

**DO-IT-YOURSELF**

A woman in a red and yellow jacket is kneeling on a brick patio, planting flowers in a circular garden bed. A young child in a red and yellow jacket stands nearby, holding a small white dog. The patio is paved with reddish-brown bricks, and there are wooden benches and potted plants in the background.

**PATIOS  
&  
PATHS**

# PATIOS



# PATHS

**W**hether it's in the Land of Oz or your own backyard, there's something magical about a brick path—especially if it leads to a sunny, spacious patio. Don't get me wrong; there's nothing magical about how patios get built. They take loads of energy and muscle power. They require careful planning from the first shovelful of dirt thrown to the last paver laid. But you'll get what you work for: a beautiful, usable, outdoor space that will last a lifetime.

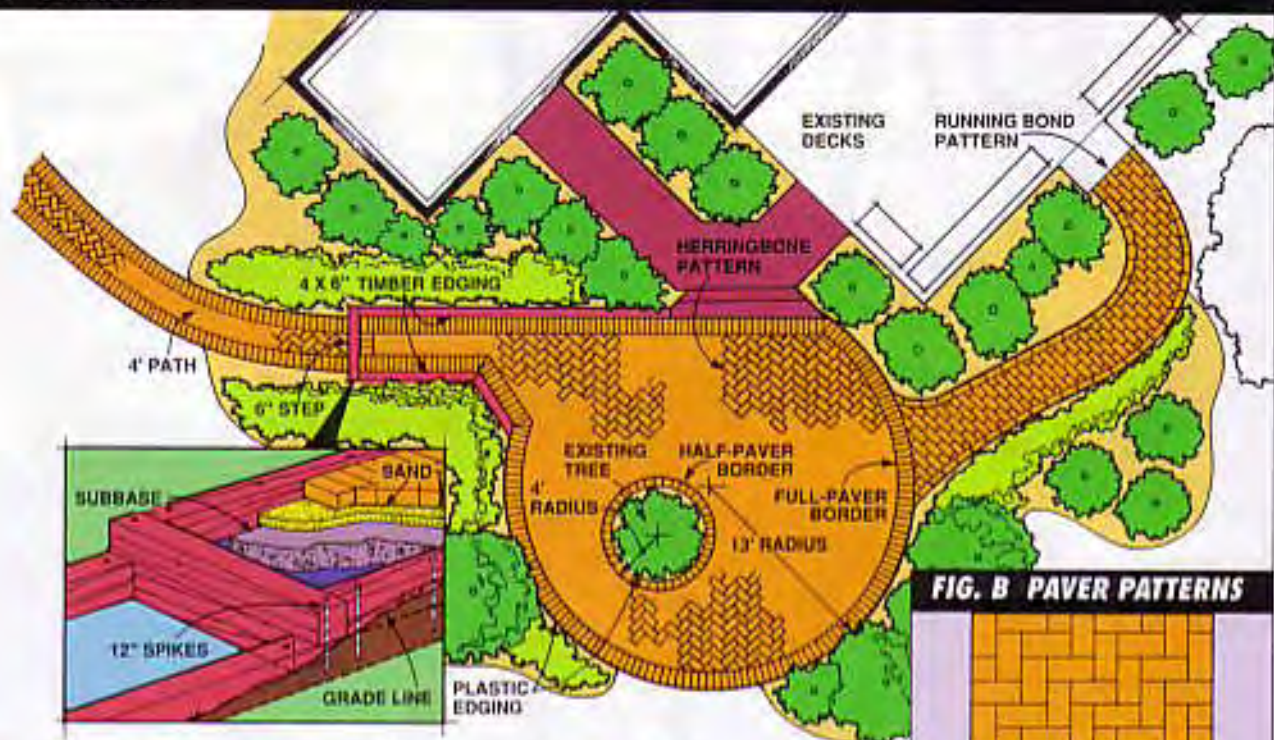
Our patio is "dry-laid," meaning there's no wet concrete used, just precast concrete pavers laid on a bed of sand. Ours is a large ambitious project with curves, paths and steps. We circled trees, looped around landscaping beds and linked together two decks.

Every patio is different—the one you build may be larger, smaller, squarer or rounder. The good news is, everything you need to know about building *any* dry-laid patio is right here on these 10 pages.

