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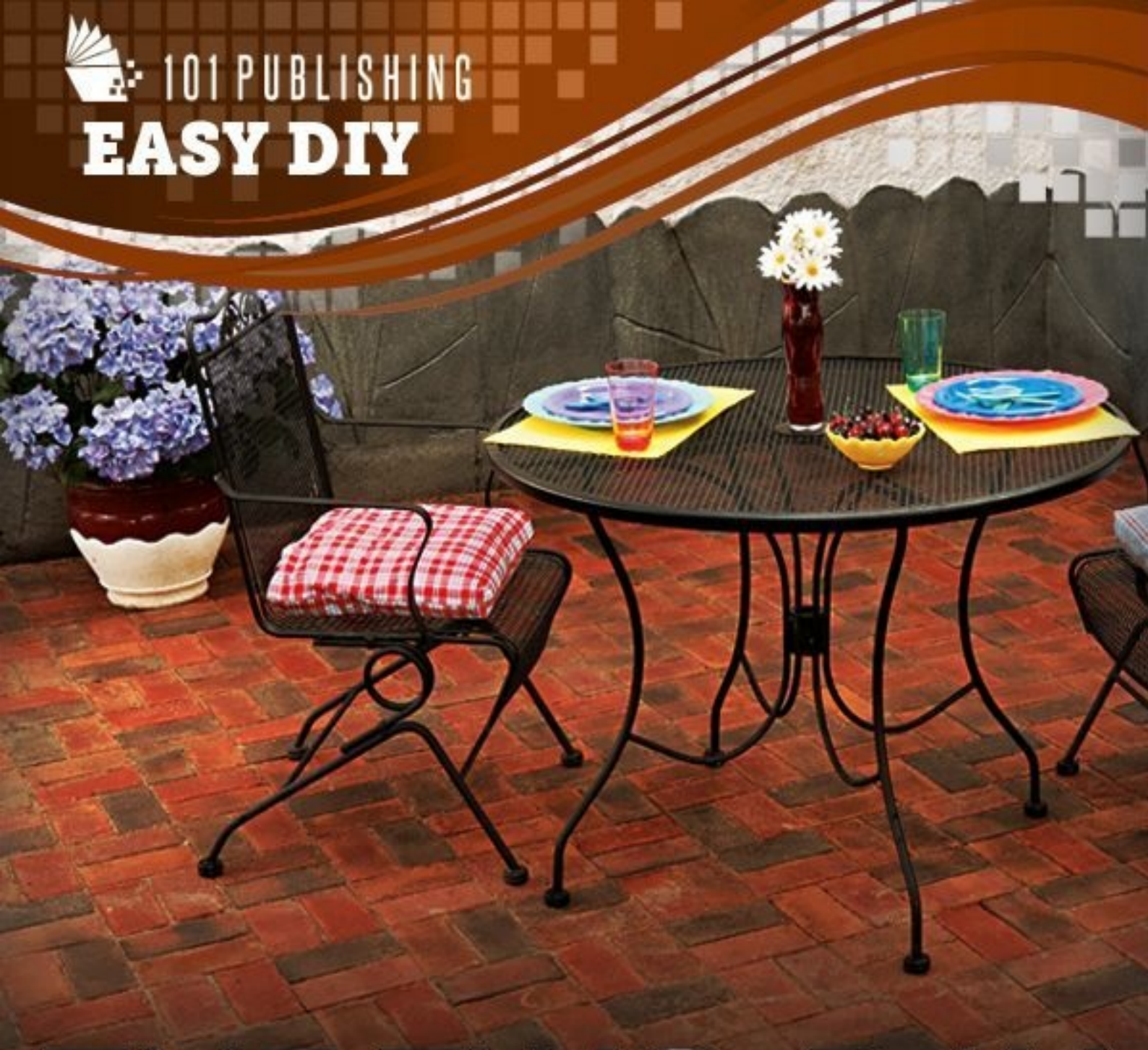

THE TWO-DAY PAVER PATIO

BUILD IT IN A WEEKEND

BY MARK JOHANSON

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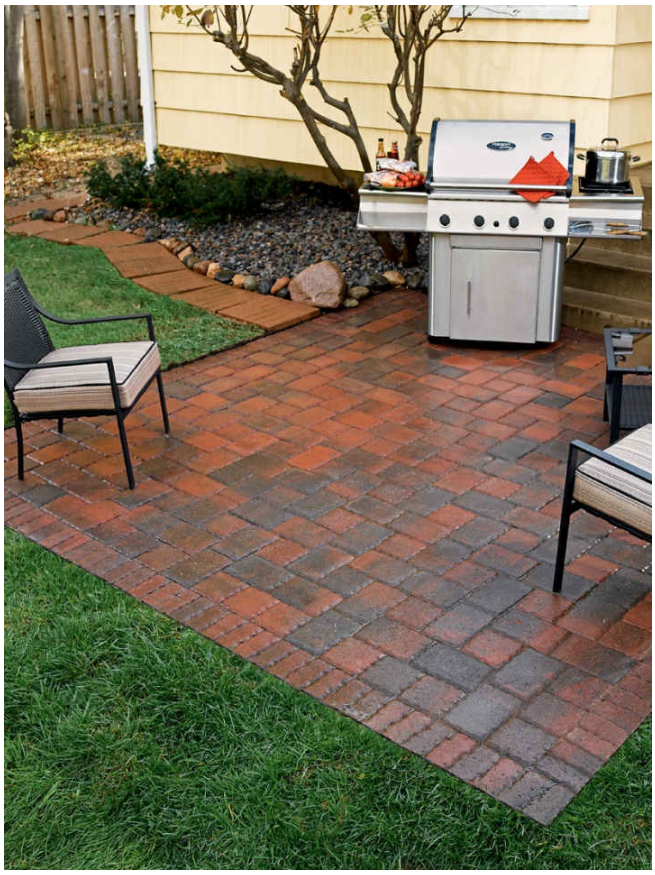

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Introduction

A well-appointed patio is the perfect example of enhanced outdoor living space. Designed around your lifestyle and favorite leisure activities, a patio can be comfortable, spacious, and even versatile, just like any well-used indoor gathering place. But what makes a patio so special are the things you can't get under your roof: pure sunlight, open air, an atmosphere that changes hourly and with the seasons—in short, a direct connection to the outdoors. It is this unique combination of comfort and the natural world that gives patios the power to lure us out of the house and away from our indoor routines.

As an "outdoor room," designing and decorating a new patio is not so different from planning any other living space. The design rule "function comes first" certainly applies. Assessing how everyone in the household will use the new patio is the primary consideration that influences every other decision, from planning the size, shape, and layout to choosing paving materials and adding special features and amenities.

One of the great things about building a new patio is the number of options you have to choose from. Few other building projects offer so many choices of materials, configurations, and even locations—unlike a deck or balcony, a patio doesn't have to be tied to the house or confined to the back yard; it can welcome guests at the front door or host an intimate gathering around a fire pit in a far corner of your lot. With all of this flexibility, a patio can complement your home's architecture as much as it shapes your landscape, and that's what makes creating a patio from scratch such a rewarding project.

Patio Basics

To install a new patio, first get started by working through the basic steps of planning your project. The section on design themes can help you think conceptually about the character and emotional quality of your new outdoor room. Consider, also, all of the ways you hope to use the new space and decide how the layout and other design elements will best accommodate those activities.

Next comes the choice of paving material. Whether it’s classic clay brick or naturally rough-hewn flagstone, the surface material you choose will be the defining feature of your patio.

In addition to the appearance and performance qualities of the different paving options, make sure to think about the logistics of installation. Other practical matters to consider are zoning restrictions and natural conditions on your property, such as drainage and seasonal weather. When it’s time to pull it all together, you’ll find it helpful to draft a site plan.

Design Themes for Patios

If you were planning new living spaces for your indoor home, you would probably start by listing the main uses of each room—cooking meals, throwing parties, relaxing with the family, sitting down for a chat—keeping these desired uses in mind, you then decide how each space should look and feel. What is the essential character, or theme, of the space? should it be formal and intimate, or should it have an open feel, with casual furnishings setting the tone for each activity? The same thought process applies to designing a new patio (which is, in essence, an outdoor living space). The following discussion of patio design themes can help get you started.

Entertaining & Dining

If a patio is perfect for one thing, it's alfresco meals. Whether enjoying a meal with the family or throwing a casual weekend barbeque or late-night hors d'oeuvre party, food just tastes better outdoors. A patio intended for everyday meals should be casual and convenient. Having a table and chairs set up at all times lets you decide at the last minute to eat outside without much fuss. Choose lighting that is bright enough for eating comfortably but can easily be lowered for after-dinner conversation. Locating the patio just off your indoor kitchen makes the space convenient enough to be used as a second dining room.

A well designed entertainment space should be roomy yet comfortable. Overheads and walls promote a feeling of intimacy, while a wide walkway or broad steps can encourage guests to wander off the patio and into the yard. Furniture and more permanent features, such as a fireplace, bar, or large dining table, can define the room's layout and set the stage for specific activities. Lighting is critical for setting the mood and should be adjustable for tailoring your patio space to different settings.

