

Creating a Curved Concrete Walkway



Form, pour, and stamp a concrete sidewalk for an inviting path to any front door

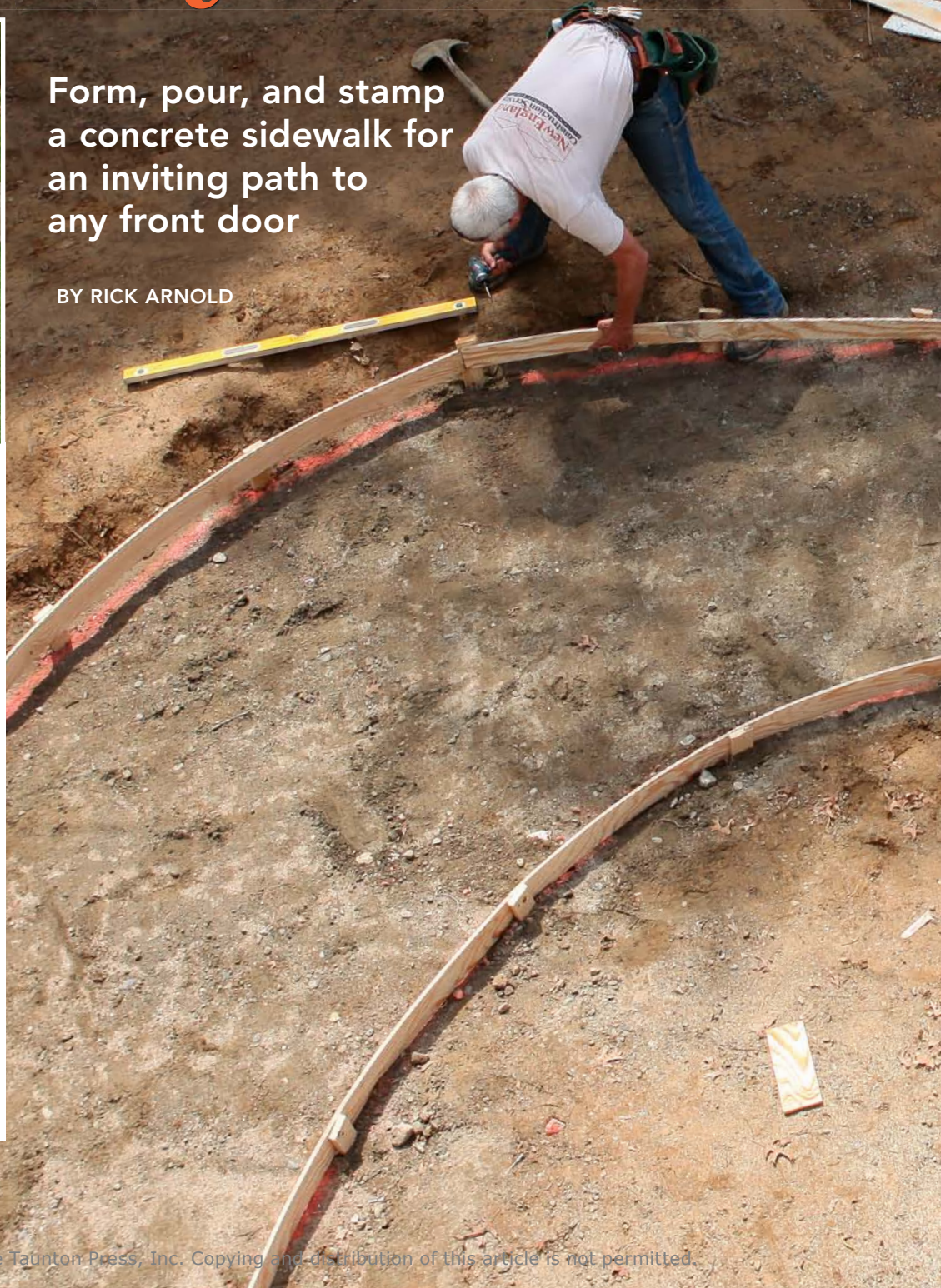
BY RICK ARNOLD

While the work might seem intimidating, installing a curved concrete sidewalk is a surprisingly easy project that most anyone with a few friends and a day of good weather can handle.

The first step is preparing the base. In general, the base needs to be free of organic material, well compacted, and free-draining. For this walk, I excavated the topsoil, then placed and tamped down a layer of gravel and dirt so that the top of the base material was 4 in. below the final elevation of the walkway.