*A little ambition and a lot of muscle power will earn you this enduring dry-laid patio.*

By Spike Carlsen

**FIG. A OVERVIEW**



**FIG. B PAVER PATTERNS**



Herringbone



Herringbone at 45°



Running bond



Basketweave

**PAVERS: BEAUTIFUL, VERSATILE, MANAGEABLE**

One of the beauties of pavers is that together they create a large, durable space, but individually they're lightweight and easy to install. This gives DIYers the permanence of concrete without the special tools, know-how and "hurry-upness" that concrete requires. Plus, pavers have color, shape and pizzazz.

There's no doubt about the durability of concrete pavers. They're often used in streets and industrial parking lots where heavy machinery cracks ordinary concrete slabs. Pavers—small and independent—withstand abuse by flexing, rather than cracking, under pressure. They're ideal for regions that go through freeze/thaw cycles, too; the individual pavers absorb heaving and movement without cracking. And it's a lot easier to repair small areas in a dry-laid patio than with a slab.

Pavers can be used for driveways, sidewalks, patios, garden paths, even porch floors. As long as the underlying gravel and sand base is properly prepared, pavers can be used almost anywhere. In areas where vehicles will travel, the subbase (Fig. C) must be increased to at least 10 in.

The simple rectangular pavers we used can be laid in a variety of patterns (Fig. B). Other paver shapes are avail-

able: squares, zigzags, keyholes, even some that look like fancy floor tile. Shop around at home improvement and landscaping centers and check the Buyers Guide on p. 45 for more information.

**THE BEST DESIGN FOR YOU AND YOUR YARD**

Whether you're a novice or experienced DIYer, you'll find this project doable and satisfying. You'll be limited more by your energy level and free time than by the skills required.

A well-designed patio must take into account the terrain, landscape and the needs and pocketbook of your family. Not all yards are candidates for a patio. In uneven terrain, a raised deck—which can span hill and dale—might be the best option for outdoor space.

We needed to tie in our patio with existing trees, planting beds and decks. We measured everything and made a small scale drawing of our home and existing landscape on paper (Fig. A). We used a straight, 16-ft. 2x4 with a 4-ft. level on it and a tape measure to get a rough idea of how much our yard sloped (we noted that on our drawing, too). Then we laid tracing paper on top of our scale drawing and doodled a half-dozen patio designs. A consultation with a landscape designer provided us with these helpful tips:

- Patios must have a slight slope (1 in.

for every 4 to 8 ft.) for proper drainage. If you don't provide enough slope, rainwater will settle into low spots, eventually softening and washing out the sand and subbase materials beneath. A flat or poorly sloped patio could even direct water into your basement. Too much slope and you'll feel you're on a listing ship. Bear in mind you can build up low spots with an extra-thick layer of subbase.

■ Ask yourself how you'll be using your

patio. Our expert recommended a minimum of 25 sq. ft. of patio per house occupant. He also added that a patio at least 16 ft. long in one direction is often the most functional. Plan for at least a 6 x 6-ft. area out of any traffic path for a dining table and chairs. Do you need space for a grill? Lounge chairs? A wading pool? Planters? Hopscotch? Sketch these on your tracing paper as you doodle.

■ In small areas, use simple pavers and

patterns (like the running bond shown in Fig. B). In large areas, you can break up the expanse with a variety of patterns or dividing bands.

■ Curves add interest and grace to the patio—but also loads of cutting and extra work.