Private

When you want to be outside, but don't want to feel exposed or on display, a private patio space is the answer. Privacy can take many forms and often is as much a result of perception as physical seclusion.

Adding privacy might mean screening out the views of neighbors or locating the patio in a distant corner of the lot. A fountain or other water feature can provide a sense of privacy by drowning out noise and letting you dwell in your own thoughts.

Along with increased privacy comes a feeling of enclosure and shelter, which may result in a space that is intimate but may be somewhat limited functionally. If this is not what you want for your entire patio, you can always make some parts private while leaving others open. Another option is to build a small private retreat away from the main patio. Whatever the design, a private patio should be personal and comfortable, particularly for those who will spend the most time there.

Remote

Most patios are located right behind the house, but there's no rule saying they have to be. A freestanding or detached patio can be remote both literally and psychologically. A

remote space can be private, tucked behind dense foliage at the end of a path, or it can be open and expansive in feel—a comfortable perch for taking in a view or catching the sunset.

Making your outdoor room out of the way inspires creativity—being free of the style constraints set by the house, the patio can blend into the landscape or become an eye-catching focal point on its own. Detached patios are often created to supplement a patio or deck adjoining the house. This arrangement offers even more freedom for designing the remote patio, since the primary outdoor activities can take place on the main patio close to the house, while the remote space is used ostensibly as a private retreat.

Multipurpose

Indoors, people congregate in their multifunctional spaces—namely the kitchen and family room. The same is true for patios: when the outdoor layout and features cater to multiple activities, the space tends to be used more often. After all, the purpose of a patio is to help you enjoy your home's outdoor space.

While a multipurpose patio requires careful planning, it doesn't have to be all about practicality. Centering the layout around a functional dining area, for example, doesn't mean you can't include a natural garden plot, a decorative water feature, or a sequestered nook for a private reading space. The ideal plan is dynamic enough to accommodate your household's range of activities, yet remains unified in design and appearance. A broad view of the patio (which is most often the view from the house) should reveal an integrated layout with a natural flow from one area to another.

Welcoming

Not all patios need to be hidden behind the house. Often surrounding the front door or main entrance, welcoming patios are a warm greeting to visitors and can be an attractive link between the house and a driveway or public sidewalk.

The inviting appearance of an entry patio certainly adds curb appeal, but its true purpose is the same as any standard backyard space. In terms of use, the entry patio is a return to the concept of the traditional front porch: a semiprivate space that allows homeowners to enjoy the outdoors while keeping in touch with neighbors. Being in full view, however, does place certain stylistic and architectural constraints on an entry patio. As the foreground to a home's façade, it's important that the patio complements the home's proportions and decorative scheme.

Material Selection

Brick, stone, and concrete rightly make up most people's short list of good patio and walkway surfaces, but these materials in their basic forms are just the beginning. Brick alone comes in a range of colors, textures, and styles, while the availability of stone and the variety of concrete pavers are both constantly expanding. After giving some thought to your preferred flooring surface, it will be well worth it to spend a few hours browsing local stone yards, landscape suppliers, and building centers to see what's available in your area. Ask about delivery pricing while you're there.

Brick

Natural clay brick is generally considered the most classic surface material for patios and walkways—a well-deserved distinction. With its combination of warm, natural coloring and texture and its orderly geometric shapes, brick is the perfect blend of house and garden. And with its small unit size, brick is also quite versatile and can be easily applied to formal layouts or imaginative curved patterns. The standard brick patio installation consists of setting brick into a sand bed in an ordered pattern, but brick can also be mortared over a concrete patio slab or walkway for a highly finished appearance and a surface that won't be affected by ground movement.

Bricks for outdoor floor surfaces are called pavers. These flat, solid units have a porous texture that helps provide traction in wet weather. Brick dimensions vary by manufacturer and range approximately from 1-1/8 to 2-3/4" in thickness. The standard size (width and length) for sandset (mortarless) installation is 4 × 8".

Bricks for mortared jobs are a little smaller to account for the mortar joints. Pavers are also rated for loadbearing strength and weather resistance. Types 2 and 3 are suitable for heavy foot traffic. SX (or SW) brick is for cold climates, MX brick is for warm climates without a hard frost, and NX brick is for interior applications. Don't use standard wall brick, fire brick, or other types of building brick for flooring surfaces.

Concrete Pavers

Concrete pavers are the most popular alternative to traditional brick and are installed the same way. Like brick, concrete pavers are highly durable, and their uniform dimensions make them easy to work with. While most clay bricks only come in standard rectangular units, concrete pavers are available in a wide range of sizes and shapes, including small and large rectangles and squares, various interlocking designs, and trapezoidal shapes used for circular and fan patterns.

Concrete pavers can be manufactured with different textures and edge treatments that can greatly alter their appearance. Among the most popular styles are "tumbled" pavers that have softened, randomly chipped edges, giving the paving an age-worn look. The tumbled effect is an important component of the many cobblestone styles of concrete paving. For sandset installations, you can use virtually any type of concrete paver. Many come with spacing lugs molded into the sides of each unit—these automatically set an even space between pavers that you fill with sand to complete the installation (most clay bricks don't have spacing lugs, and you have to set the gaps with temporary spacers). For mortared

finishes, choose concrete pavers with square sides (with or without spacing lugs); interlocking styles and other irregular shapes make it difficult to fill and finish the mortar joints.

Flagstone

Natural stone has an organic beauty that’s unmatched by all other building materials. Stone paving is used all over the world in grand courtyards, ancient roadways, and backyard landscapes alike. In nature, stones frequently form paths for crossing streams and skirting muddy fields—it’s not surprising, then, that it’s a popular material for patios and walkways. Stone is available in many forms, while the most commonly used type for do-it-yourself projects is flagstone.

Flagstone is the general term given to any broad, flat stone that has been split to a thickness of around one to four inches, making it good for paving. Common species of flagstone include sandstone, limestone, bluestone, and slate. Individual stones may have cut edges for paving in linear patterns, while stones with jagged edges and irregular shapes are best for creating a patio or walkway surface with a natural, casual feel.

Flagstones can be set in sand or stable (tamped) soil, or they can be permanently laid in mortar over a concrete patio slab or walkway. For an organic, stepping-stone effect, you can space stones widely and fill the gaps with gravel or groundcover plantings. Availability of flagstone varies by region; see what types are offered at local stone yards. For paving on patios and primary walkways, make sure the stone is thick enough for furniture and/or heavy foot traffic and that the surface of the stones won’t become dangerously slick when wet.

Practical Considerations

In addition to the creative work of planning the look and feel of a patio space, there are several practical matters that must be addressed before you can hit the drawing board. Thinking about how you will use the patio will help you answer one of the biggest questions—how much space you'll need. The planning stage is also the time to consider environmental factors, including site drainage, sunlight, and wind, to make sure your patio will be both comfortable and usable whenever you're ready to get outside. Finally, it's a good idea (and possibly required by law) to check with your city's building department to learn about building code requirements and zoning restrictions that might affect your project plans.

Use

How you plan to spend time on your patio will influence many of your design decisions, so it's best to start the planning process by brainstorming with everyone in your household. What will be the primary uses for the space? Dining, entertaining, sunbathing, playing with the kids, enjoying the view? Once you establish the uses, see if you can accommodate all of those activities within an attractive, efficient design. For some, the solution lies simply in providing adequate space in a flexible floor plan—a quick shift in furniture, for example, can set the stage for the next activity.

In thinking about everything you hope to do on your new patio, imagine the ideal setup for each activity. For example, if you have young children, maybe you want a comfortable sitting area near an edge of the patio that's adjacent to a sandbox (or even a sandbox built into the patio; when the youngest has outgrown it, you can turn it into a planting bed). Or maybe you want some space on the patio for a baby pool or a fountain for the kids to play in.

A patio that's good for entertaining, as well as everyday uses, requires a balanced plan. Large, open areas are best for hosting parties, but can feel empty and overly exposed for a small group of diners. To accommodate both, separate expansive areas from more intimate spaces with a change in floor level or create a more personal, sheltered space by tucking a furniture set into a corner under an arbor.

Size & Layout

The ideal size and configuration for your patio is determined by the space needed for each activity, including plenty of room for easy access and intervening traffic. With the floor space allocated, you can begin playing around with different layouts, design elements, and shapes until the form of the space complements all of its functions. All the while, keep the big picture in mind—make sure the proportions and general design of the patio complement your house and the rest of the landscape.

Time to think again about all the uses you have planned for the patio. If you already have the patio furniture, set it up on the proposed site and experiment with different arrangements to get a sense of how much space each furniture grouping will need. If you don't have the furniture yet, visit a patio furniture store to get approximate sizes. Next, decide which areas you want to be dedicated for specific activities and which can be

rearranged for multiple uses. Cooking and dining areas are best as static, or anchored, stations, while an informal sunbathing spot defined by a couple of lounge chairs can easily be rearranged or moved as needed.

To plan traffic routes, allow a minimum of 22” of width for main passages between and alongside activity areas (32” minimum for wheelchair access). The main goal is having enough room for people to move around the patio without disrupting any activities.

