

Working with Manufactured Stone



Fake rocks can look pretty good if you know what you're doing

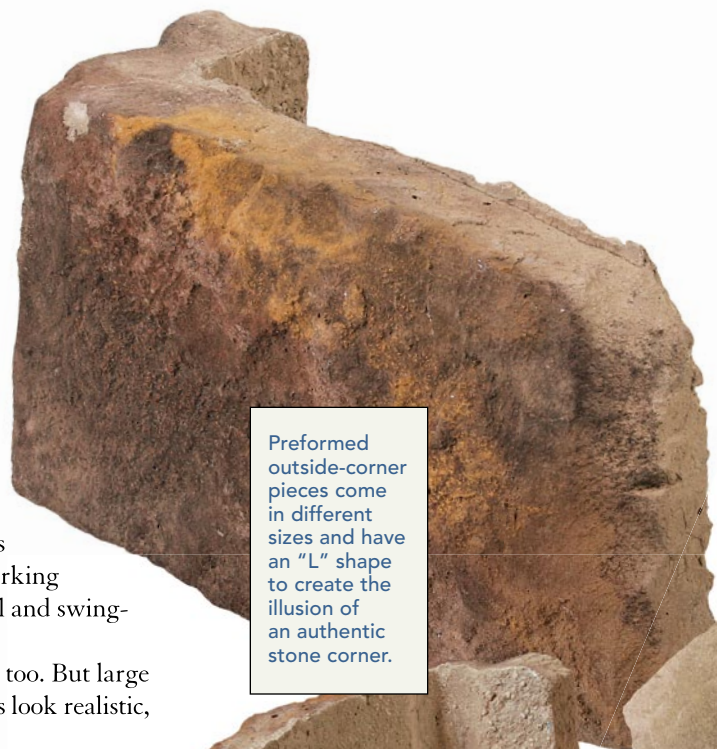
BY BRENDAN MOSTECKI

About nine years ago, I stopped to visit a friend at a job site after a 10-hour day of lifting fieldstone and pounding on a chisel. I was exhausted, and my fingers were curling into what we masons refer to as “monkey hands” from moving stone all day.

My buddy had been working with manufactured stone all day, and he looked like he had just come off his first morning break. I asked him a flurry of questions about manufactured stone and picked up a few pieces for a closer inspection. I remember noticing that they felt almost weightless compared to what I had been lifting. I took a swing at the man-made stone with my hammer and watched it break along the desired line as if it had a memory. I was hooked.

Since that first encounter, I've incorporated manufactured stone into more and more projects. I've also noticed the growing popularity of this material just about everywhere I go. Don't get me wrong; I still love working with natural stone. But cold winter mornings gripping an ice-cold chisel and swinging a 3-lb. sledge are not my idea of a good time.

I know lots of people are skeptical about man-made stone, and I was, too. But large manufacturers have really improved their processes to make these stones look realistic,

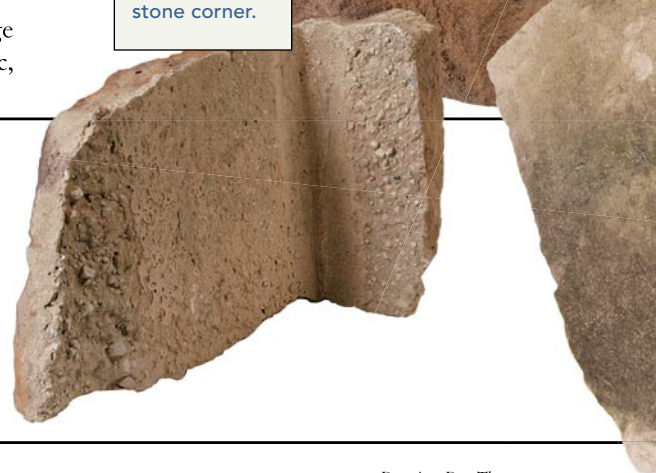


Preformed outside-corner pieces come in different sizes and have an “L” shape to create the illusion of an authentic stone corner.