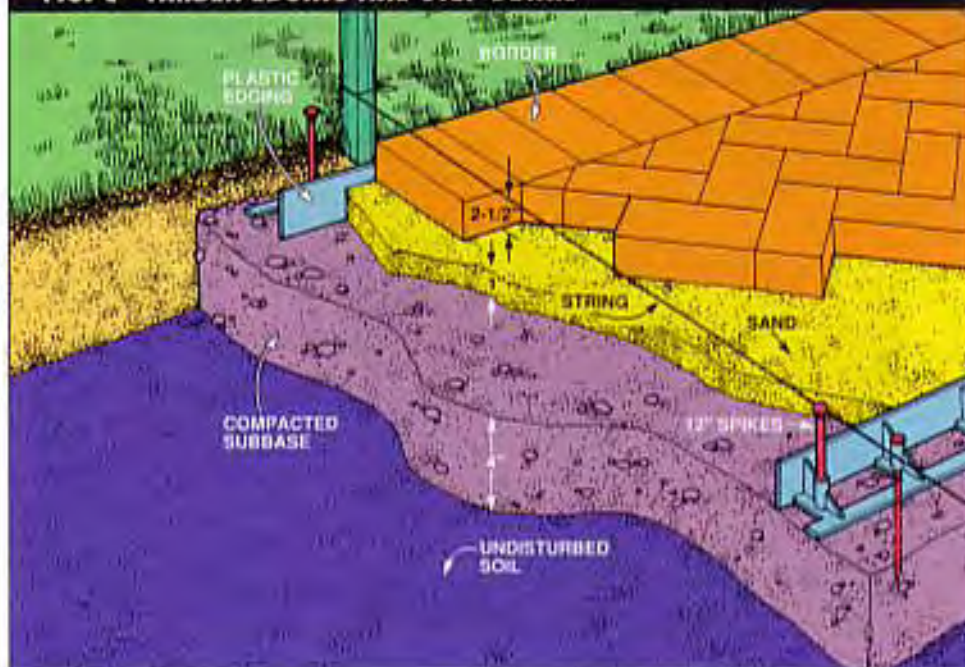
## PAVERS, MATERIALS AND TOOLS

We paid 50¢ each (a little over \$2 per sq. ft.) for our 4 x 8-in. pavers. We purchased them from a landscape center, where they supplied us with brochures from the paver manufacturer and gave us lots of installation tips.

When ordering pavers, estimate the square footage of your patio, then add 5 percent. If you have a lot of curves, borders or half pavers—like our patio—order 10 percent extra. This allows for damaged pavers and provides extra ones for future repairs. The Snap Edge plastic edging (see Buyers Guide) cost \$2.25 per ft.; the 8" - 10" spikes to secure it cost 40¢ each.

We used "class 5" crushed limestone for building the subbase. Class 5, a grade of material commonly used for road beds, is widely available. It consists of 3/4-in. rock and smaller particles, which nest together firmly when compacted. When ordering (look under "Sand and Gravel" in the yellow pages), tell the quarry or trucking company you'll be using the material for a patio subbase. If they don't have class 5 limestone they should be able to

**FIG. C TIMBER EDGING AND STEP DETAIL**



**OUTLINE** the patio perimeter using a garden hose for curved areas and long 2x4s for straight sections.



**REMOVE SOD** in an area extending 8 in. beyond the boundaries of the patio. Spray paint indicates the excavation line.

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offer crushed gravel or another suitable substitute. The class 5 we used cost us around \$100 (7 cubic yards at \$7.50 per yard plus a \$50 delivery charge). One cubic yard of class 5, when placed 4 in. deep, will cover 81 sq. ft. If you need to build up an area, order more.

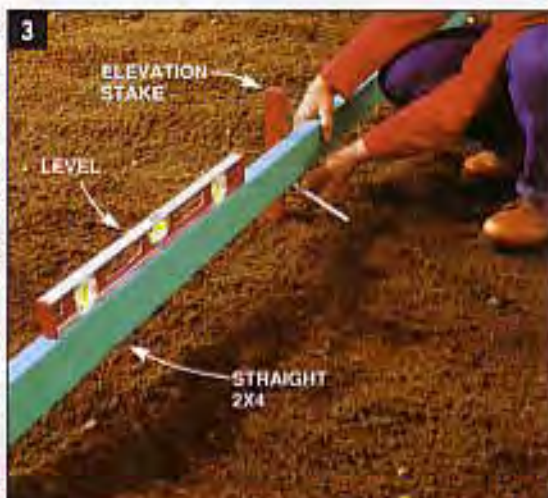
Coarse sand for leveling and bedding the pavers ran \$15 a cubic yard, plus delivery. One yard of sand will provide a 1-in. base for about 300 sq. ft. of patio. Order a little extra for sweeping into the cracks when you finish (our patio consumed about four 5-gal. buckets of sand for this).

For tools, you'll use everyday hammers, levels and tape measures as well as big, oddball tools like a flat-plate vibrator and a masonry saw that you'll need to rent (\$40 to \$50 each per day). With proper planning, you shouldn't need to rent either tool for more than two whole or half days.