Zoning Laws, Building Codes & Utilities

Any alterations made to your lot could fall under your municipality’s zoning laws. In the case of a new patio, zoning laws might limit locations for the patio and how much ground it can cover. The latter relates to the allowable percentage of development on the lot (adding a large patio now could preclude future plans for a home addition). Also make sure the patio conforms to setback restrictions (required distance from lot lines) and easements (zones that must be accessible for utilities and other public services).

Walls, fire features, or overhead structures may be subject to standards set by the local building codes, and you may need to obtain building permits. Discuss your complete plans with an official at the local municipality’s planning office for zoning laws. If you run into snags, ask about alternatives; for example, a poured concrete patio may not be allowed over an easement, but a less permanent, sandset surface may be approved.

Also, contact the local utility companies to have all utility lines marked on your property. Most states are part of the North American One Call Referral system (888-258-0808), which will contact all of the utilities in your area to have lines in your yard marked.

Another important consideration involves the rooms that lead to the patio. For example, if outdoor dining is one of your primary activities, locating the patio near the kitchen will prove to be an enormous convenience. Similarly, a patio used frequently for large parties should not be accessed through a bedroom or other private space. This is not only an inconvenience; guests feel uncomfortable walking through private or formal areas of a home.

Dealing with Drainage

It’s not unusual that a new patio creates, or is subject to, drainage problems. One common cause is a hard paved surface that sheds water instead of absorbing it and deposits it along the lower edge of the patio. There, the water collects, creating a swampy area of grass. During heavy rains, runoff water can build up enough force to wash out flower beds bordering a patio. Drainage problems can also occur when the water has no escape, a common condition with sunken or recessed patios that are surrounded by retaining walls or ascending slopes. Additionally, adding or removing soil or plants to make room for a patio can alter natural drainage patterns, potentially resulting in an unpleasant surprise with the first good rain.

Fortunately, all of these problems can be solved with an appropriate drainage system. For patio runoff, a drainage swale or perimeter trench is usually effective. These are sloped channels or trenches that collect excess groundwater and divert it to a collection point. A trench running along the lowest edge of the patio can collect water directly from the patio

surface. If the patio is at the top of a natural slope leading to a low point in the yard, a drainage swale located in the low point keeps the rest of the yard relatively dry.

Diverting excess water is only half of the battle—the water also needs a place to go. Ideally, it is collected on your property, where it filters through the soil and returns to natural aquifers. This can be achieved with a dry well or with a swale leading to a natural collection area in the landscape. Another option is to divert excess runoff to a street gutter or a storm drain, but this design must be approved by the city's planning department.

Enclosed or recessed patios may require their own drainage system, typically with some type of floor drain. The patio surface slopes toward the drain, located either in the center or along one side, where runoff water collects in a subsurface catch basin. From there, an underground drainpipe carries the water to a collection point. If you think your patio will need this type of system, consult an engineer or qualified landscape professional early in the planning process to discuss your options.

Project: Site Preparation

The first major step of any patio project is to set up guide strings. Once that's finished, excavation begins and then a layer of gravel is added. The gravel is an essential element of patio construction: like your house's foundation, it creates a flat, stable base for building upon; and it protects the surface material by providing drainage underneath to minimize shifting and settling caused by seasonal freeze-thaw cycles.

There are a few matters to take care of before you begin the layout and surface prep work. The first is to determine the thickness of each layer of the patio construction. This includes the thicknesses of the surface material, the sand bed (if required), and the gravel subbase. For most patio types, the gravel layer should be four inches thick (after compaction). Concrete slab patios call for six inches of gravel, but this is subject to the local building code and may vary by region. The combined thicknesses of the layers minus the distance the patio surface will stand above the ground gives you the depth of the excavation.

The height of the finished patio aboveground is up to you. The standard minimum height is one inch. This ensures the patio will drain properly, but it's low enough to cut any bordering grass with a mower.

The next factor to determine is the total drop distance—the change in elevation from the high end to the low end of the patio surface. This creates the slope necessary for water runoff. Your patio should slope away from the house foundation or other adjacent structure (and preferably away from main traffic routes) at a rate of 1/8" per linear foot. For example, if your patio will extend 12" from your house, the drop distance of the patio surface will be 1-1/2". In the following project, you'll calculate the drop distance by measuring from the house (or high edge of the patio) to the batterboards at the low edge. The batterboards are set about 12" beyond the finished patio edges, and this additional amount makes the final drop distance more accurate than using the finished patio dimensions. A story pole—measured against temporary cross strings—makes it easy to check the depth of each layer as you work.

The final step before you start digging is to locate underground utility lines in the project site. Call your utility service providers or a national provider to have your lines marked.

Tools & Materials

- Tape measure
- Circular saw
- Drill
- Excavation tools
- Mason's string
- Stakes
- Line level
- Plate compactor (available for rent)

- Hand tamp
- 4-ft. Level
- Rubber mallet
- Push broom
- Lumber (2 × 2, 2 × 4)
- 2-1/2” drywall screws
- Compactable gravel
- Work gloves

How to Prepare & Excavate a Patio Site

1. Construct the batterboards from 2 × 4 lumber and 2-1/2” screws: cut the batterboard legs 24” long, and then taper the ends to a point. Cut the crosspieces at 24”. Align and fasten the legs perpendicular to the ends of the crosspieces. Use a nail or screw at the top center of each crosspiece.

2. Roughly mark the patio corners with 2 × 2 stakes. Cut the 2 × 2 ends to a taper (the greater the angle, the easier it will be to drive into the ground). Tap the tapered end into the ground with a hand maul or sledgehammer.

3. Drive pairs of batterboards about 2 ft. behind the stakes, holding them plumb and level. The tops of the crosspieces should be about 12” above the ground. If the patio abuts the house, drive a single 2 × 4 stake at each corner so one face of the stake is even with the planned edge of the patio.

4. Tie a mason’s string taut between an outer batterboard nail and one of the house-side (or

high edge of the patio) stakes. Attach a line level to the string and adjust the stakes as needed until the string is perfectly level.

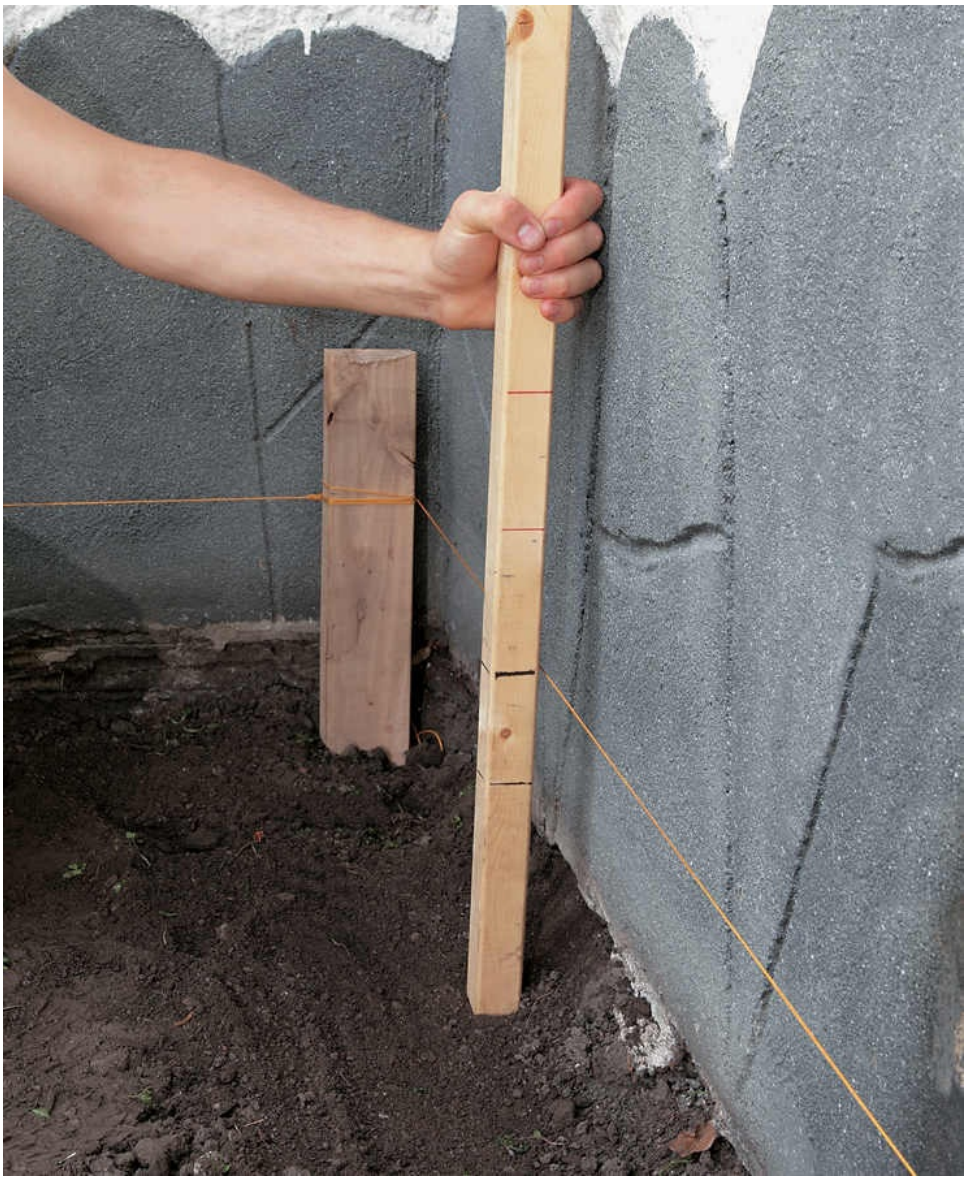
5. Begin setting the slope on the first layout string: stand the pole next to the batterboard and mark the height of the level mason's string. Measure between the house (or high side) stake to the batterboard, then calculate the drop distance for the string—a common slope is 1/4" per linear foot.