It's really concrete

Manufactured stone is made by pouring lightweight concrete into molds that take their shape from real pieces of rock. To ensure that an installation looks authentic, large manufacturers use more than 1000 different molds and varying shades of color. Although the color and the texture are lifelike, they are only as



PREPARE THE SUBSTRATE

If you are installing the stone over an exterior wood substrate, as shown in the project featured here, start by applying a double layer of a weather-resistant barrier. Builder's felt is the standard choice, and I strongly recommend #30 felt over the lighter weight #15 felt. The latter rips too easily. Peel-and-stick membrane should be used around all windows and doors, and also on 90° inside corners to ensure a proper seal against the weather. It's also necessary to install wire lath over the felt paper, or the mortar won't adhere properly to the wall.



Tack with staples, anchor with screws.

I've seen some installers secure wire lath with roofing nails, but they hold tightly only if you hit a stud every time. I like to use a hammer tacker to hold the lath in place, then fasten it securely with 1-in. galvanized screws, spaced about 10 in. to 12 in. apart. When driving screws, aim for the corner of the diamond-shaped holes in the lath, then pull the sheet in different directions as you fasten it so that the lath is nice and tight between the screws.

Galvanized-wire lath with 2-in. overlap at all seams, fastened with 1-in. coarse-thread galvanized screws, 10 in. to 12 in. on center

Keep the lath tight to the foundation.

If the stone is going to extend down to the foundation, make sure to bend the lath tight to the edge of the plywood and concrete, and fasten it to the foundation with 1-in. powder-actuated concrete nails spaced every 12 in. If you don't extend the lath, the mortar will slide off the weather barrier.

Double layer of #30 felt paper with 4-in. overlap at all seams

4-in.-wide strip of peel-and-stick membrane applied over transition between sheathing and foundation

The front face is molded to look like real stone. The back has a coarse texture and is grooved for a strong mortar bond.

deep as the surface of the stone. Any cuts need to be concealed along the mortar lines to maintain a realistic appearance. These products can be used for interior and exterior applications, and are lighter and less expensive than real stone. Packaged in small or pallet-size boxes, manufactured stone is sold nationwide for \$6 to \$10 per sq. ft. The stone shown in this project is Bucks County Dressed Fieldstone, made by Owens Corning.

JOINT CONTROL

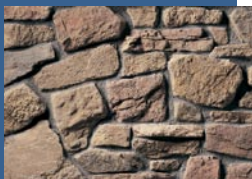
The size and style of mortar joint you choose depends on the stone you are installing, its location, and the look you are trying to achieve. Regardless of the size or style, joints are always brushed before the mortar fully cures.

Size



No joint: Also referred to as tight joint, this dry-stack look requires a precise fit and places the focus on the stones.

Small: Best for interior applications or small areas where weather isn't a concern; 1/4-in. joints look great when the stone is viewed from above.



Medium: A 1/2-in. joint is probably the most common. This size is suitable for both interior and exterior applications.

Large: Showing a 3/4-in. mortar joint is typically done on rustic applications, and on house styles such as farmhouse and colonial.



Style



Deeply raked: Whether square or concave, heavily raked joints leave the edges of the stone exposed. This is typically a joint style for indoors, where weather conditions are not a concern.

Standard raked: Again, this style can be square or concave, but the mortar comes closer to the front edges of the stone and prevents moisture from working its way behind the rocks.



Flush: These joints are filled completely with mortar and scraped flat to the face of the stone for a smoother look.

Overgrout: This style is achieved by using the back side of a trowel to force mortar over the edges of the stone. The joints are then scraped flush. The mortar can also be smeared over the face of the stone for an old-world, rustic look.



and the increasing number of styles available means that you can get just about any look you're after. Sure, this stone might be man-made, but with the right installation techniques, it can look just as good as the real thing.

Prep work depends on the substrate

Natural-stone veneer is heavy, so it requires wall ties and a ledger for proper support. Manufactured stone, on the other hand, installs like tile. It can be applied over plywood, OSB (oriented strand board), rigid-foam insulation, block walls, concrete, or even drywall.

When you're installing man-made stone over a smooth, nonmasonry surface, such as the plywood sheathing shown on this project, the common denominator is wire lath. When fastened securely to the sheathing, this strong metal grid enables the mortar to form a mechanical bond with the wall. Because this project was an exterior installation, I also paid careful attention to weatherproofing details, as shown in the photos and drawings on p. 49.

