

Build an Heirloom Garden Shed

Sheds are popular do-it-yourself projects. They're quick to build, and they offer a taste of everything from framing to finish. Not surprisingly, there's no shortage of information on building sheds, and a lot of it uses a predictable list of materials: 2x4s, panel siding, tiny windows, and asphalt shingles. When our colleagues at *Fine Gardening* asked us to design and build a shed for them, however, we decided to make something a bit different.

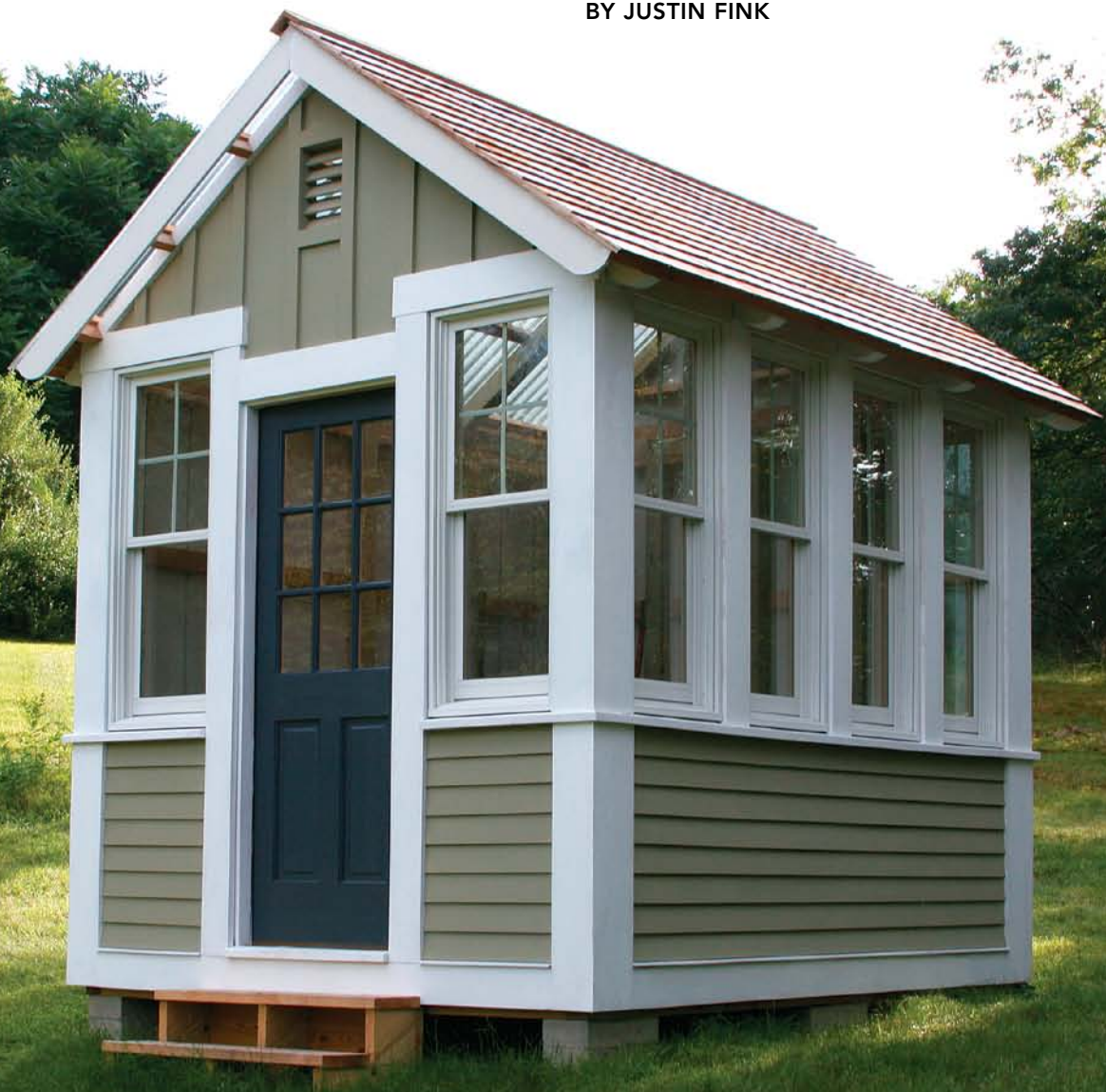
We wanted to give our project the kind of classic feel you get from a timber-frame outbuilding, but without the expensive materials and required skill. We ended up designing the structure with pressure-treated 4x4 lumber as sort of a hybrid timber frame. Wanting to let that style influence the rest of the project as well, we chose a solid-plank floor rather than one made of plywood or OSB, and wood clapboards and board-and-batten siding rather than T-111 panel siding. Instead of asphalt shingles, we chose cedar shingles for one side of the roof and polycarbonate panels to let light in on the other side.

Our shed took longer to make than a standard outbuilding, but the payoff was worth the effort.

Justin Fink is Project House editor. Shed design by Rodney Diaz.

Anything but typical, this handsome outbuilding can be built by one person in about a week

BY JUSTIN FINK

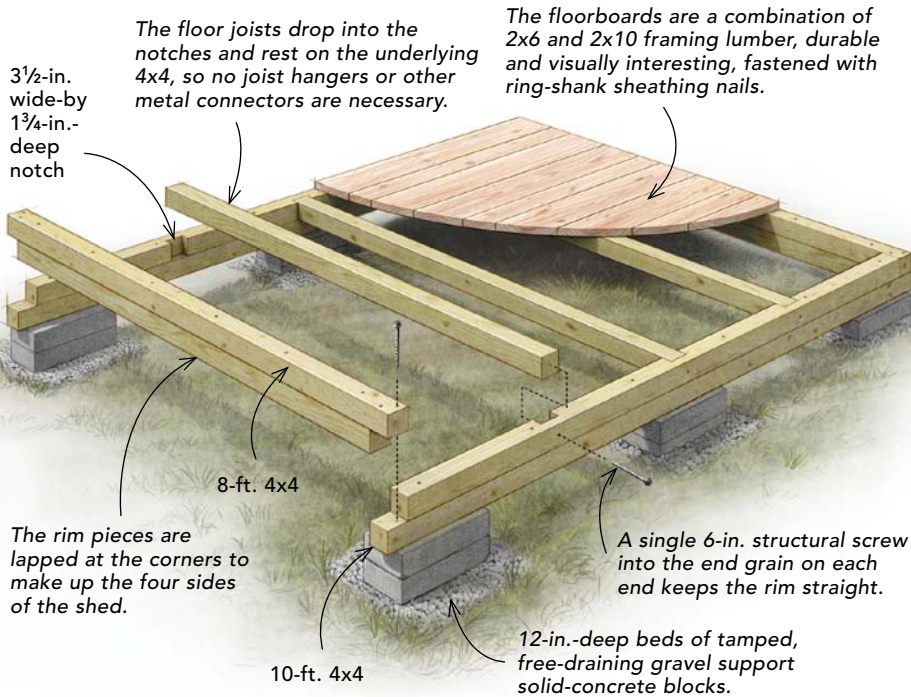


Free video series

Watch and learn how to execute every detail of this custom shed at FineHomebuilding.com/extras.