6. Using the story pole as a guide, drive the batterboard down until the string is even with the drop distance mark. Make sure the crosspiece remains level across the top so the string's height won't change if you move the string later.

7. Set up the remaining three string lines so they are even with the outer edges of the finished patio and are just touching the first string. First install the two strings parallel to the house, and use the line level to confirm they are level. The final string (parallel to the first string) will have the proper slope when it touches the intersecting strings.

8. Make sure the string layout is perfectly square using the 3-4-5 squaring technique: starting at one of the string intersections, measure along one string and make a mark at 3 ft. (or a multiple of 3 ft.). Measure along the perpendicular string and mark at 4 ft. Measure between the two marks: the distance should equal 5 ft. If not, adjust the strings as needed until the measurements come out correctly. Repeat the process at the diagonally opposed corner. Mark the string positions onto the batterboard crosspieces.

9. Determine the finished height of the patio surface. If the patio abuts the house, the finished surface should be 1 to 3” below the typical threshold of an entry door. At the low end of the patio it’s desirable to have the finished surface rise at least 1” above the surrounding ground to facilitate drainage and prevent dirt and mud from washing onto the patio.



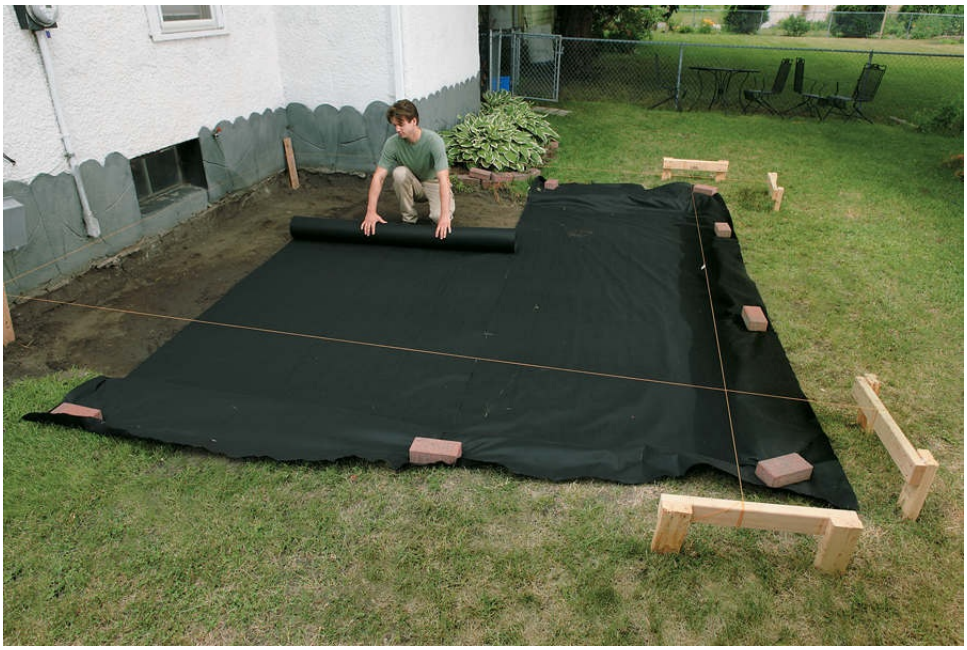
10. On your story pole, mark a top line for the distance from the string line (measured at the high edge of the patio) to the full excavation depth. A second line represents the distance from the string to the top of the compacted gravel base. Be sure to account for the thickness of the paving material and sand bed as needed.

11. Cut the sod along the project outline using a flat-end spade or a power lawn edger. To compensate for edging, extend the excavation about 6” beyond the finished patio outline. Reserve healthy sod for covering soil backfill behind the edging.

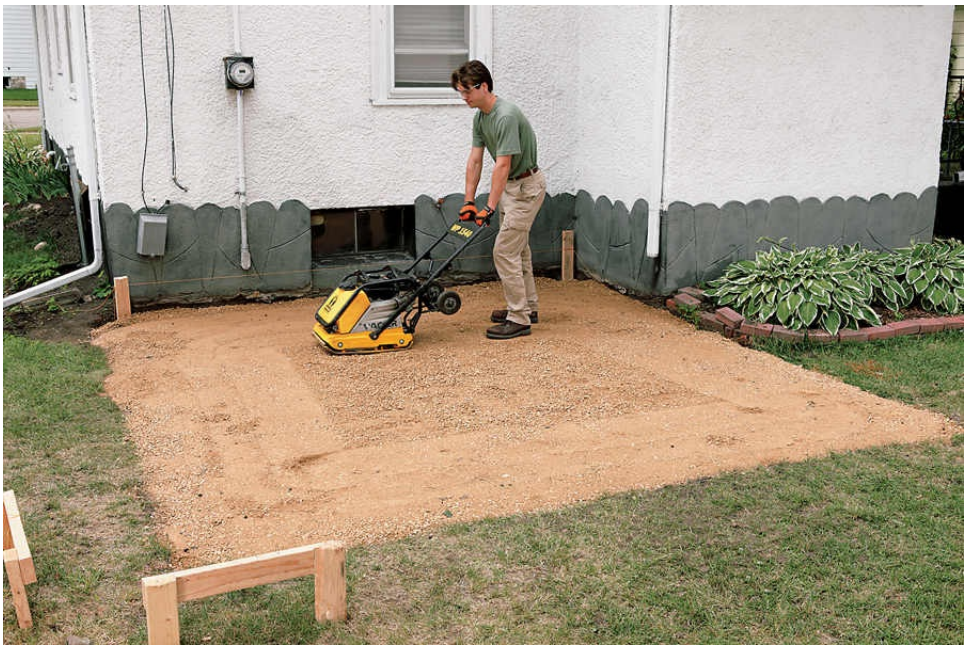
12. Strip the sod or vegetation inside the outlined area and then excavate the construction area to a depth that allows for a 6”-thick gravel subbase, a 1” layer of sand, and the paver thickness; account for the finished height aboveground also.

13. Grade and compact the soil. First use a bow rake to achieve the proper slope, and then compact the soil with a rented plate or hand tamper. Set up temporary cross strings for reference to simplify the excavation and the gravel installation later.

14. Use the story pole to check the depth as you work. Drive a pair of 2 × 2 stakes outside of the original string layout, and tie on the cross string so it's just touching the layout strings. Check the depth at several points along the cross string, removing or adding soil as needed to achieve the proper depth. Once that's done, move the cross string to the next section and repeat. Note: Thoroughly tamp any soil that's been added to a low spot to minimize future settling. For the same reason, it's best to use soil from the immediate area (instead of purchased topsoil) or fill low areas with compacted sand or gravel.



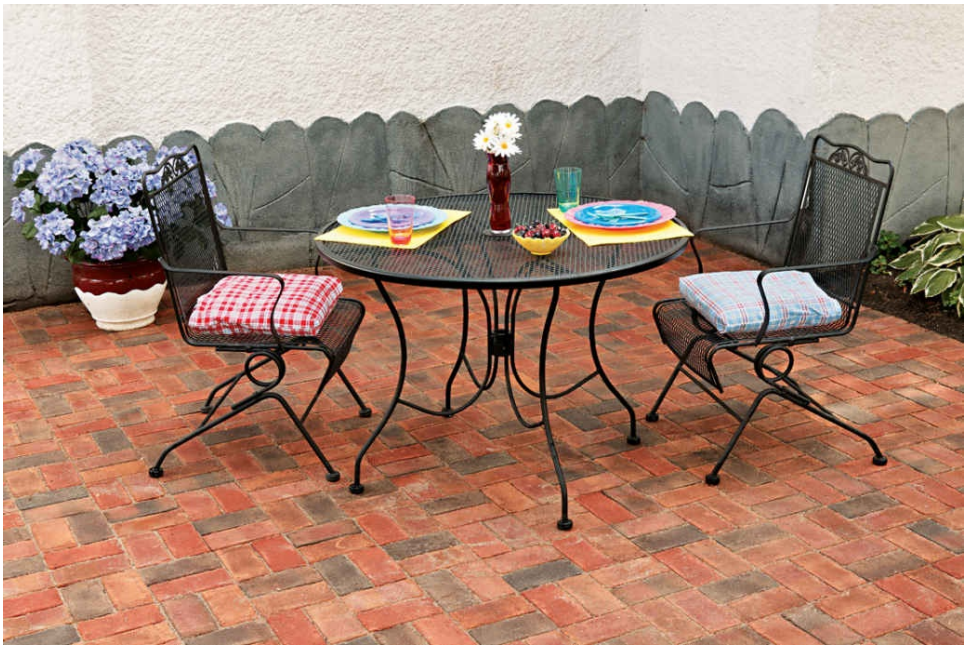
15. Add the first layer of compactable gravel. Dump wheelbarrow loads of gravel into evenly distributed pods, then spread out each pod in all directions with a shovel and a bow rake. Use the rake to create a flat, smooth surface.



