Tap capstones with a rubber mallet to set them in position. Make sure the capstones are level. One easy way is to snap a chalkline across the wall before you set the last course of stone.

Finish with a brush and a sealer

As you lay the stones, packing mortar behind them to set each one and to hold the wall ties, some mortar will make its way to the surface cracks. After a couple of hours of curing, scratch away this excess with a small pointing trowel. The mortar should crumble and fall out. Scratching too soon may smear cement on the edges of the stones or compromise the integral structure of the hidden mortar bed. With dry-stack veneering, you don't need to finish the joints, so after scratching out excess mortar, brush the joints with a small broom.

After a few days, the mortar should be cured fully and ready for a waterproofing sealer. I like Sure Klean Weather Seal Siloxane PD (www.prosoco.com; 800-255-4255). Waterproofing keeps moisture out of the basement and also prevents efflorescence. Apply sealant to the stone with a garden sprayer. The most important place to seal is the top of the wall (the cap) because this spot gets the most water. □

Cody Macfie, a second-generation stonemason and freelance writer, owns Steep Creek Stoneworks in Brevard, N.C. Photos by Daniel S. Morrison.

ONLINE EXTRA

To see a video tip of Cody Macfie breaking and fitting stone, go to www.finehomebuilding.com.