DAY 1 FOUNDATION AND FLOOR

Building a shed atop stacked concrete blocks that rest on pads of compacted gravel has several advantages over other methods: The materials are inexpensive, the method is simple, and there's no waiting for concrete to cure, which means you can start building the floor frame sooner. If your site is hilly or requires stacking more than a few blocks to get the foundation level, you'll need either to do some preliminary site work to level the area, or consider poured-concrete piers instead.



Half-lapped 4x4s create a timber-frame look

Because many pieces of this shed frame are similar, you can gang up parts to create the notches where they will join together. The basic technique for cutting the notches is shown below.

Lay out with a template. Lumber varies in width depending on how wet it is, so when laying out the notches, use a 4x4 cutoff as a template to help ensure that the cutouts will be wide enough to accept the posts.



Follow the line, then hog out the waste. The first two cuts establish the shoulders of the notch, and the rest of the passes kerf the lumber so that it can be removed easily. Aim for no more than 1/4 in. between cuts.



Finish with a hammer and chisel. Remove the bulk of the waste with a hammer. Then clean up the notches with a wide chisel, leaving the joints reasonably flat and free of high spots.



Level the footings



Using the highest corner as a benchmark, level the other corners with the help of a long board and a box-beam level. For fine adjustments, add or remove gravel from the pad.

Square the frame



Before fastening the corners of the frame, take diagonal measurements to check for square. They should be within 1/8 in. of each other. If not, persuade the frame a bit with a hammer and a block.

Fasten the corners



The connections in the frame of this shed are fastened with structural screws. They're available in several lengths and head styles, are weather resistant, and zip into wood without pilot holes.

Trim the floor flush



Install the floorboards tight to one edge of the floor frame, then trim any overhang on the opposite end with a circular saw.

DAY 2 WALL FRAMING

The wall assembly consists of 4x4 top and bottom plates, 4x6 corner posts, and 4x4 wall posts. As with the floor, gang as many common parts together as possible, cut them to length, and notch them according to the layout.

Start at the corners



Unlike a traditional stud wall built on the floor and lifted into place, these walls are built in place, starting with bottom plates and corner posts.

Lower girts are next



The 2x4 girts, which will later act as the windowsills, provide bracing between corners and make handy scaffolding for reaching the top plates.

Gable plates, then eaves



Place the gable-side top plates first, and then drop in the eave pieces between, resting them on the remaining lip of the 4x6 corner posts.

Fill in the wall posts

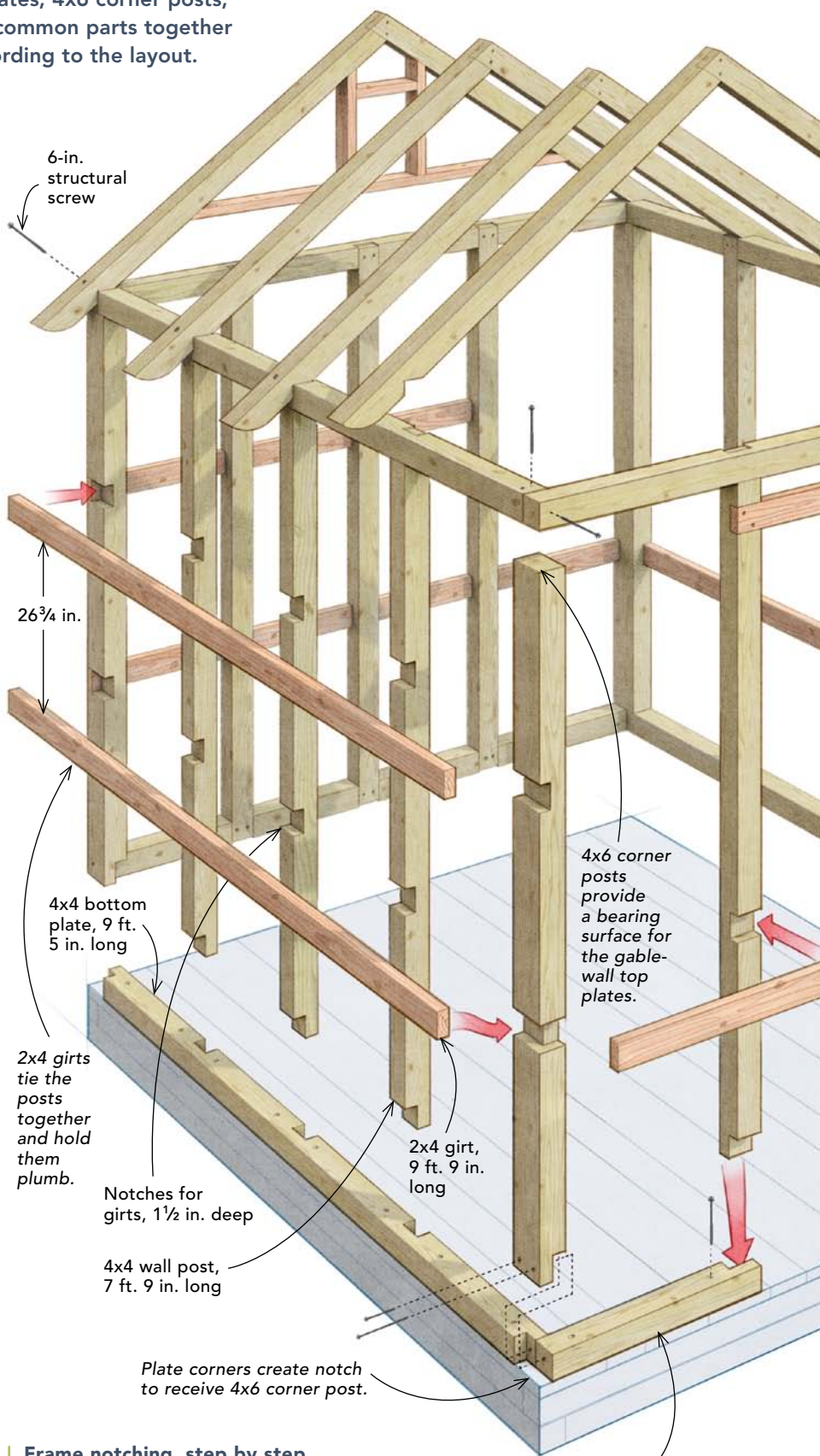


Pay careful attention to the placement and orientation of wall posts; their notches correspond to the upper girts and window locations.

Upper girts are last



The girt above the door goes in next, but leave the lower girt across the door opening to brace the walls. It can be removed later.