16. Thoroughly tamp each layer of gravel before adding more, as needed. If using a hand tamper, compact the gravel in 2”-thick layers; if using a plate compactor, compact every 4” of gravel. Use cross strings and the story pole to check the gravel height as you work. A straight 2 × 4 also helps for smoothing gravel prior to compacting and for checking for high and low spots.

17. Extend a plumb bob from the layout strings to the base to mark the exact corners and edges of the finished patio for the surface installation. Mark each point with paint or a small stake. Find and mark the corners of the patio by hanging the plumb bob from each string intersection. Proceed to the installation portion of your project.

Project: Sandset Brick Patio



Traditional clay brick pavers set in sand make for one of the simplest yet most rewarding patio projects. The installation process is straightforward and, because there's no mortar involved, you can complete the work at your own pace. The overall installation time depends on the patio's design. Square-edged patios require fewer cuts and thus less time than curved designs. But if you want something out of the ordinary, sandset brick is a good material to work with—the small units are perfect for making curves and custom features; even if you have a lot of cuts, you can make them quickly and accurately with a rented masonry saw.

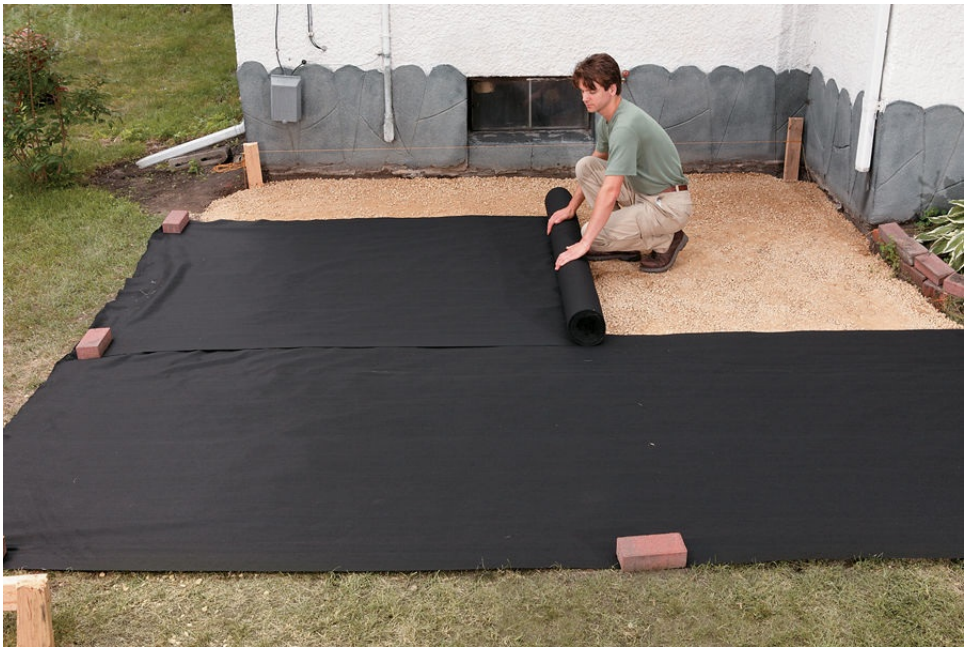
To pave with any of the classic patterns, such as running bond or herringbone, you'll start at one corner of your patio border or edging. To ensure accurate layout, check that the sides of the edging form a 90-degree angle at the starting corner. If you're not using edging or any kind of formal border, set up mason's strings to guide the brick placement. If you go with clay brick without spacing lugs, use spacers cut from a sheet of 1/8"-thick hardboard to help set accurate sand-joint gaps as you lay the units.

Tools & Materials

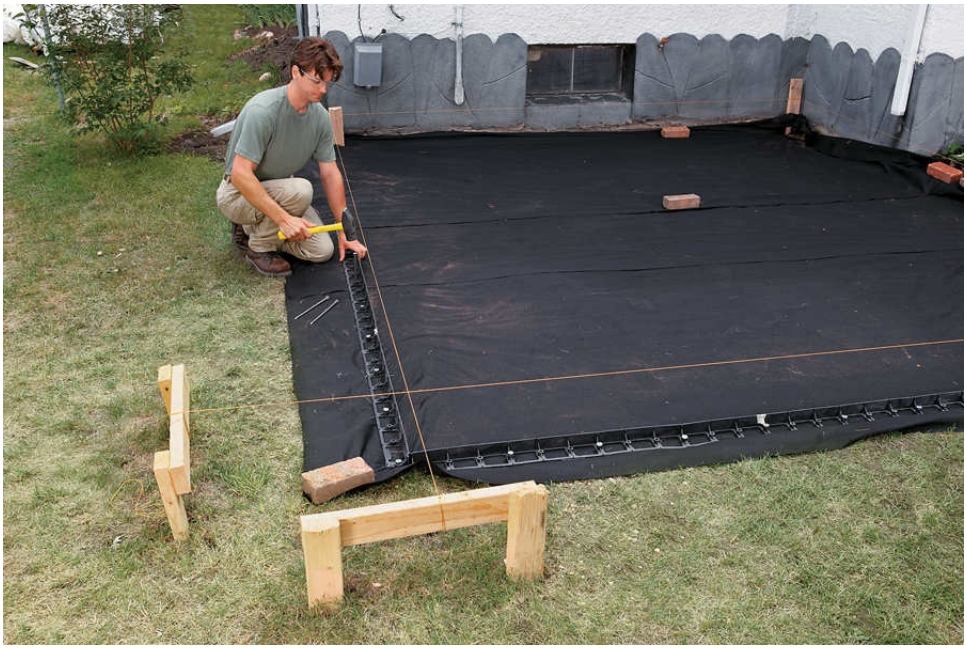
- Professional-grade landscape fabric
- U-shaped wire stakes (optional)
- Brick paver units
- Rigid paver edging
- 1"-dia. Pipe
- Coarse sand
- Straight 2 × 4
- 1/8" hardboard

- Plywood scrap
- Paver joint sand
- Rake
- Trowel
- Masonry saw
- Eye and ear protection
- Maul
- Galvanized spikes (for edging)

How to Install a Sandset Brick Patio

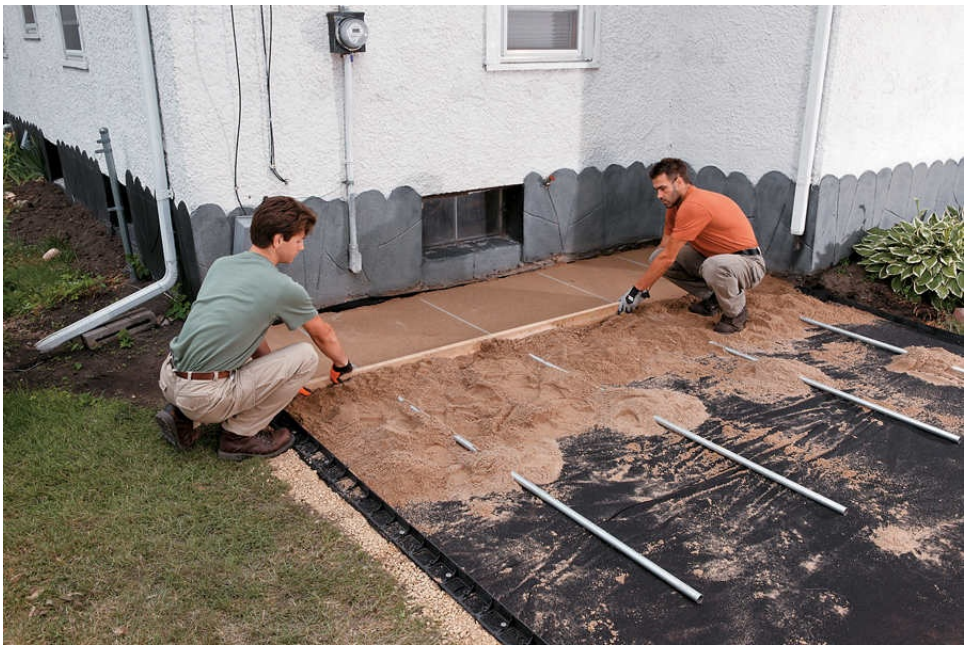


1. Prepare and excavate the site as detailed above. Install a layer of high-quality landscape fabric. Overlap rows of fabric by at least 6”. If desired, pin the fabric in place with U-shaped wire stakes.