I also pitched the section near the house about $\frac{1}{8}$ in. per ft. to direct water away from the house. Although the minimum width of a sidewalk is 3 ft., I made this walk 4 ft., which is more comfortable to use. Because this

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LAY OUT AND FORM

A curving walkway starts with a stable subgrade of well-compacted, free-draining material. The design is planned either with a garden hose or by eye and is transferred to the soil with marking paint. Curving forms are made from 4-in. strips of $\frac{3}{8}$ -in. plywood screwed to stakes so that the tops of the plywood and the stakes are flush. Straight forms made from 2x stock are placed similarly. Inside the forms, a grid of reinforcement helps to prevent cracks and control shrinkage.

Drive the stakes. Space the stakes every 1 ft. in the curved sections and every 2 ft. in straight sections. Then, using a rotary laser equipped with a receiver (a water or spirit level works, too), mark the stakes no less than 4 in. above finished grade. Once they're marked, cut them off with a circular or reciprocating saw so that the screed board can pass easily.



Add reinforcement. Place sections of reinforcing mesh so that the panels overlap by 6 in., and cut away the excess so that the wire is about 2 in. away from the sides of the form. Then put in rows of $\frac{3}{8}$ -in. rebar spaced about 1 ft. apart. Overlap the bars by 1 ft., and tie them together at both ends of the overlap.



Wet the ground. Concrete needs adequate water to cure properly. Prevent water from being drawn out of the concrete by thoroughly wetting the ground just before you start pouring.

POUR AND FINISH

The main worker screeds the concrete level with the forms while helpers rake out the concrete and raise the reinforcement so that it's in the center of the slab. Finishing starts with a magnesium bull float to bring up bleed water and to force the aggregate into the mix. After the bleed water has evaporated, start troweling, first with a magnesium float, then a steel finishing trowel.



Bull float first. Take two or three passes with a magnesium bull float to level the surface and to push the aggregate into the mix. Raising the leading edge of the float will prevent it from digging into the surface. Additional handle sections provide extra reach on large pours.



Bring up the cream. A smaller float made of magnesium, aluminum, or wood brings cement particles and fine aggregate to the surface. The resulting cream fills small voids and smooths the surface.



Edge the corners. After mag-floating, use an edging tool on the slab corners. Rounded edges resist weather better than sharp corners.

Order concrete like a pro

Place your order two or three days ahead of time for a better chance of getting the concrete when you want it. Be prepared to give the dispatcher directions to the job and answers to the questions below. When you're done placing the order, ask the dispatcher to read back the specs and to give the total price. The total should include the price per yard as well as any extras for fuel, Saturday deliveries, or small loads. Also ask about the standard unload time. Some suppliers charge extra when their trucks are on site longer than normal.

What strength and slump?

Residential concrete is generally rated from 2000 psi to 3000 psi. Used for exterior flat work, a 2500-psi air-entrained mix is common in sidewalks and patios, but check with your building inspector for local requirements. Measured on a scale from 1 in. to 10 in., slump describes the stiffness of wet concrete. The lower the number, the stiffer the mix. Walks and patios should be placed at a 5-in. slump, while steps should be at a 3-in. slump. Water weakens the mix, so place concrete as stiff as possible.

How many cubic yards?

Dispatchers often help you to figure out how much concrete you need, but this should be a way to double-check a figure you've already come up with. For sidewalks, multiply length times width (in feet) times thickness (4 in. = 0.33 ft.), and divide by 27. For curving walks, use a 50-ft. or 100-ft. measure (they're more flexible) to follow one side of the walk's curving formwork. Double-check your math, and add 10% to compensate for spillage and an uneven grade.

How much time between trucks?

If your order requires multiple loads (a full-size mixer holds between 9 yards and 11 yards), consider how long you need to empty each truck. Because the concrete will start to cure, you don't want a truck waiting, and you'll also have less time to pour and finish. If you're using a wheelbarrow to move wet concrete, plan to have three or more going at once.

Is this a firm order?

When the weather is iffy, some suppliers take a will-call order, meaning that the concrete will be sent only if you call ahead of time (usually two hours) to confirm. This contrasts with a firm order, which means that your concrete will be delivered at the agreed-upon time unless you cancel. If you need to postpone, call the dispatcher right away.



Pull up the reinforcement. You can place rebar and reinforcing mesh on small metal stands called chairs ahead of time, or you can raise them as you spread the wet concrete.



Finish with a steel trowel. The final finishing tool is a large steel trowel that forces the cream back down into the surface for a smooth, durable finish. Trowels with curved corners are less likely to leave tracks.

walk needed to turn 90° toward the house, I included a curve for extra interest.