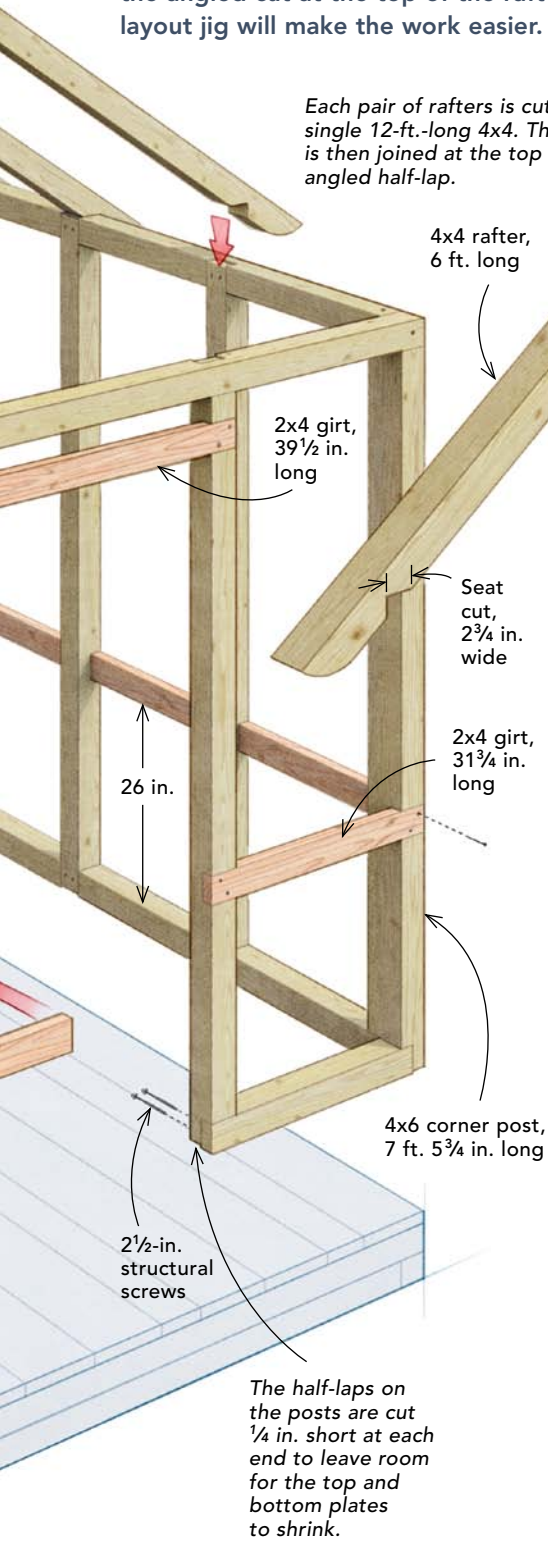
Frame notching, step by step

For a detailed gang-cutting sequence of the half-lap joinery, purchase our illustrated plans at FineHomebuilding.com/extras.

Bottom plates are installed flush to the outside face of the floor frame with 6-in. structural screws.

DAY 3 ROOF FRAMING

The half-laps at the top of the roof rafters are basically the same as the half-laps used for the floor and walls, but they are set on an angle, which makes the layout and cutting a bit more challenging. You can use a rafter square to mark the angled cut at the top of the rafters, but taking a few minutes to make a layout jig will make the work easier.



Each pair of rafters is cut from a single 12-ft.-long 4x4. The pair is then joined at the top with an angled half-lap.

4x4 rafter, 6 ft. long

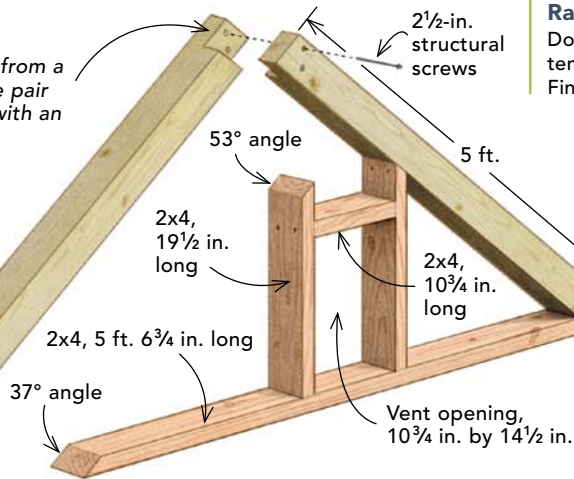
2x4 girt, 39 1/2 in. long

2x4 girt, 31 3/4 in. long

4x6 corner post, 7 ft. 5 3/4 in. long

2 1/2-in. structural screws

The half-laps on the posts are cut 1/4 in. short at each end to leave room for the top and bottom plates to shrink.



2 1/2-in. structural screws

53° angle

5 ft.

2x4, 19 1/2 in. long

2x4, 10 3/4 in. long

2x4, 5 ft. 6 3/4 in. long

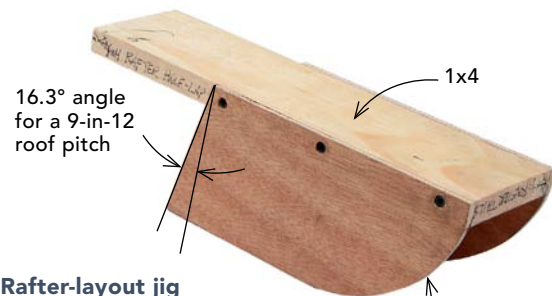
37° angle

Vent opening, 10 3/4 in. by 14 1/2 in.

2 3/8-in. height above top plate

3 1/2-in. radius for rafter tails

All of the rafters are the same, so grab two, flip one over, and join them together with screws so that they can be lifted already assembled.



Rafter-layout jig

Download a full-size template of this jig at FineHomebuilding.com/extras.

Shape the rafter tails



After roughing out the shape of the curve on each rafter tail with a jigsaw, clamp them all together, and clean them up with a belt sander.

Gang-cut the half-laps



Cut the angle at the top of each rafter, then clamp them together so that their angled ends are in line. After cutting the sides of the half-lap with a circular saw, cut across the end grain.

Cut the bird's mouth



Clamp the rafters together so that the curved ends are flush, and cut the bird's mouth in two passes—first the seat cut, then the plumb cut.

Lay out the angled half-laps



Use the jig shown above to mark the through-cut angle at the top of each rafter, then slide it down to mark the shoulder of the overlap.

Pop 'em with a chisel



Even with the 7/4-in. circular saw set to its maximum depth of cut, the blade won't be able to finish the half-lap. Use a chisel and a hammer to pop off the waste.

Anchor with screws



After aligning the rafters to their layout marks, drive a single structural screw through each rafter's bird's mouth and into the top plate.