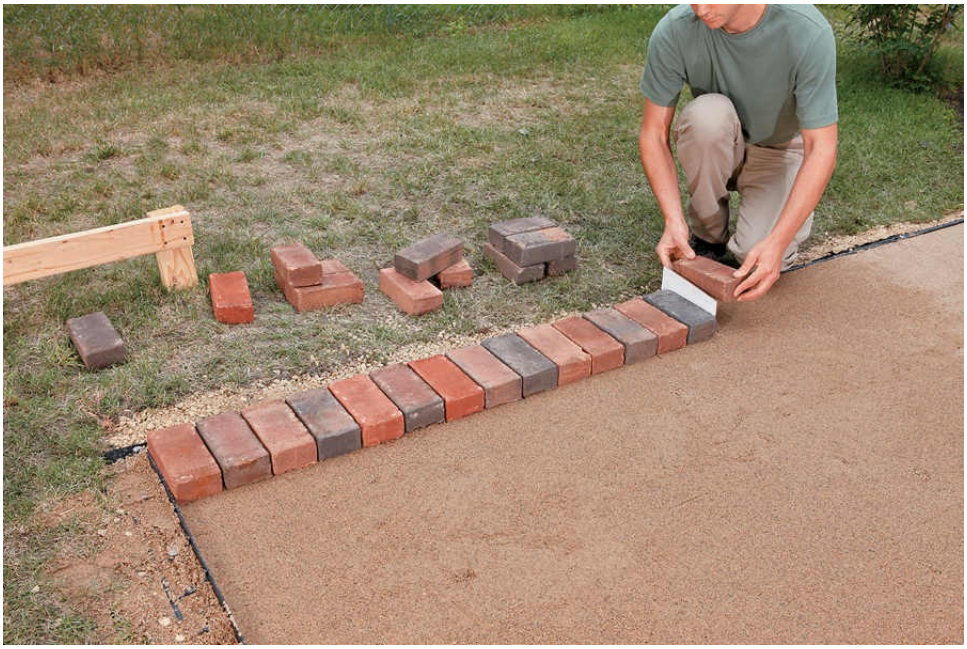
2. Install rigid paver edging along two adjacent sides of the patio area, creating a perfect 90° corner. Trim the fabric along the back of the edging. Lay down lengths of 1”-dia. pipe in parallel lines about 3 to 6 ft. apart.

3. Add a 1”-thick layer of coarse sand. Smooth it out with a rake so it just covers the pipes. Dampen the sand with water, then pack it down lightly with a hand tamp.

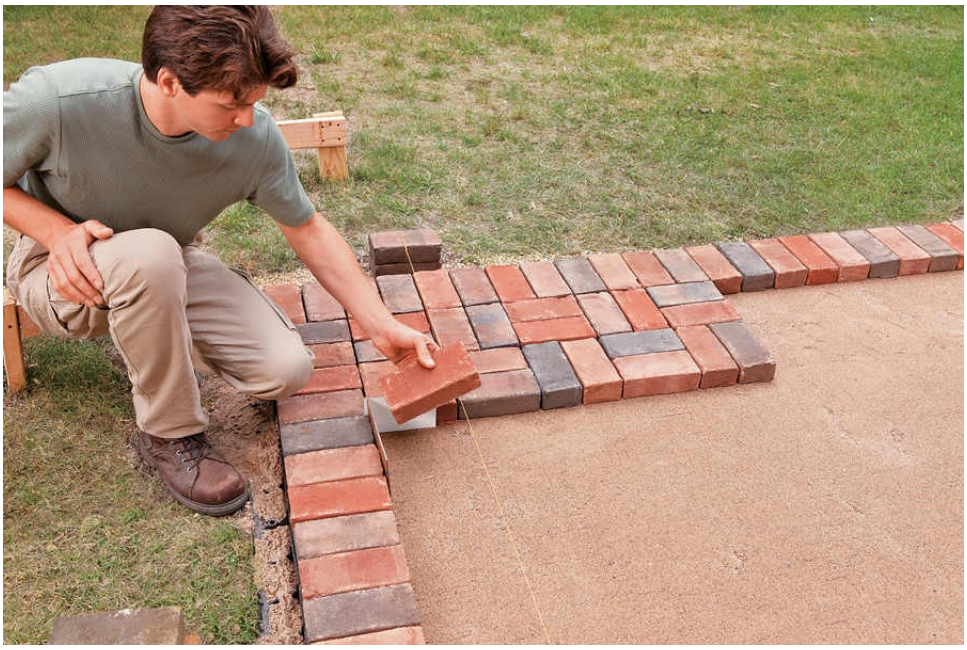


4. Screed the sand perfectly flat using a straight, long 2 × 4: rest the board on top of the pipes, and pull it backward with a side-to-side sawing motion. Fill in low spots with sand as you work. Dampen, tamp, and screed the sand again until the surface is smooth and flat and firmly packed. Remove the pipe(s) in the area where you will begin the paving.

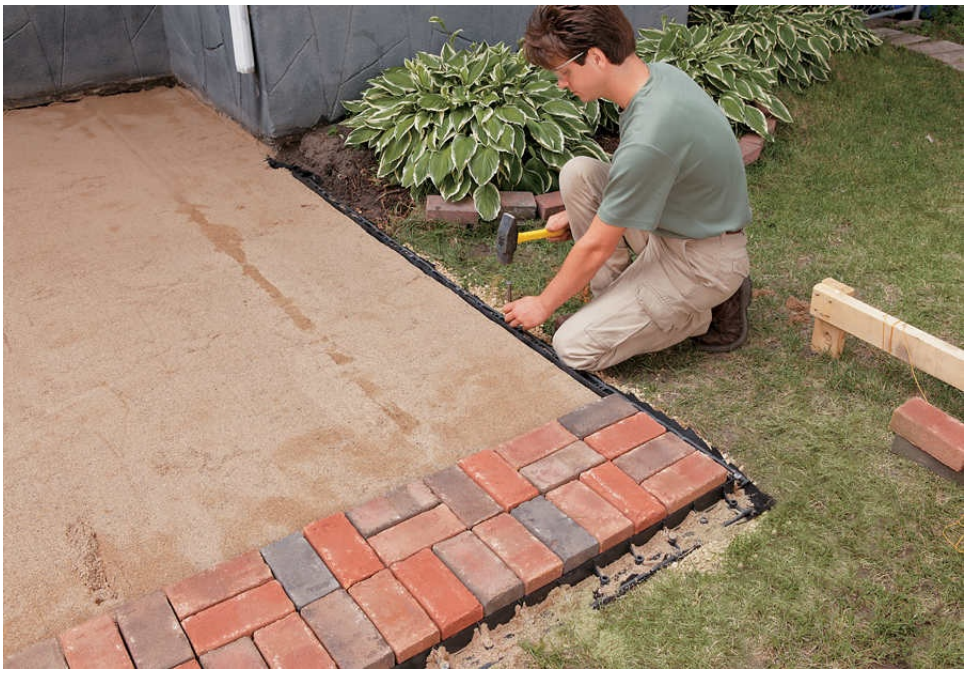
5. Fill the depression left by the pipe with sand, and then smooth it out with a short board or a trowel. Tamp the area with the hand tamp, and smooth again as needed so the filled-in area is perfectly flat. Note: Repeat this step as needed during the paving process.



6. Begin setting the border bricks, starting at the right-angle corner of the patio edging, using 1/8” hardboard spacers if necessary. Complete the border row that will be parallel to the first course of field brick, and continue several feet up the perpendicular side edge. For gentle curves, use full bricks set with slightly angled (wedge-shaped) sand joints; tighter curves require cut bricks for a good fit.

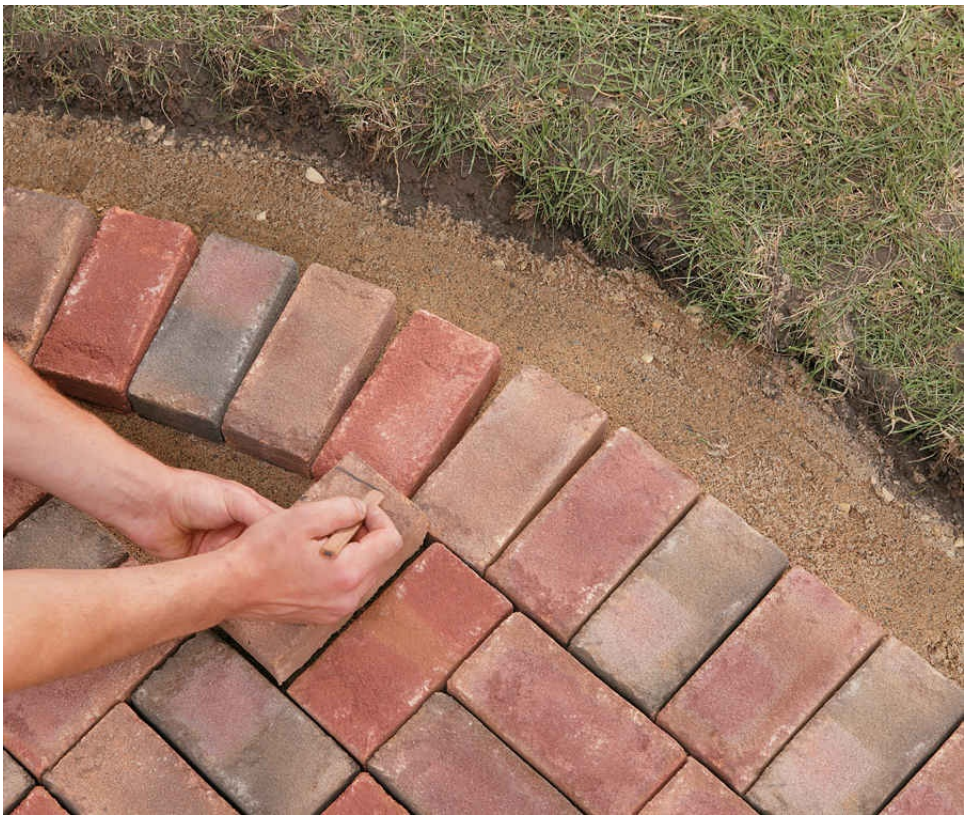


7. Set the first course of field brick. These bricks should be centered over the sand joints of the completed border row. Use a mason’s string tied between two bricks to align the leading edges of the first-course bricks. After setting several bricks, tap them with a rubber mallet to bed them into the sand layer. Complete the first field course, and then add some border units along the edge.