An organized site ensures a smooth installation

At the start of each project, I walk around the site with the homeowner or general contractor and figure out where to set up all my equipment. It's important to think ahead about access points for bags of mortar and sand, as well as the mixing station. Whether you have a gas-powered mixer or a guy with a hoe, you need to be able to run wheelbarrows to and from the area easily, so figure out where to set up the mixing station before anything else happens. You also need access to water and electricity, the closer to where you will be working, the better.

Before you mix the first batch of mortar, make sure you have the appropriate tools on hand. The basic stone-veneer tool kit includes a brick hammer, a tuck pointer (I find 3/8 in. to be the most-versatile size), a stiff-bristle brush, an angle grinder, and one or more diamond blades, depending on the amount of stone to be installed.

It takes time to develop a mason's memory for stone

With the mortar station set up and the tools close at hand, I like to open all the boxes of manufactured stone and choose an assortment of sizes and shapes from each box to ensure that the look remains natural.

When choosing the right stone for the right spot on the wall, it all comes down to retaining certain stone shapes in your memory. A good mason can sort through a pile of stone, organizing pieces into different groups and remembering 25 to 50 different stones. This way, when he needs to fill a specific spot, he knows he has a piece that will fit. This memory for stones comes over time, though. Beginners will find it helpful to lay out the pieces in front of the work area so that they have a variety of shapes, sizes, and colors to choose from.

It's important not to fit just one stone at a time. The installation will look more natural if you are thinking two or three stones ahead and paying attention so that you don't create

PUT UP CORNERS FIRST

Realistic-looking corners can make or break a stone job because they set the stage for the rest of the project and are often the most-visible aspect of the installation. The 90° corner pieces need to be installed carefully. In the photos shown here, I'm installing a short section of stone wainscot, so I was able to use a level to keep the corner plumb. If you're installing a corner any more than 3 ft. to 4 ft. tall, you should swap a level for a vertical stringline to establish the plane that the stone needs to follow.

More so than the flat pieces, preformed corners seem to be thicker in some spots than others. Keep the corner of the stone lined up vertically, but also make sure to keep it in plane with the field of stones that comes after it. Corner pieces also have a long leg and a short leg. As you work your way up the wall, stagger the legs so that they look natural. I install only two or three corner pieces before letting them set up a bit. Building the corners too high before the mortar has set up can cause the corners to fall off.



Pack out the corner. If you are starting the installation at grade level, pack out the lower section of the foundation wall with mortar until it's in plane with the rest of the surface to be veneered.



Coat the lath and the stone. After spreading a skim coat of mortar over the wire lath, back-butter each corner stone with mortar, and position it by applying firm pressure toward the wall. If you aren't planning to install stone adjacent to the corners right away, remove the excess mortar before it hardens.



Get the mortar just right

I mix the ingredients until the mortar is smooth and fluffy. Mortar that is too wet will be weak and messy. Mortar that is too dry will be crumbly and won't provide a strong bond. If the mortar comes out too wet, put it in a dry wheelbarrow, then into dry buckets before using it. This step allows some of the excess water to evaporate.

Push in and down for a nice fit. Place each stone on the wall a bit higher than where its final position will be, then apply pressure in toward the wall and down toward the stones below. Use the handle of your trowel to tap the piece into place. Once the position of the stone looks good, remove excess mortar, and smooth the joints. Then pack the mortar on the exposed sides of the stone to ensure a good bond.

long, uninterrupted grout lines or odd angles that will be hard to work around later.

Tackle the transitions first

Whether you're working with manufactured stone or the real thing, the most-challenging parts of a stone-veneer job are the outside corners, the stonework around windows and doors, and the other transition areas. The good news is that stone manufacturers have resolved just about all these issues by casting special parts such as sills and headers.

These transition areas are the first parts of a job to complete. Along an exterior wall, I typically finish the first 2 ft. to 3 ft. of an outside corner, then work my way toward the center of the wall. The same goes for a doorway, a window, or an inside corner. Where man-made stone meets another material—such as wood, stucco, or a window frame—the typical detail calls for caulk rather than mortar to bridge the gap.

Make the mortar smooth and fluffy

When it comes to mixing mortar, it's all about consistency. Adding a cupful of this and a shovelful of that can lead to color problems. I mix together one 70-lb. bag of type-N or type-S mortar mix, three 5-gal. buckets of mason's sand, and approximately 3½ gal. to 4 gal. of water in each batch. If you want to color the mortar, now is the time to add pigment.