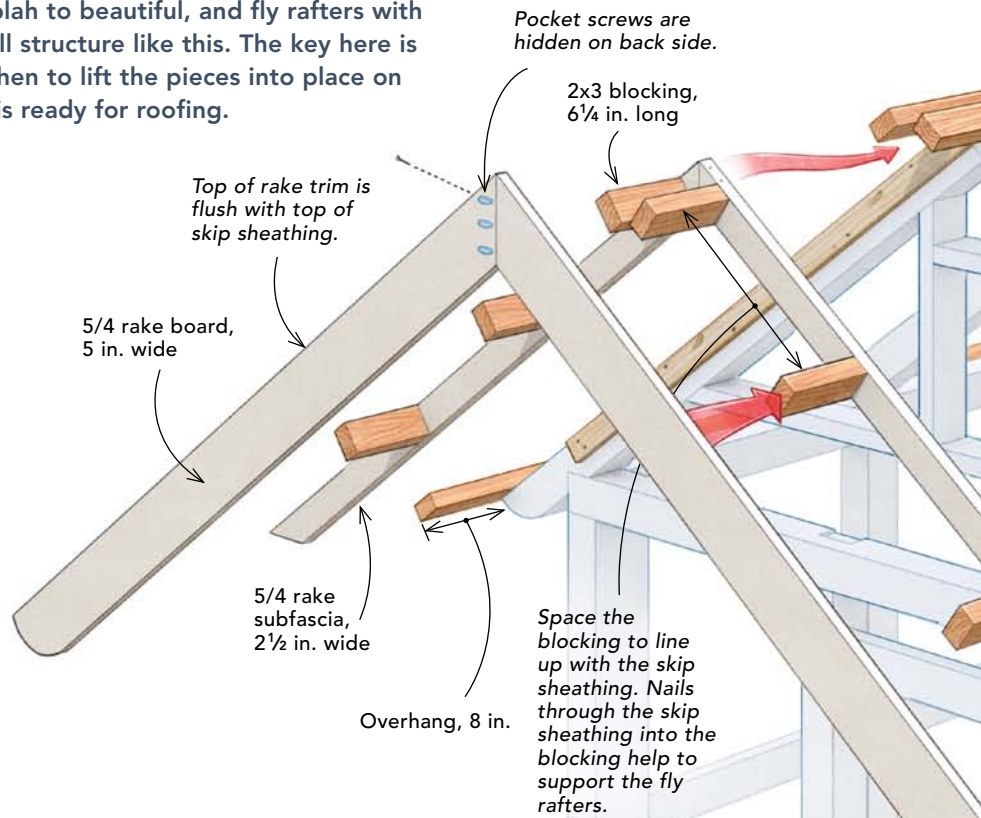
DAY 4 ROOF TRIM

Overhangs help to take an ordinary roofline from blah to beautiful, and fly rafters with trim are pretty simple to build, especially on a small structure like this. The key here is to do the fussy work while you're on the ground, then to lift the pieces into place on the shed. Once the fly rafters are up, the building is ready for roofing.

Plumb the rafters

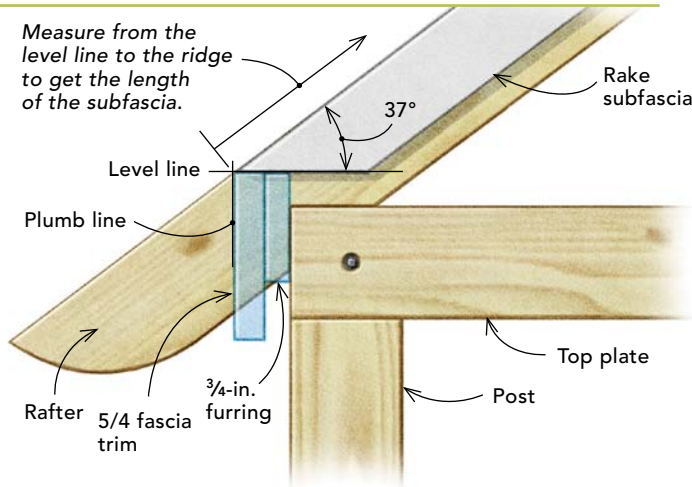


After marking the overhangs and rafter layout on a piece of skip sheathing, nail it to one of the gable rafters a few inches down from the ridge. Next, clamp a level to the framing and tweak this first rafter into plumb. Work your way down the roof, aligning and nailing the rafters to the marked skip sheathing.



Measure for the subfascia

Measure out from the eave wall the thickness of a 3/4-in. furring strip and the 5/4 trim board, and mark the rafter with a plumb line. Draw a level line out from the point where the plumb line meets the top of the rafter. This level line represents the bottom of the rake subfascia.



Secure the subfascia



After nailing the 2x3 blocking to each half of the rake subfascia, clamp the halves together at the peak, and drive a couple of exterior screws through the miter to hold it tight.

Install the subfascia



Fasten the rake-subfascia assembly over the furring strips, making sure the bottom of the subfascia lines up with the top of the 5/4 fascia trim that comes later (see drawing above).