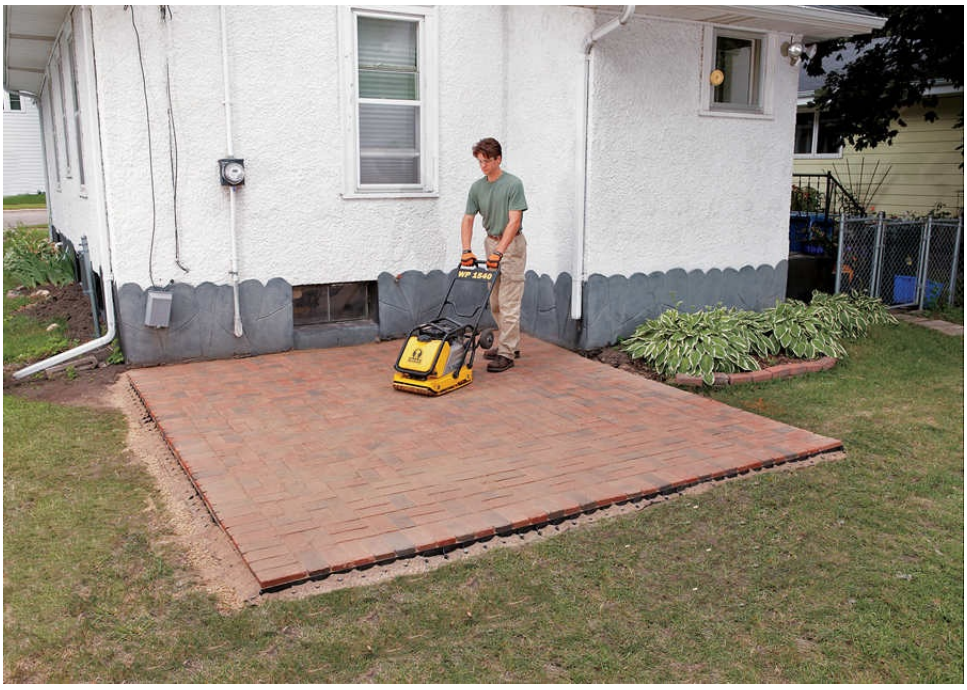
8. Snug a piece of edging against the installed brick and anchor it in place. Note: Install the remaining edging as the paving progresses. Continue setting the brick using the mason’s string and spacers for consistent spacing and alignment.

9. Check each 4-ft. section for level to make sure the bricks are even across the top. Remove low or high bricks and add or remove sand beneath to bring them flush with the surrounding bricks. Work atop a plywood platform to prevent displacing the bricks. Complete the paving.



10. Variation: If your patio design includes curves or rounded corners, mark bricks for cutting curves by holding each brick in position and marking the desired cutting line onto the top face, then make the cuts with a masonry saw. For complex curves, it might be easier to leave off the border bricks and run the field brick long at the edges, then mark the curved cuts onto the field brick.

11. Spread sand over the surface, then sweep the sand to fill the joints. Sweep the surface clean, and then tamp the surface with the plate compactor to settle the sand in the joints and lock the bricks in place.



12. Fill and tamp the sand joints one or more times until the joints are completely filled after compaction. Sweep up any loose sand.

13. Soak the surface with water and let it dry. If necessary, fill and tamp again, then hose off the surface and let it dry.

> **TIP:** If your design requires cuts, use a masonry saw (tub saw). These water-lubricated cutting tools are available for rent at most building centers and stone yards.

Project: Sandset Flagstone Patio

Flagstones make a great, long-lasting patio surface with a naturally rough texture and a perfectly imperfect look and finish. Randomly shaped stones are especially suited to patios with curved borders, but they can also be cut to form straight lines. Your patio will appear more at home in your landscape if the flagstones you choose are of the same stone species as other stones in the area. For example, if your gravel paths and walls are made from a local buff limestone, look for the same material in limestone flags.

Flagstones usually come in large slabs, sold as flagstone, or in smaller pieces (typically 16” or smaller), sold as steppers. You can make a patio out of either. Larger stones will make a solid patio with a more even surface, but the bigger ones can require three strong people to position, and large stones are hard to cut and fit tightly. If your soil drains well and is stable, flagstones can be laid on nothing more than a layer of sand. However, if you have unstable clay soil that becomes soft when wet, start with a 4”-thick foundation of compactable gravel under your sand.

There are a few different options for filling the spaces between flagstones. One popular treatment is to plant them with low-growing perennials suited to crevice culture. For best results, use sand-based soil between flagstones when planting. Also, stick to very small plants that can withstand foot traffic. If you prefer not to have a planted patio, simply fill the joints with sand or fine gravel—just be sure to add landscape fabric under your sand base to discourage weed growth.

TIP: Lay flagstones so their tops are approximately 1/2 to 1” above the surrounding ground. Because natural stones are not uniform in thickness, you will need to adjust sand or dirt beneath each flagstone, as needed.

Tools & Materials

- Mason’s string
- Line level
- Rope or hose
- Excavation tools
- Spud bar
- Broom
- Stakes
- Marking paint
- 1” (outside diameter) pipe
- Coarse sand
- Straight 2 × 4

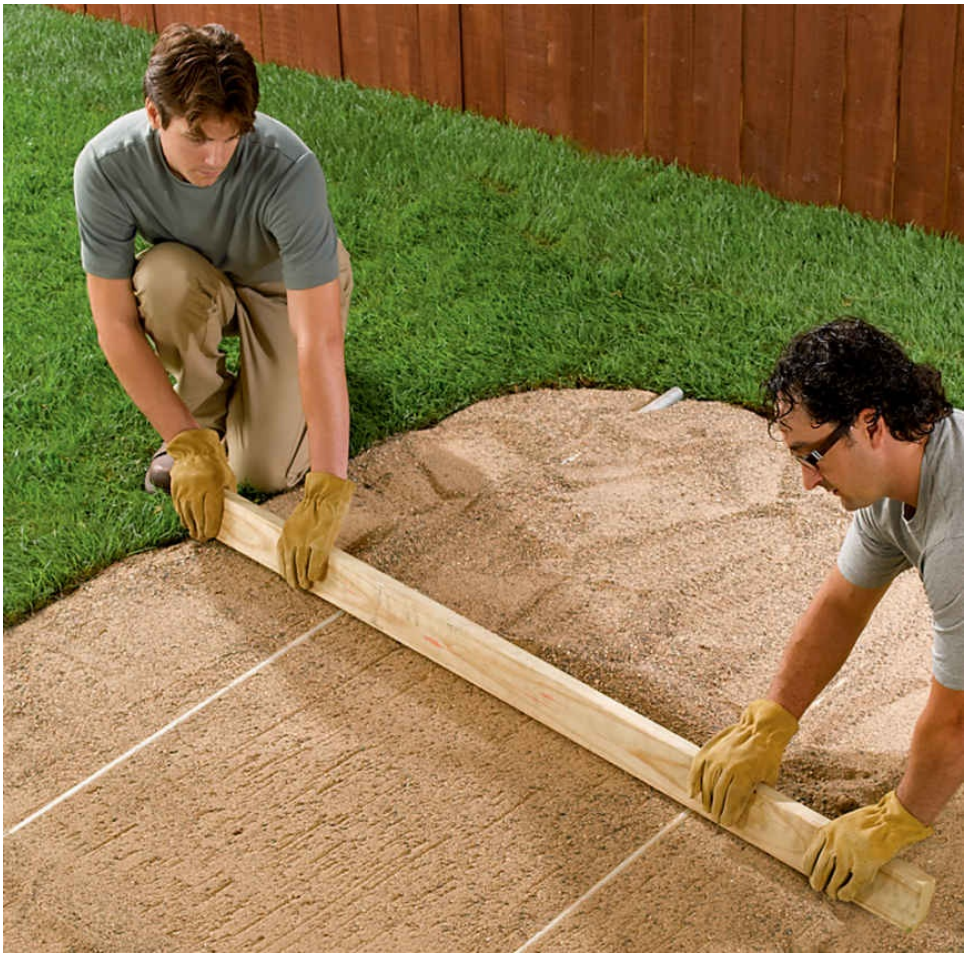
- Flagstone
- Spray bottle
- Stone edging
- Sand-based soil or joint sand
- Lumber (2 × 2, 2 × 4)
- Drill
- Mason’s trowel
- Stiff-bristle brush
- Circular saw with masonry blade
- Plugs or seeds for groundcover
- Eye and ear protection
- Work gloves
- 3/4” plywood
- 3-1/2” deck screws
- Pointing chisel
- Pitching chisel
- Stone chisel
- Hand maul
- Dust mask
- Chalk or a crayon
- Square-nose spade
- Crushed stone

How to Build a Sandset Flagstone Patio

1. Outline the patio base using string and stakes for straight lines and/or a rope or hose for curves. The base should extend at least 2 to 4” beyond the edges of the flagstones, except where the patio will butt up to a wall. Transfer the outline to the ground with marking paint. Remove any sod and vegetation within the base area.

