

On Site With Form-A-Drain

A photograph showing two construction workers at a construction site. They are installing a modular plastic footing form called Form-A-Drain. The workers are wearing work clothes and safety gear. The form is being placed on a bed of gravel. The background shows a dirt and rock excavation.

This modular plastic footing form doubles as a perimeter drain

by John Pagurko

As a GC and foundation subcontractor since 1984, I've seen countless new products designed either to improve job-site efficiency or to produce a better home — few do both. A couple of years ago, though, we found one that does: Form-A-Drain from CertainTeed (800/233-8990, www.certainteed.com).

Labor Savings

Form-A-Drain works much like the dimensional lumber and metal footing forms I've used for years. But unlike traditional lumber or metal forms, which must be stripped once the footings are poured, these hollow plastic forms are left in place to become the home's foundation drain.

Using this system saves us a half-day's work on every foundation — two to three hours that otherwise would be

Figure 1. A worker secures a preformed corner with drywall screws (right). Preformed 45-degree bends are also available (below). Vertical 90s and tees are handy for stepped footings (bottom).



spent stripping, cleaning, and moving footing forms, and a couple of hours for installing footing drains later. But more important, Form-A-Drain is in most cases a better foundation-drainage system than perforated pipe. Whereas schedule-20 or corrugated pipe can be easily sloped the wrong way or improperly positioned, Form-A-Drain is always in the right spot for effective drainage, and it provides drainage from both sides of the footing. (For this reason, Form-A-Drain works well as part of a radon-control strategy, if needed.)

At around a half-pound per lineal foot, Form-A-Drain forms are far lighter than their wood and metal counterparts. This makes them easier to maneuver around the job site, which is helpful on some of the difficult sites where we build in coastal Maine.

Components

The 12-foot lengths of Form-A-Drain are joined with slip couplings and drywall screws. The couplings are sold precut and in 12-foot lengths. We buy the 12-foot lengths and cut the material ourselves, because it takes only a little time and saves us from having to carry another box of small pieces. Inside/outside 90-degree corners and 45-degree transitions are available also, as well as L-shaped and T-shaped fittings for stepped foundations (see Figure 1). You also can use the coupling stock to make your own corners if you run out or need a custom angle.



Figure 2. The author determines the footing location by measuring from a string representing the outside of the foundation wall (left). At footing corners, short rebar pins driven into the ground hold corner forms in place. A knockout hole in the bottom of the corner (above) receives the pin.

Staking the Corners

Like many sites around here, the lot shown in the photos has ledge just below the surface. After blasting and excavating, we typically bring in some crushed stone to level the bottom of the hole and create a capillary break under the foundation.

The first step in setting the forms is to stake the foundation corners and run strings between them. We measure off the string, 4 inches for the outside form and 12 for the inside form. Starting at one of the footing's outside corners (usually the one with the two longest walls), we drive a couple of rebar pins into the ground, one at the inside and one at the outside of the corner.

We then make up two corner assemblies, each consisting of a length of Form-A-Drain attached to a corner piece. We make up one for the inside and one for the outside, making sure the drainage perforations are facing out. The corner pieces have knockout holes that



Figure 3. Lengths of Form-A-Drain are joined with slip couplings and drywall screws.





Figure 4. A circular saw equipped with a cutoff blade produces a fast, clean cut (left). Lengths of Form-A-Drain are divided into two chambers (above); this adds rigidity, and is useful for radon control applications in which the upper chamber is connected to a vent system powered by an in-line fan.



Figure 5. Once one side of the form is positioned, spacer straps automatically locate the opposite side (above). Pieces of strapping secured with drywall screws (right) are a good solution when you don't have the right size, or for nonstandard footing widths.

allow us to slip the assemblies over the pins (Figure 2, previous page). This holds the corners in place while we're getting started.

Setting the Forms

Next, we connect the 12-foot lengths, using slip couplings and drywall screws (Figure 3, previous page). You can cut the plastic with a handsaw or recip saw, but we generally use a circular saw because it produces the fastest, cleanest cut. Special blades aren't required — we just use inexpensive abrasive blades from the lumberyard (Figure 4).

We work our way around the foundation, measuring off the string and setting both the inside and outside

forms as we go. Wire spacer straps provided by the manufacturer help maintain the correct spacing between the forms, and a few stakes keep everything in position (Figure 5). We don't bother leveling the formwork until all the forms are set; then we do it all at once with a rotary laser. We hold the forms about an inch off the stone





Figure 6. A worker makes a corner from coupling stock by carefully taking two 45-degree passes with a circular saw to remove a 90-degree wedge from one side.

in case we need to tap down a high spot when we're leveling everything.

Custom corners. The foundation shown here had several jogs, which used up our supply of corners. Fortunately, they're easy enough to make from coupling stock (Figure 6). Also, there was a place where the footing widened from 16 to 24 inches. The offset was too short to fit two normal corners, so we made up a customized shortened one (Figure 7, next page). We saved the three-sided bump-out for last, because it's easier to form odd angles when the adjoining sections are already in place (Figure 8, next page).

Once we've set all the forms and everything is screwed together, we install a pair of crossover pipes to connect the inside and outside forms. Otherwise, water collected by the inside form would have no way to drain. We also install an outlet adapter, which connects the Form-A-Drain to a daylight drain (Figure 9, page 7).

Leveling the Forms

Once the forms are installed, we bring out the rotary laser and level them, and then secure them to the stakes. One difference between Form-A-Drain and conventional form materials is that you have to use a lot more form stakes. Otherwise, the plastic material will flex under pressure from the concrete. The manufacturer offers



Figure 7. Where this footing transitioned from 16 to 24 inches (left), there wasn't enough room for two corners. A shortened corner patched with duct tape solved the problem (above).