Screw the rake trim

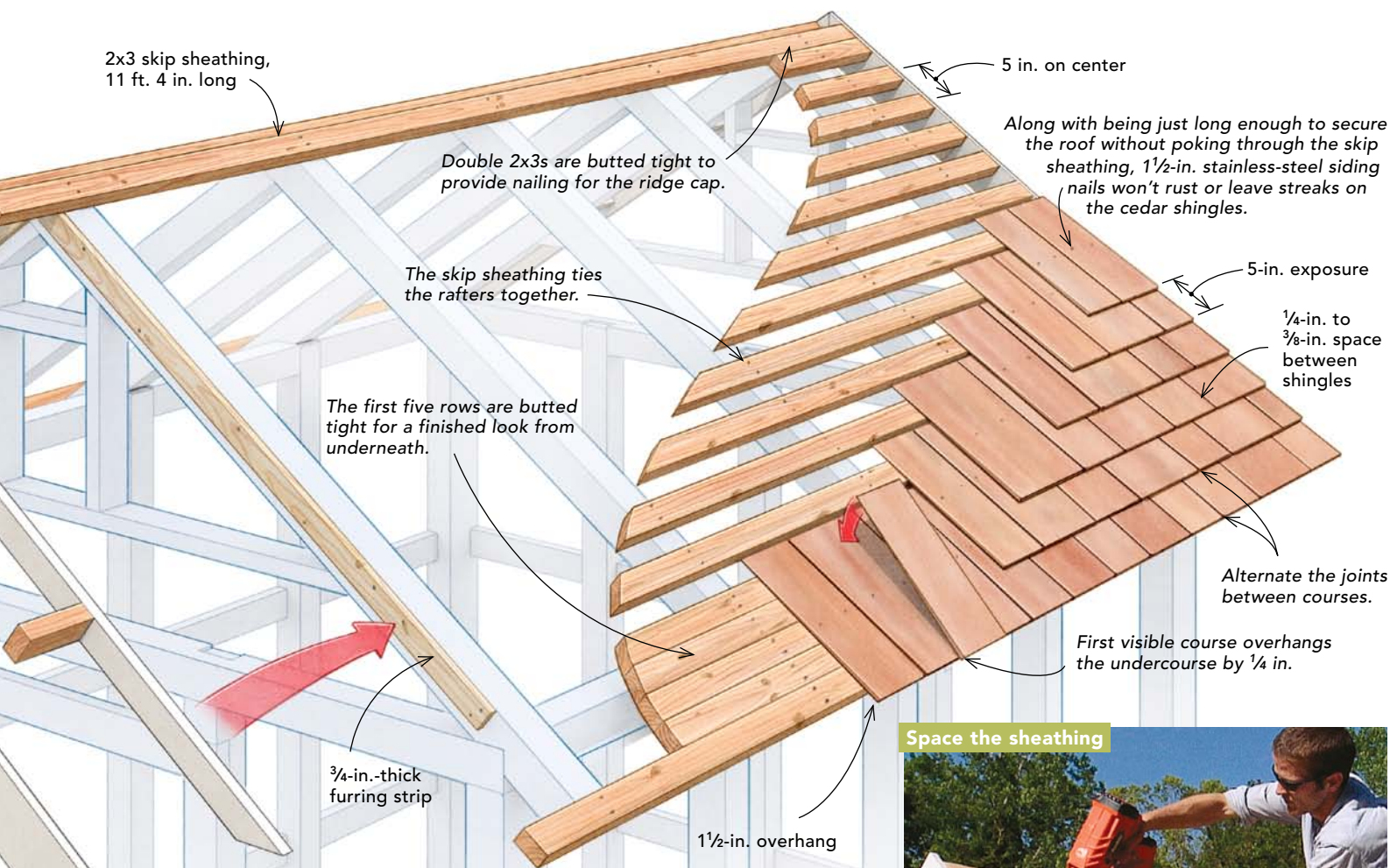


The rake trim will be the outermost part of the roofline, so use pocket screws on the back of the trim to pull the two halves of the miter together and to ensure they never open.

Install the rake trim



Nail the rake trim to the blocking and skip sheathing, keeping it flush with the top of the skip sheathing. Finish the lower ends of the rake with the same curve as the rafter tails.



2x3 skip sheathing,
11 ft. 4 in. long

5 in. on center

Double 2x3s are butted tight to
provide nailing for the ridge cap.

Along with being just long enough to secure
the roof without poking through the skip
sheathing, 1 1/2-in. stainless-steel siding
nails won't rust or leave streaks on
the cedar shingles.

The skip sheathing ties
the rafters together.

5-in. exposure

The first five rows are butted
tight for a finished look from
underneath.

1/4-in. to
3/8-in. space
between
shingles

Alternate the joints
between courses.

First visible course overhangs
the undercourse by 1/4 in.

3/4-in.-thick
furring strip

1 1/2-in. overhang

Space the sheathing



DAY 5 CEDAR SHINGLES

Although it costs more and takes a bit of extra work to install, the cedar roof on this shed offers a big payback. Not only is it one of the most fun parts of the project, but it also looks great and is durable.

The cedar shingles will be installed with a 5-in. exposure, so the 2x3 skip sheathing must be 5 in. on center. This seems fussy to lay out, but because 2x3s are actually 2 1/2 in. wide, you can use a cutoff as a spacer during layout.

Establish the overhang



Tack a 2x4 spacer and ledger to the rafter tails to establish the 1 1/2-in. overhang for the undercourse shingles. Once the undercourse shingles are in place, remove the spacer and ledger to make room for the first course of visible shingles, which will overhang the undercourse by an even 1/4 in.

Nail a course at a time

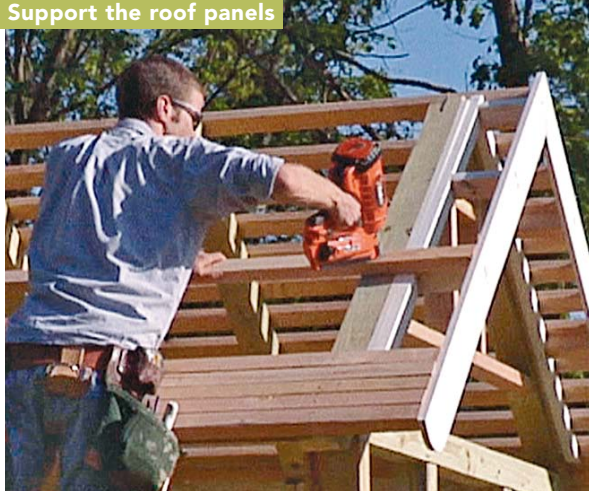


If you're not comfortable placing nails by eye, you can snap a chalkline or place a dry line between the two jigs to guide your nail placement and ensure that the following course will hide your fasteners by about 1 1/2 in. The string is also helpful on windy days to keep the shingles from blowing around.

DAY 6 POLYCARBONATE ROOF

In addition to being used to store garden tools, this shed can be used for starting seeds. To maximize the incoming sunlight, the south-facing portion of the roof is finished with clear polycarbonate roofing panels.

Support the roof panels



Polycarbonate panels don't need much support, so this side of the roof requires only two pieces of skip sheathing. Align them with the blocking in the fly rafters to help support the fly-rafter assemblies.