All the materials and rental charges for our project came to \$1,900. That's a lot! But when you consider pros charge between \$6 and \$10 per sq. ft. when they supply and install pavers, you'll see you're saving 1/2 to 2/3 the cost by doing it yourself.

## PLANNING AND LAYOUT

The first thing you should think about is where the last paver you lay will wind



**USE A LEVEL, a 2x4 and stakes to determine the slope of the patio. Slope of 1 in. per 4 to 8 ft. away from house is ideal. Run stakes and a grid of string to mark the top of finished patio, then excavate 7-1/2 in. below strings.**



**SPREAD CLASS 5 subbase to a depth of 4 in. over entire patio area and 8 in. beyond. Measure down from guide strings to establish uniform height of subbase.**

Here's the ultimate outdoor project—it's high in sweat equity, doable in small chunks of time, and offers great results.





**5** **FLAT-PLATE VIBRATOR**  
**TAMP THE SUBBASE** using a flat-plate vibrator (rented at \$40 a day). Work in a circular motion and compact the area twice.

up. Will your yard accommodate the slope and size of your patio? Will a square patio end in nice, full pavers or skinny little slivers?

With your graph paper plan in hand, lay down garden hose (Photo 1) and 2x4s to form an outline of your patio. Use your level and a straight 2x4 to double-check the lay of the land for proper slope. Then spray-paint a line 8 in. outside the outline of your patio to act as a line for excavating. Strip away the sod at this point (Photo 2), so grass doesn't get in the way of the guide strings you'll soon be setting up.

### EXCAVATING THE SITE AND BUILDING THE BASE

This part of the project is the key to a successful (and long-lasting) patio.

Use the bottom of a door or a set of stairs abutting the patio area as the starting point for establishing the final height and slope of your patio. Your entire slab should slope away from the house at a rate of 1 in. every 4 to 8 ft. This slope may be one long decline or a slight dome-shape so water runs off in more than one direction. Place one end of a long 2x4 at the bottom of the stairway or an inch below the door threshold, then level across to stakes driven at the perimeter of the patio and make a mark (Photo 3). Make another mark the appropriate distance down the stake to indicate the slope. In our case, after making a level mark on our stake with a level and 12-ft. 2x4, we made another mark 2 in. down to indicate a slope of 2 in. for that 12 ft. (1 in. for every 6 ft.).



**6** **12" SPIKES**  
**10" WEBBING FOR PAVING**  
**CUT**  
**INSTALL THE EDGING** on the tamped subbase using 8" - 10" spikes. Cut the webbing on the edging's back side to make it flex for curves.



**7**  
**INSTALL LANDSCAPE TIMBERS** for edging in areas where you need to change levels or step down. Be certain to overlap corners.



**8** **1" IRON 3" PIPE SCREEN GUIDE**  
**2X4 SCREED**  
**NOTCH**  
**COARSE SAND**  
**SPREAD AND LEVEL** a 1-in. bed of sand over compacted subbase. Pipes provide a guide for dragging the 2x4 screed board across.

Make a gridwork of stakes and guide strings to indicate the finished height and slope of your patio, then excavate 7-1/2 in. below these lines. This will provide room for a 4-in. subbase, the 1-in. sand base, and the 2-1/2 in. pavers themselves ( $4 + 1 + 2\text{-}1/2 = 7\text{-}1/2$  in.). See Fig. C. If the area is hilly, you'll need to go back and forth between excavating, leveling and setting strings to get things right.

Soil conditions vary greatly across the country. If after digging 7-1/2 in. below your strings, you still find pockets of loose dirt or black soil, remove it or it will eventually settle, creating a wavy patio.

Next, bring in the subbase material. Bring the area up to a height 3-1/2 in. below your guide strings (Photo 4). It should be at least 4 in. deep in all places. The subbase should extend 8 in. beyond the actual edge of the patio to provide room for the edging. It's possible you'll need to build up an area to accommodate your patio. In such cases, remove the sod and loose soil, then build up the area with your subbase material. Building a 10- to 12-in. subbase is common; even 20 in. would not be unusual. Compact the class 5 using a flat-plate vibrator (also known as a compactor) as shown in Photo 5. Go over the entire area twice.