Plan the path

If you're working around established landscaping, you can stretch out a garden hose or two to visualize the path. Because this simple design was built on bare soil, I outlined one side of the path with a can of marking paint and then used a 4-ft. stick to space and mark the other side evenly. With conventional 3/8-in. plywood forms, a 2-ft. radius is the tightest turn you can make, but tighter turns are possible with plastic forms, which are available at concrete-supply houses.

Reinforcement is a must

All concrete needs reinforcement to prevent cracks. For this sidewalk, I used 6-in. wire mesh and #3 (3/8-in.-thick) rebar. To bend the rebar to fit the curves, have a helper lift up the end while you walk down its length. When placing it, be sure to overlap the bars by at least 12 in., and secure the joint with tie wire (or plastic zip ties) in two places. The steel should be near the middle of the concrete depth (about 2 in. from the bottom). You can either place the reinforcement on supports (called chairs), or you can pull it up as the concrete is being placed.

Get extra help for the pour

When it's time to place the concrete, it helps to have at least three people on hand. The most important job is getting the concrete flat with a screed board. A screed board is a 2x4 long enough to span the formboards on both sides of the walkway. It scrapes away excess concrete and highlights low spots so that the forms are filled to the perfect level. You also need one or two people with rakes to move the concrete around. Their job is to place just the right amount of concrete in front of the screed and to lift the wire and rebar into the middle of the concrete as the pour progresses.

Concrete has a limited working time. When temperatures are in the high 70s or warmer, you may have only 30 minutes before the concrete is too hard to finish and stamp, but in cooler temps, especially below 65°F or so, you may have to wait an extra hour or two before you can start finishing. Also keep in mind that projects in direct sun will set up faster than those in shady areas.

As you stamp the concrete, it will get harder. But be careful not to pound too

STAMP THE SURFACE

After finishing with a steel trowel, cover the surface with a powdered release agent (www.advancedsurfaces.com), which allows the stamp mats to be removed without damaging the textured surface. Arrange the mats in running-bond pattern, and start stamping. At first, stamping is easy, but it gets more difficult as the concrete firms up. Stamp mats are expensive, costing between \$100 to \$200 each, but they can be rented at many concrete-supply yards.



Apply release agent. Before stamping, cover the entire surface with a release agent. Shaking it on with a broom is fast and easy, but be careful not to hit the wet concrete with the bristles.

heavily, which will create small cracks in the surface. Once you've finished stamping, which should take 30 minutes or less, check the edges and transitions for any places that need to be touched up.

Apply a sealer

After about 24 hours, wash off the release agent (photo above) with a garden hose. Once the surface is dry, apply a good sealer with a thick-nap paint roller or a garden

sprayer. I like to use Renew-Crete Sealer (www.renewcrete.com) because it usually covers in a single application. A walk like this costs about \$8 per sq. ft. in my area, which is a bargain compared to the \$12 per sq. ft. a walk with real cobbles would cost. □

Contributing editor Rick Arnold is the author of *Working With Concrete* (The Taunton Press, 2003). Photos by John Ross.



Transition at curves. A stripe with a simple contrasting pattern provides a convenient place to hide control joints and to eliminate odd transitions where the walk changes direction.

FineHomebuilding.com members can learn more about the stamping process in an online video series featuring this project.



Arrange the stamps. Place the first row of stamp mats parallel to the form's end board, and stagger subsequent rows to create a running-bond look. Tamp the form straight down. Be careful not to overstamp, or you may leave small cracks in the surface. You may have to vary the order you stamp, depending on the pattern.

SIX TIPS FOR KEEPING UP WITH CONCRETE

1. Plan for the weather

Hot, dry, and windy conditions mean the slab will set up more quickly. In cool, damp conditions, it may take hours for the slab to firm up. In either case, start early, and have extra help to finish the job.

2. Use a minimum of water

While wet concrete is easier to work, it also has less strength and shrinks more, leading to cracks. Get extra help instead of relying on soupy concrete to make the job easier.

3. Don't leave the slab

It may be tempting to run for lunch while the bleed water evaporates, but don't do it. You could return to a slab that's too hard to finish. Have a helper get lunch while you keep an eye on things.

4. A slow cure is best

Few things weaken concrete as much as having it set too quickly. Cure finished concrete slowly by spraying on a curing compound or by covering the surface with wet burlap or straw. Don't use plastic because it can discolor the surface.

5. Start finishing right away

You can start finishing fresh concrete when you step on the wet surface and your boot leaves a 1/4-in.-deep depression. Wait longer, and you'll have less time to do the job.

6. Clean your tools

Wash your tools as soon as you're done using them. Dirty tools leave a rough finish, and cleaning off crusty residue is a pain.