Cut to length

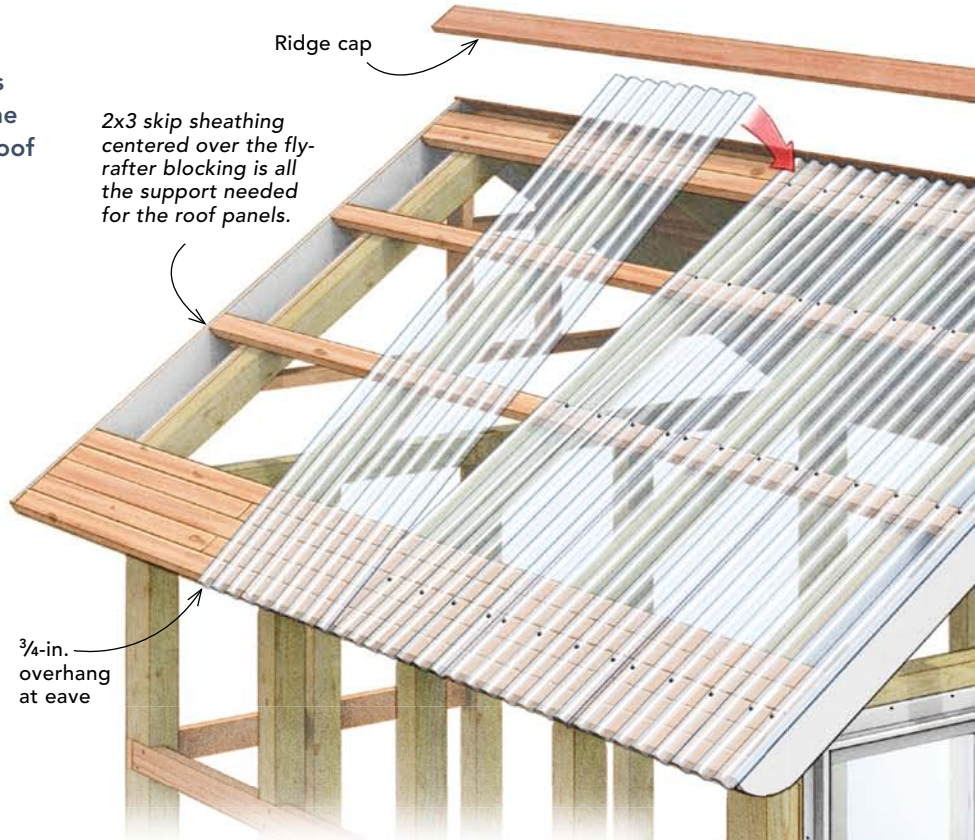


Clamp the corrugated roofing panels together, and cut them to length with a circular saw. To get clean cuts, the roofing manufacturer recommends mounting the sawblade backward. Cutting this material is very loud, so wear ear protection.

Fasten carefully



Don't overtighten the fasteners; overtightening can compress their rubber washers and limit panel movement. As with the cedar shingles, use a spacer and ledger to keep the overhang consistent.



Drill for screws



While they're still stacked, mark the sheathing locations on the panels, and drill 1/4-in.-dia. pilot holes for the gasketed screws. Drill through the raised portion of the panels, not through the troughs, where water is more likely to seep in.

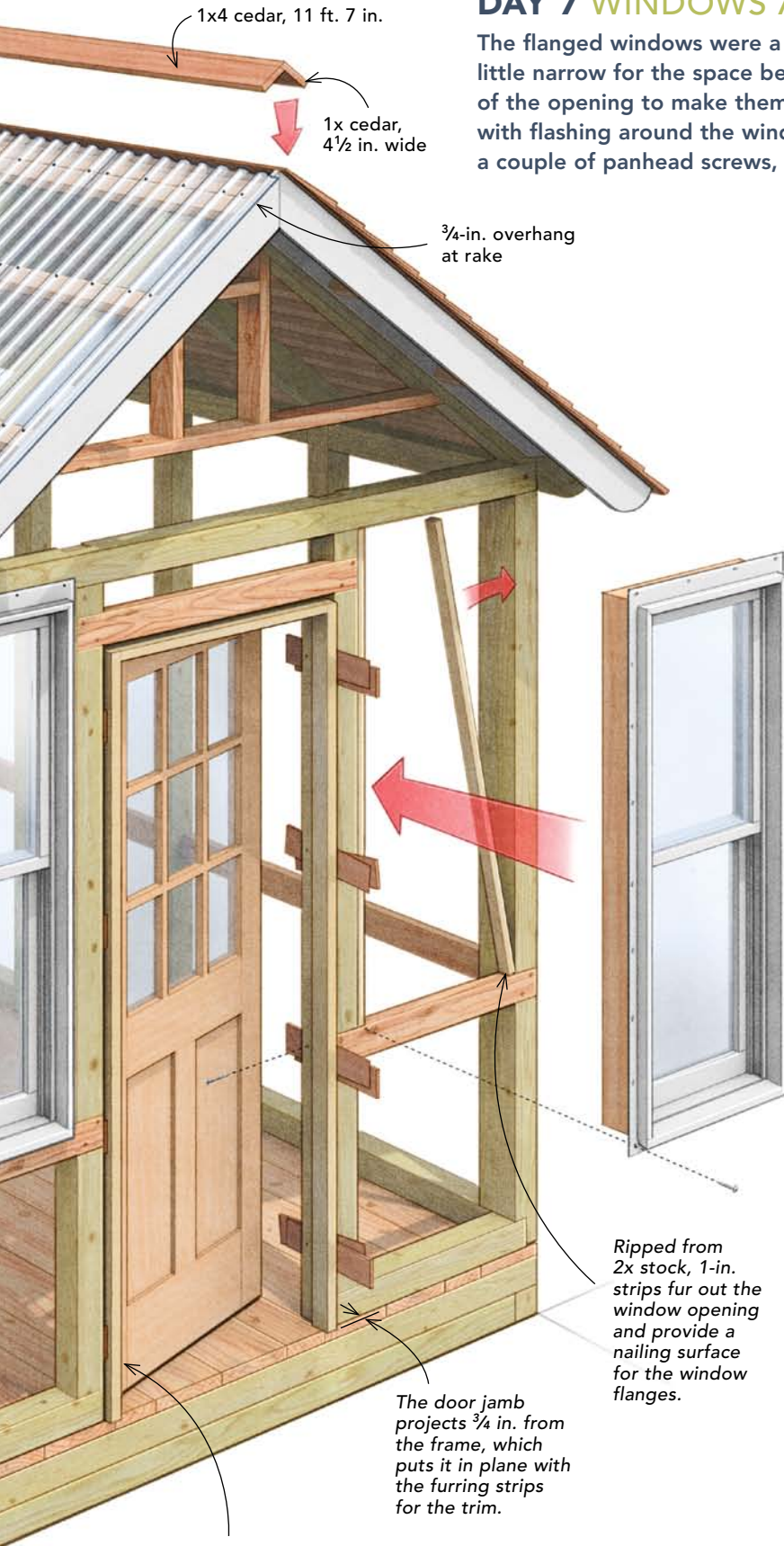
Overlap the seams



As you work across the roof, overlap the panels by one full trough. The last panel needs to be ripped to width for the proper overhang along the rake. Again, use a circular saw with the blade mounted backward.

DAY 7 WINDOWS AND DOOR

The flanged windows were a bargain-bin deal at a local lumberyard, but they were a little narrow for the space between the posts. The frame needed blocking on each side of the opening to make them fit. This shed has no weather barrier, so we didn't bother with flashing around the window flanges. Each window was simply fastened in place with a couple of panhead screws, checked for level and plumb, and then fastened securely.



A jamb kit and a solid-wood door from the local home center were an affordable alternative to a prehung unit.

Space the windows evenly



When placing multiple windows with trim in between, leave nice, even spaces between the windows so that you don't have to make tapered rip cuts to fit the trim. Establish the gap between the middle windows, then work to the outside.

Seal the bottom of the door



The door doesn't include a threshold because sealing against drafts isn't necessary and having no sill makes the shed easier to sweep out. Without a threshold, though, the bottom of the jamb legs and the door slab must be sealed with primer.

Plumb the door with shims



The solid-fir 9-lite door was fitted with a jamb kit prior to installation. Shims at the upper corners lock the door into position temporarily while allowing it to be adjusted for plumb.

Screw the door to the frame



The door jamb must be set out in line with the 3/4-in. furring strips that will back up the door trim. Once in position, the prehung unit is fastened to the frame with screws through both jamb sides.