## THE ESSENTIAL EDGING

Edging is an absolute must for maintaining the integrity of your patio. Without solid edging, your sand base and pavers will separate and drift apart as rain, frost and foot traffic pound away.

We used Snap Edge plastic edging. Left uncut, it remains straight and rigid, but when it's cut it can be bent to form curves. Secure the edging into the compacted subbase with 8" - 10" spikes (Photo 6).

We used landscape timbers for combination edging/steps in a sloped area of the yard (Photo 7). Crisscross corners and use double timbers on the front of steps (even though the lower one will be buried). This lower timber prevents the subbase and sand from washing out. The tops of the timbers should be at the same height as the surface of the finished patio. See "Backyard Path and Steps," May '92, p.61, for more information on cutting and installing timbers.

## SPREADING SAND

Sand provides the final base for your



**INSTALL THE PAVERS** starting along the longest, straightest edge. Border pavers provide a crisp finished edge, especially along curved portions of patio.



**CONTINUE LAYING PAVERS** using a layout string to keep them in line as you work. Put a gap between pavers or tap them tighter to stay in line.



**MARK PAVERS** that run "wild" into the border area. Then remove the paver, cut to size and place back in position along with border paver.

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pavers. If this surface is uneven, the pavers on top will be, too.

Ideally, the sand should be 1 in. thick, but if it's a tad thicker or thinner in spots, that's okay. What you want is a firm, flat surface for laying pavers. Sand also locks the pavers in place. When you vibrate the pavers, they'll bed themselves slightly into the sand.

If your patio is under 10 ft. wide, use a screed board with a 2-in. notch on the ends to ride along the edging to level the sand (similar to that in the first photo below). On larger expanses, level long lengths of iron pipe in the sand 2 in. below your guide strings, then run your screed along the top of the pipes. (When you're done with the pipe, remove it, then fill in the groove it leaves

with sand). In many cases you'll use a combination—a notched screed board riding along the edging on one end, with the other end of the screed running along iron pipe (Photo 8). Whichever screeding method you use, roughly dump and level the sand over the compacted subbase, then fill in low spaces and rake away excess sand as you drag your 2x4. Shuffle the screed lightly from side to side as you work. You're not compacting the sand, just creating a firm, solid bed.

Screed only as much sand as you can cover with pavers in one day. Screeded

sand left any longer is guaranteed to be ruffled by wind, rain, kids or a stray cat thinking he's found the world's biggest litter box.

## PAVE AWAY

You should now be standing before an expanse of sand that's flat as a pancake (but slightly sloped). Take down the guide strings you used to determine height and slope and put up new stakes and strings to mark the lines for the pattern of your pavers (Photo 10).

Start along your house or other long straight edge and lay down the border pavers. (A border isn't essential, but adds a crisp, finished look, especially

## PATHWAYS

**A** pathway can be part of a larger project or a project in itself. A walkway made from pavers is an attractive way to link your driveway to your front door, existing deck to new patio, or back door to garden area.

Here are a few tips:

- Keep the pattern simple; a border running parallel to the path with a simple staggered pattern within is often the most attractive.
- Put a slight tilt in the path for drainage. One-half inch across a 3-ft. wide path is adequate.
- Take extra care to keep the edgings an equal distance apart; it will make screeding, cutting and paver laying easier.



SLIGHT  
SIDE-TO-SIDE  
SLOPE

NOTCHED  
SCREED  
BOARD



USE PENCIL  
AS ANGLE  
GUIDE

ANGLE CUT  
EVERY OTHER  
BORDER PAVER  
AT CURVE



LAYOUT  
STRING

**SMOOTH AND LEVEL** the sand using a notched screed board riding along the edging for a guide. Include a slight tilt for good drainage.

**INSTALL THE BORDER**, marking and cutting every other paver at an angle at curved areas.

**LAY THE PAVERS** using a string for a guideline. Cut and install pieces that butt up to the border later.

along curves.) Then lay the rest of your pavers in your selected pattern. Just lay the pavers in place—don't bang on them or twist them. Measure over to your string every few rows to make sure you're staying on track. You can leave a slight gap between pavers or tap them tighter together with a rubber mallet.