To ensure that the mud doesn't dry too quickly, I often slake it. In other words, after mixing, I let the mortar stand for roughly five minutes so that the sand in the mixture can absorb some of the water. Then I add a bit more water before use.

Leave the stone alone

Once the stone is in place on the wall, I grab any oversize globs of wet mortar that could fall off and stain the surrounding stones and use a tuck pointer to pack the joints tightly. Then I leave it alone. If you play with the mortar too much before it has set up, it smears and stains the stones. If you do smear mortar on any stones, you need to wipe them immediately with a damp sponge and some clean water.

After the mortar has had a little time to set up properly (sidebar, facing page), I use a tuck pointer to scrape off all the loose mortar. When I like the look of the joints, I brush over them lightly with a stiff-bristle brush to create a uniform texture. If the installation work spans more than a single day, I leave the mortar out of the joints on the last stones I set before quitting time, then fill the gaps between stones using a grout bag at the start of the following day. □

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MAKE THE CUTS LOOK NATURAL

If I'm installing manufactured stone with visible mortar joints (see "Joint control," p. 50), I like to dry-fit each piece on the wall first. If a piece does not rest neatly against adjoining stones, it needs to be manipulated with a brick hammer, an angle grinder, or both. These tools have a learning curve, so practice on some scraps.



Small corners are best handled with a brick hammer. After marking the area to be removed, use the head of a square-faced brick hammer to break off the bulky back side of the rock at a 45° angle; then use the chisel side of the hammer to pare the stone to the line. Although this technique doesn't always yield a precise result, the brick hammer is an effective tool, and the resulting broken edges tend to look natural. The chisel side of a brick hammer can dull after lots of use, so I occasionally like to sharpen the point with my angle-grinder blade.



Steer clear of segmented blades. Selecting the right grinder blade is important, and they are not all the same. Segmented blades (2) aren't great for cutting man-made stone because they tend to bounce around and flake the face of the stone. A turbo blade (1) is more precise and has less kickback. Prices start around \$15.



Feather the edges. Angle grinders leave a nice, straight cut, but when your goal is a natural look, a straight cut looks out of place. Finish up by feathering the blade of the grinder in and out until the edges of the fresh cut look wavy and more natural.



YOU'RE NOT DONE UNTIL THE MORTAR IS CURED

Mortar joints should be cleaned up throughout the day so that they look neat and consistent. If you tool the joints while the mortar is still wet, though, it will smear and dry too shiny and smooth. If you don't tool them often enough on a hot day, the mortar will set up as is. The amount of time between application and curing, and the frequency of scraping and brushing, depend on sunlight, temperature, the consistency of the mortar, and the substrate you are using.

If it's between 40°F and 60°F, wait about four hours before scraping and brushing. If it's between 60°F and 70°F, scrape and brush three times a day; between 70°F and 80°F, four times a day; anything 90°F and above, check every hour, especially if the work is in full sunlight.

Remember, if the last stones you set aren't ready to be tooled by the end of the day, scrape all the mortar from the joints, and fill them in the following day using a grout bag.



Tuck-point for a consistent joint. Once the joints have set up a bit, use a $\frac{3}{8}$ -in. tuck pointer to scrape off any bits of mortar, and rake the joints to a consistent finish. If you need to add mortar to the joint, do so now, using the tuck pointer to pack it in place.

Finish with a stiff-bristle brush. After raking the joints, brush both the surface of the stones and the mortar with a stiff-bristle brush. Never use a wet brush or a wire brush on man-made stone.



SOURCES

We don't have room to show the range of available manufactured-stone styles, but a growing market is making it easier than ever to find stone to suit any taste, for any application, in just about any part of the country. Here are a couple to wet your whistle.

Cultured Stone



Summer Standard Stream Stone

Eldorado Stone



La Jolla Beach Rock

Owens Corning: www.culturedstone.com
Coronado Stone: www.coronado.com
Eldorado Stone: www.eldoradostone.com
Dufferin Stone: www.dufferinstone.com
River Valley Stone: www.rvsproducts.com
TriLite Stone: www.trilitestone.com