DAY 8 LOWER TRIM AND SIDING

This shed has two different types of siding—clapboards on the lower half and board and batten on the upper half—and they aren't the same thickness. To keep the upper and lower halves of the siding and trim in plane with each other, add 3/4-in.-thick furring strips to the lower half of the shed before the trim and siding work begins.

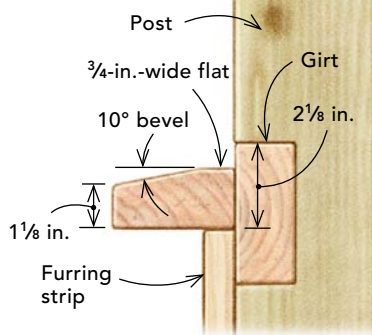
Pad out the lower trim



Furring strips are used to space the trim and siding on the lower half of the shed so that they're in the same plane as the board-and-batten siding on the upper half of the shed.

A chalkline guides the furring strips

Install the lower furring strips so that they start 2 1/8 in. from the top of the girt that runs around the entire building. This keeps the sill straight and provides solid nailing.



Furring strips are set 1 1/2 in. from the opening to provide nailing for the clapboards.



Continuous sill, 3 in. wide by 1 1/2 in. thick

1x4 furring strips

Door sill, 3 in. wide by 1 1/2 in. thick, same profile as continuous sill above

The door casing is installed over furring strips.

5/4x6 door casing

Nail the sill atop the furring

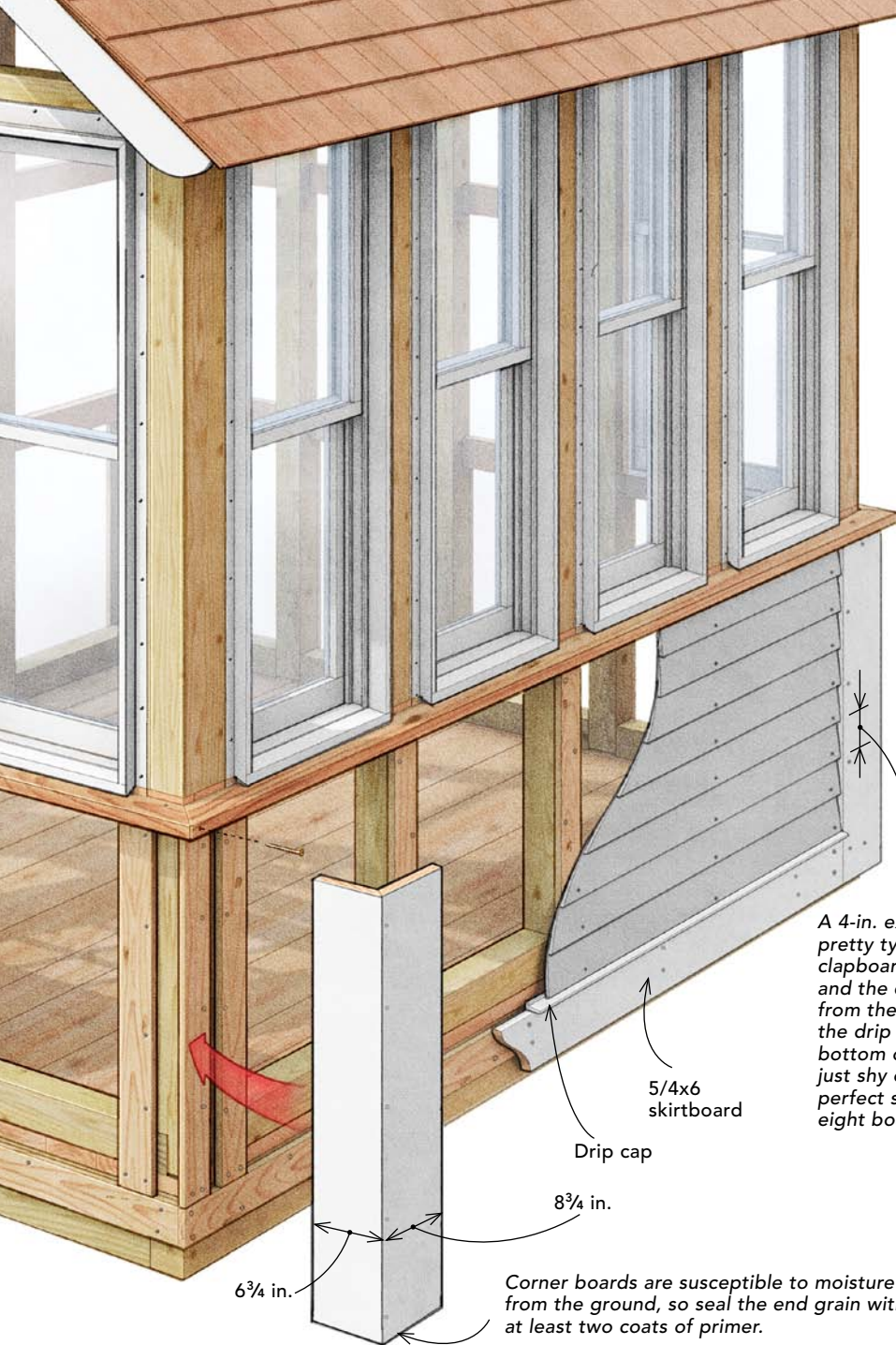


A continuous sill ripped and beveled from 2x stock rests on top of the furring strips, dividing the upper and lower siding and acting as a sill for the windows. Nails are driven through the top of the sill into the furring and the posts for a solid connection.

Lock down the corners



Lock the miters of the sill with a single exterior screw at each corner of the shed. This keeps the miters tight against seasonal movement.



A 4-in. exposure is pretty typical for clapboard siding, and the distance from the top of the drip cap to the bottom of the sill is just shy of 32 in.—perfect spacing for eight boards.

Corner boards are susceptible to moisture from the ground, so seal the end grain with at least two coats of primer.

Lay out the clapboards



The best way to keep siding in line from one side of the building to the next is to measure and mark the siding exposure on a story stick, then to use the stick to mark the siding exposure on the inside edges of each corner board. Make sure to account for the lip on the back of the drip cap when marking the height of the first course.

Flex them to fit



Cut the clapboards just a hair longer than the space between the corner boards so that you can spring them into place for a snug fit.

Nail 'em off



Prime all cuts, and fasten the clapboards with a single siding nail at each framing member. The top clapboard is ripped to 4 in. for an even exposure.

Assemble the cornerboards



Join the mitered edges of the corner boards with trim screws. Butt the assembly tight to the underside of the sill, and fasten it with ring-shank nails.

Cap the skirtboard



A wooden drip cap is fastened atop the skirtboard, helping to direct water from the trim and spacing out the bottom edge of the first course of clapboards.

DAY 9 UPPER TRIM AND SIDING

The board-and-batten siding on the upper half of the shed is a combination of primed 1x10 and 1x3 trim boards. The wide boards get fastened near the center; the edges, which are pinned down by the battens, are left to expand and contract with seasonal changes.