2. Set up layout strings to guide the excavation using stakes or batterboards (see Project: Site Preparation for detailed steps on layout). Excavate the base to a depth of 2” plus the stone thickness plus 1/2 to 1”. Slope the ground away from the house foundation at a rate of 1/4” per foot.

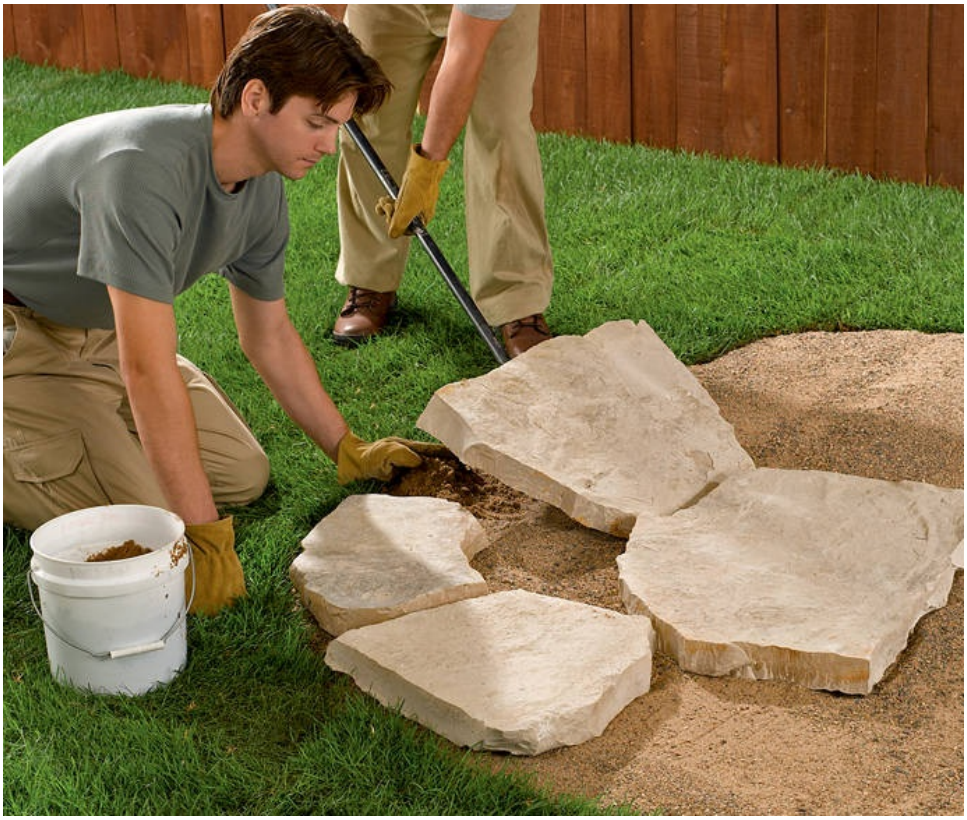
3. Lay sections of 1” pipe across the project area to serve as screed gauges. These allow you to strike off sand at a consistent depth when you drag a screed board over them. Note: Since large flagstones can be held in place adequately by the surrounding soil, edging for the patio is optional; it often looks best to allow neighboring groundcover to grow up to the edges of the stones. If you do plan to use edging, install it now.



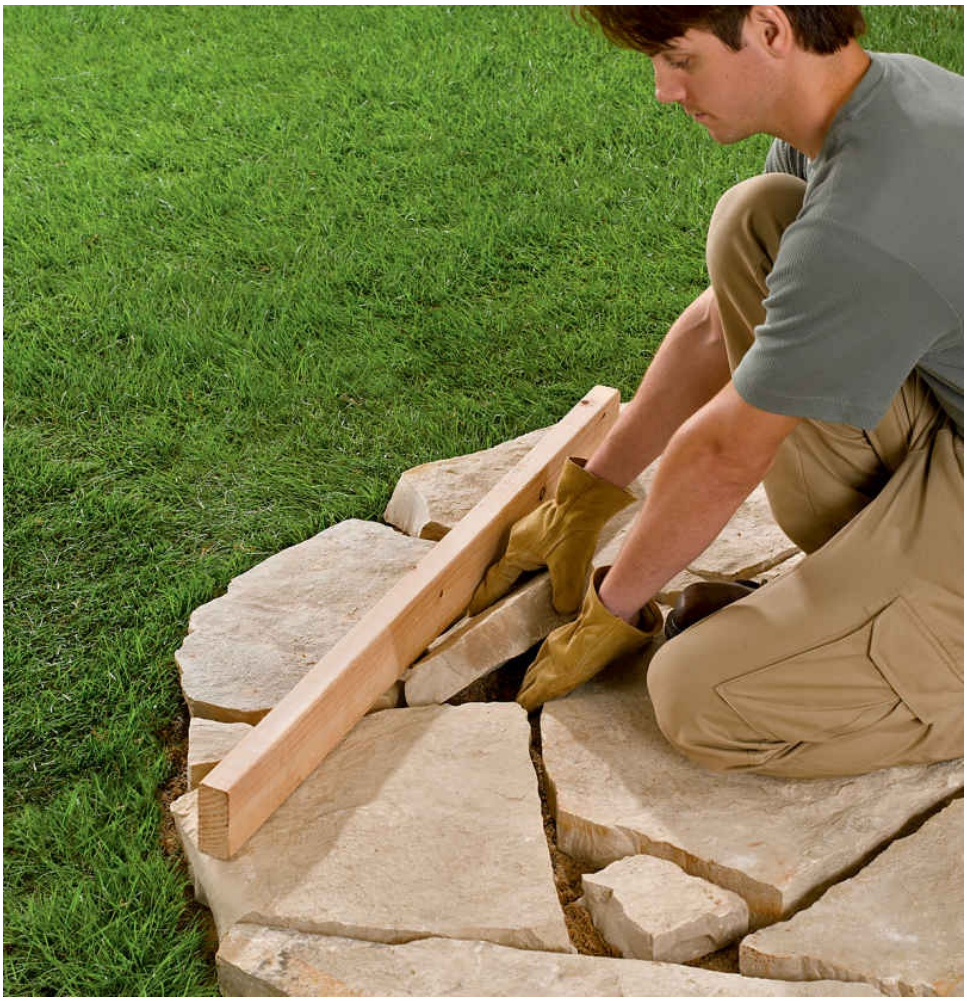
4. Fill the site with coarse sand slightly above the screed gauges. With a helper, drag a straight 2 × 4 across the screed gauges to level off the sand. Use a screed board that’s long enough so that you can avoid stepping in the sand. Work the screed in a back-and-forth sawing motion. Remove the pipes once each section is finished, fill in the voids and smooth the surface flat.

5. Arrange your flagstones into groups according to size and shape. As a general rule, start paving with the broadest stones and fill in around them with increasingly smaller pieces, but appearance and sight lines are also important: if there is one nice stone with a flat

surface and good color, feature it in the center of the patio. Or, if some of the patio will be visible from the house, choose nicer stones for these areas.



6. Begin by laying large, thick stones around the perimeter of the patio. Leave a consistent gap of about 1” between stones by matching pieces like a puzzle and cutting and dressing stones as needed. The outer edge of the patio should form smooth curves (or straight lines) without jutting pieces or abrupt irregularities. Level stones as needed by prying up with a spud bar and adding or removing sand underneath.



7. Fill in around the larger stones with smaller pieces cut to fit the spaces, as needed, working from the outside in. After setting a band of stones a few courses wide, lay a 2 × 4 across the stones to make sure they're level with one another. Add or remove sand below to adjust their height, and dampen the sand occasionally to make it easier to work with.

8. Fill the joints between stones with sand-based, weed-seed-free soil. Sweep the soil across the patio surface to fill the cracks, and then water the soil so it settles. Repeat as needed until the soil reaches the desired level. Plant plugs or seeds for groundcover to grow up between the stones, if desired.

Variation: To finish the patio with sand instead of soil and plants, spread sand over the patio and sweep across the stones with a push broom to fill the joints. Pack the sand with your fingers or a piece of wood. Spray the entire area with water to help compact the sand. Let the patio dry. Repeat filling and spraying until the joints are full and the stones are securely locked in place

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Mark Johanson has written and edited more than 150 books on home improvement and repair, woodworking, and gardening. He was Managing Editor of *HANDY Magazine* and produced more than 100 articles in the DIY subject area. He is an experienced home remodeler and builder and lives in Saint Paul, Minnesota.

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