If you've taken the time to set things up right, laying the pavers goes amazingly fast. Many pavers have little nubs on the sides to serve as spacers. Don't walk or kneel on the edge of the patio until after you've vibrated it; otherwise these pavers can sink unevenly.

We let our pavers run "wild" near the curved edges (Photo 11). Using a paver as a guide, we marked the inner pavers, removed and cut them on a masonry saw, then reinstalled the cut inner piece and the border piece. On tight radius circles, we used half pavers for the border (Photo 12) to avoid large, pie-shaped voids between them.

As big and foreign as the masonry cutting saw appears, it's actually safe and easy to use. A constant stream of recirculating water keeps the blade cool and lubricated, and a sliding tray carries the paver past the blade. A cut takes about 10 seconds. Don't forget to wear your hearing and eye protection.

When all your pavers are cut and in place, vibrate the entire patio (Photo 14), starting at the outer edge and working inward in a circular motion. The vibrator will lock the pavers into the sand and help even up the surface. Don't let the vibrator sit in one place too long, or pavers could settle unevenly or crack. Some pros place plywood down and vibrate on top of that to help distribute the weight of the machine.

If a paver sinks deeper than its neighbors, use a pair of screwdrivers to pry it up, sprinkle a little extra sand in the void, then replace the paver.

## **SWEEPING AND UPKEEP**

Spread coarse sand across

the surface of your patio. After the sand dries, sweep it around the patio (Photo 15) to fill the spaces between the pavers. Make sure the sand is *dry*—wet sand will bridge, rather than fill the gaps. It may take two sweepings with a push broom a few days apart to completely fill the gaps. The sand helps solidify the pavers, and also fills any spaces where dirt might enter to provide a mini-planting bed for weeds.

We rolled two coats of a water sealer over our completed patio. We didn't do this to protect the pavers—they don't need protecting! We did it to enrich the color.

Landscape around your patio with grass, sod or planting beds to give it a finished look. Bring in dirt to even out the space between the new patio and existing yard. Keep dirt at least 1/2 in.



**HALF PAVERS FOR SMALL RADIUS BORDERS**

**USE HALF PAVERS** for bordering tight circles. Smaller pavers cut down on the size of the pie-shaped gaps between each piece.

below any plastic edging to allow rainwater and runoff to easily drain away from the patio.

Set up the lawn chair and take a snooze—you've earned it. **TFH**

**Pavers stand up better to heavy loads and winters than concrete slabs do—pavers move and flex but slabs will crack.**





**CUT PAVERS** on masonry saw. Saw has a built-in sliding carriage for moving pavers past the blade. Recirculating water keeps blade cool and lubricated.



**TAMP THE PATIO** with a flat-plate vibrator after all the pavers are installed. Tamp entire outside edge first, then circle in.



**SWEEP COARSE, DRY SAND** between cracks of pavers to lock them together and fill voids. Repeat with more dry sand in a few days.



**LANDSCAPE** around the completed patio with flowers, shrubs and grass. Grass will root through the open spaces in flexible edging to anchor it in place.

## SHOVELING SMARTS

**T**his project scores a 9.9 in sweat equity. You'll be amazed at the amount of dirt you remove, even with the smallest patio. Compacted earth, once dug up and tossed, tends to double its previous size. Move it as few times as possible—preferably once. If you're going to use the dirt to fill in a low area, shovel the sod and dirt right into the wheelbarrow and dump it in its final resting spot. If it's going to be hauled away, back the trailer, truck or trash bin as close as you can.

Be equally wise with the materials you haul in. Do all your excavating, then have your subbase dumped directly on the patio site. Have your leveling sand and pavers delivered close to the patio. Our patio took 2,500 pavers—that's a lot of hauling by hand! Consider access to your back yard. Can you back a truck close to the patio site? If not, are you prepared to do a lot of hauling by wheelbarrow? Will that heavy truck damage any tree roots or your soft asphalt driveway on a hot day? Have you carefully figured the amount of materials you need before ordering, so you don't wind up with tons of extra sand, subbase or pavers? Does it make sense to temporarily remove a section of fence for access during the project?

Finally, consider recruiting help for some of the more labor-intensive parts: excavating, spreading the subbase, lugging the pavers.

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