Start in the middle



For the board-and-batten siding on the gable ends, start with the center board and work your way out. Make sure to get the first board dead plumb. If it's not perfect, you'll fight the layout all the way across the wall.

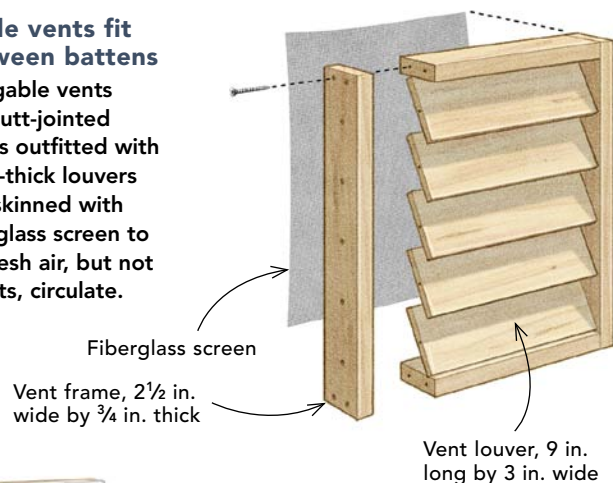
Use a spacer block



A spacer keeps the board layout consistent. A horizontal trim board will span above the door and windows, making it possible to use short boards on the gable.

Gable vents fit between battens

The gable vents are butt-jointed boxes outfitted with $\frac{3}{8}$ -in.-thick louvers and skinned with fiberglass screen to let fresh air, but not insects, circulate.



Gable vent, 10½ in. by 14¼ in.

The final piece of fly-rafter blocking goes in after the trim.

Furring strip

For the fascia above the windows, use a piece of 5/4 trim between the rafter tails, and then run a continuous piece below the rafters.

Furring strips around the windows ensure that the trim will be in plane with the fly rafters and slightly proud of the battens.

Mark the fascia in place



When fitting the fascia board around the rafter tails on the back of the shed, locate the notches by cutting the fascia board a little long, tacking it in place, and using a square and a pencil to mark the cuts right off the rafters. Once it's marked, pull the board back down and cut it with a jigsaw.



Cover the gaps

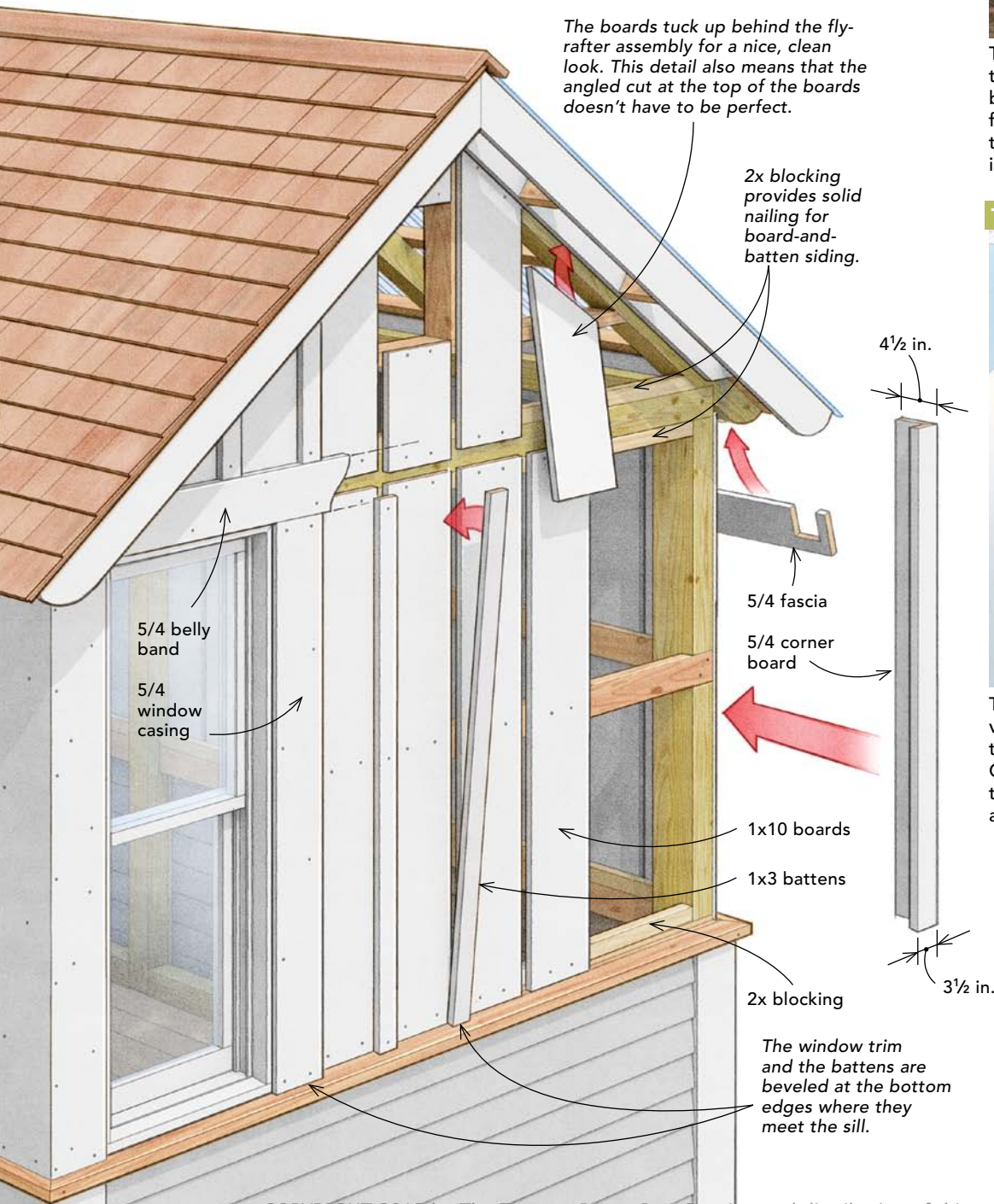


The job of the 1x3 battens is to hide the expansion gaps between the boards and to prevent the boards from cupping. Siding nails should go through the middle of the battens and into the framing.

Trim out the vents



The last step is to install the gable vents, which slide into place from inside the shed and get screwed to the frame. On the exterior, trim above and below the vents ties them into the battens for a clean look.



The boards tuck up behind the fly-rafter assembly for a nice, clean look. This detail also means that the angled cut at the top of the boards doesn't have to be perfect.

2x blocking provides solid nailing for board-and-batten siding.

4 1/2 in.

5/4 fascia

5/4 corner board

1x10 boards

1x3 battens

2x blocking

3 1/2 in.

The window trim and the battens are beveled at the bottom edges where they meet the sill.

Explore the shed in SketchUp

Download a full-scale SketchUp model of our garden shed at FineHomebuilding.com/extras.