Figure 8. The crew saved this 45-degree bump-out for last. The angles are fairly easy to form because the slip-on fittings provide 2 inches of leeway.

metal stakes in 18- and 30-inch lengths and suggests using one every 3 to 5 feet. You also can use wood stakes or regular form pins, but the CertainTeed stakes are inexpensive so it's no big deal to leave them in the ground. We secure the forms to the stakes with screws.

The manufacturer recommends removing the spacer straps for reuse once the forms are secured to the stakes, but they, too, cost very little, so we leave them in place for additional bracing.

Prepping the Slab

Often we'll leave a mini excavator and a pile of gravel inside the foundation footprint and spread a layer of gravel before we pour the footings. The gravel provides a free-draining base for the basement slab and gives additional support to the inside form. The next day, after the footings have firmed up, we drive out the excavator and start setting foundation forms.

If tying up the excavator for two days isn't feasible, we'll pile some gravel in front of the forms with a shovel



Figure 9. Using a hole saw (top left), a worker drills a 3 1/2-inch hole in the side of the form for the crossover pipe (top right), which allows the inner form to drain into the outer form. The pipe adapter attached to the outside form (above) will connect to the daylight drain.

to help hold them in place, then bring in the excavator to spread the rest of the stone while we're setting the foundation forms.

When it comes time to backfill the foundation, we bury the Form-A-Drain forms beneath about 12 inches of washed stone with a layer of filter fabric on top (Figure 10, next page). CertainTeed makes a version of Form-A-Drain with filter fabric already applied, but we haven't used it.

Limitations

Form-A-Drain works fine for most jobs, but forming up and down on exposed ledge can be more challenging with this product than with wood. Depending on the type and amount of ledge, it also may be tough to assure an effective drainage system. Small sections are okay, but for larger areas it's frequently easier to use conventional forms and footing drains.

Form-A-Drain is offered in only three depths — 4, 6, and 8 inches. If you need a thicker footing, you have two options. You could dig a shallow trench and set the

Form-A-Drain Installation

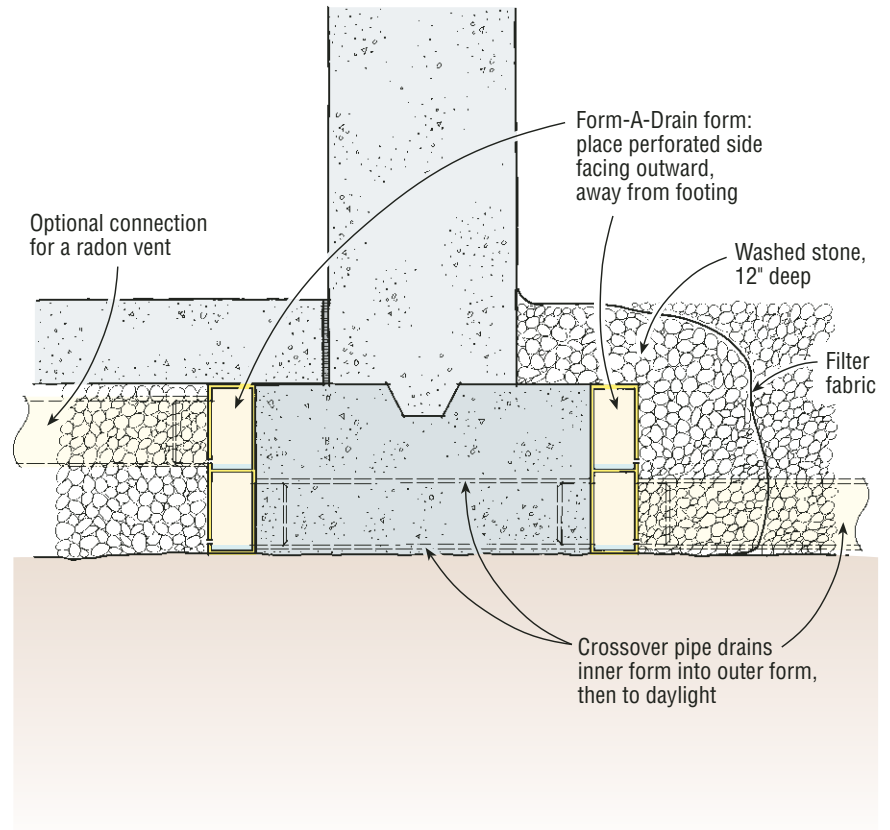


Figure 10. Like any perimeter drain, Form-A-Drain must be protected with clean stone and filter fabric. Note the optional connection for a radon vent.



Figure 11. The foundation shown in this article measures 44 by 30 feet, and has 11 corners and a three-sided bump-out. Form-A-Drain installation took a three-man crew about three hours and cost around \$450 in materials.

forms above it. (For example, for a 12-inch-high footing, you could dig a 4-inch trench and put the 8-inch Form-A-Drain on top.) The second option is to leave a 4-inch space between the bottom of the Form-A-Drain and grade, and fill the void with dirt or gravel.

Cost and Learning Curve

With my own crews, it took just one or two installations to learn how to use this product, and installation takes no longer than installing conventional forms. For the project shown here, my three-person crew had the footing formed up and ready for concrete in about three hours (Figure 11).

Builders sometimes tell me they think footings will cost more using Form-A-Drain, but when I factor in the labor savings I think it's cost-competitive. The components for this 44-by-30-foot foundation with 11 corners cost about \$450.

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