The Family Handyman®

PROJECT PLAN

Yard shed

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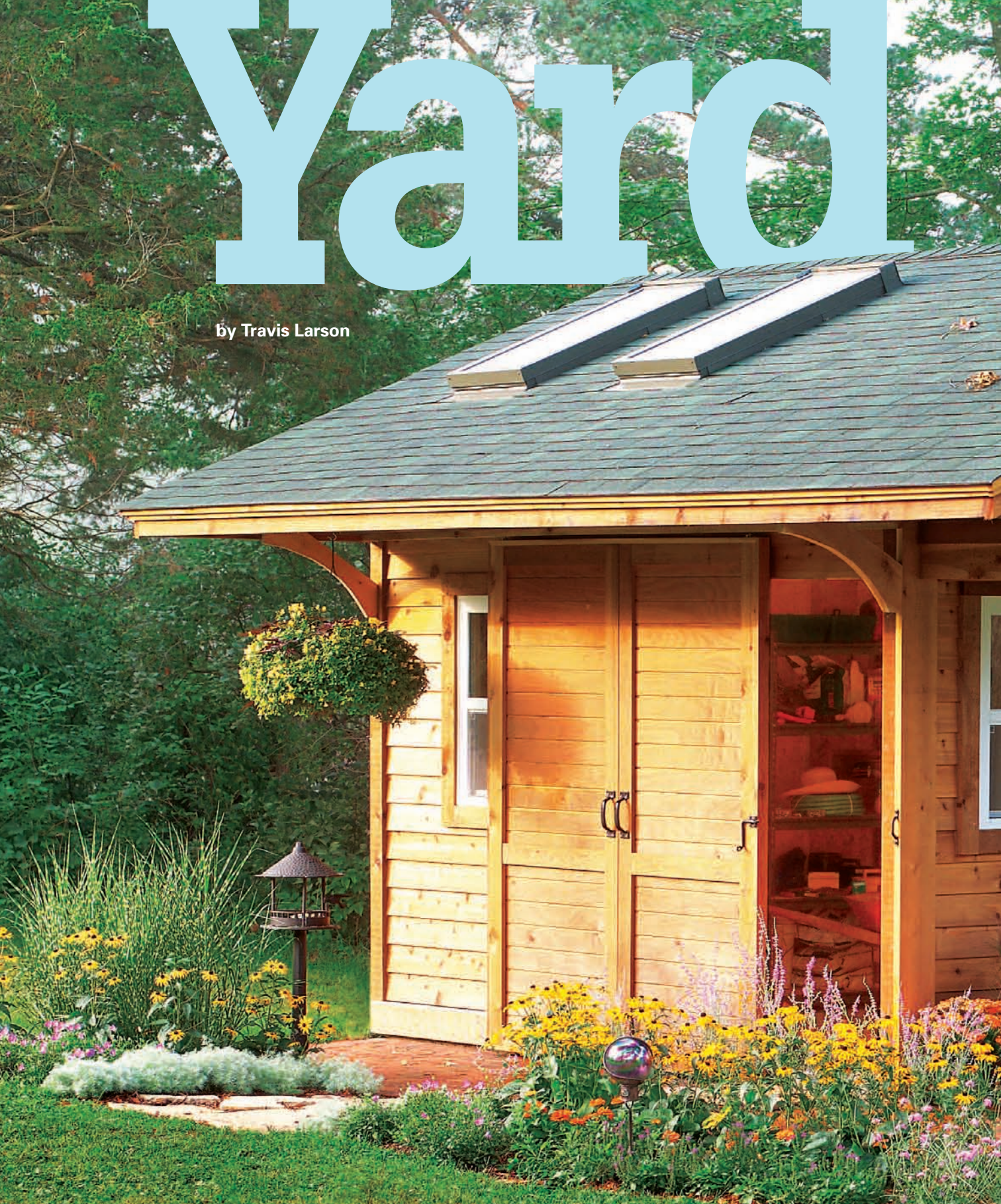
Yard

by Travis Larson

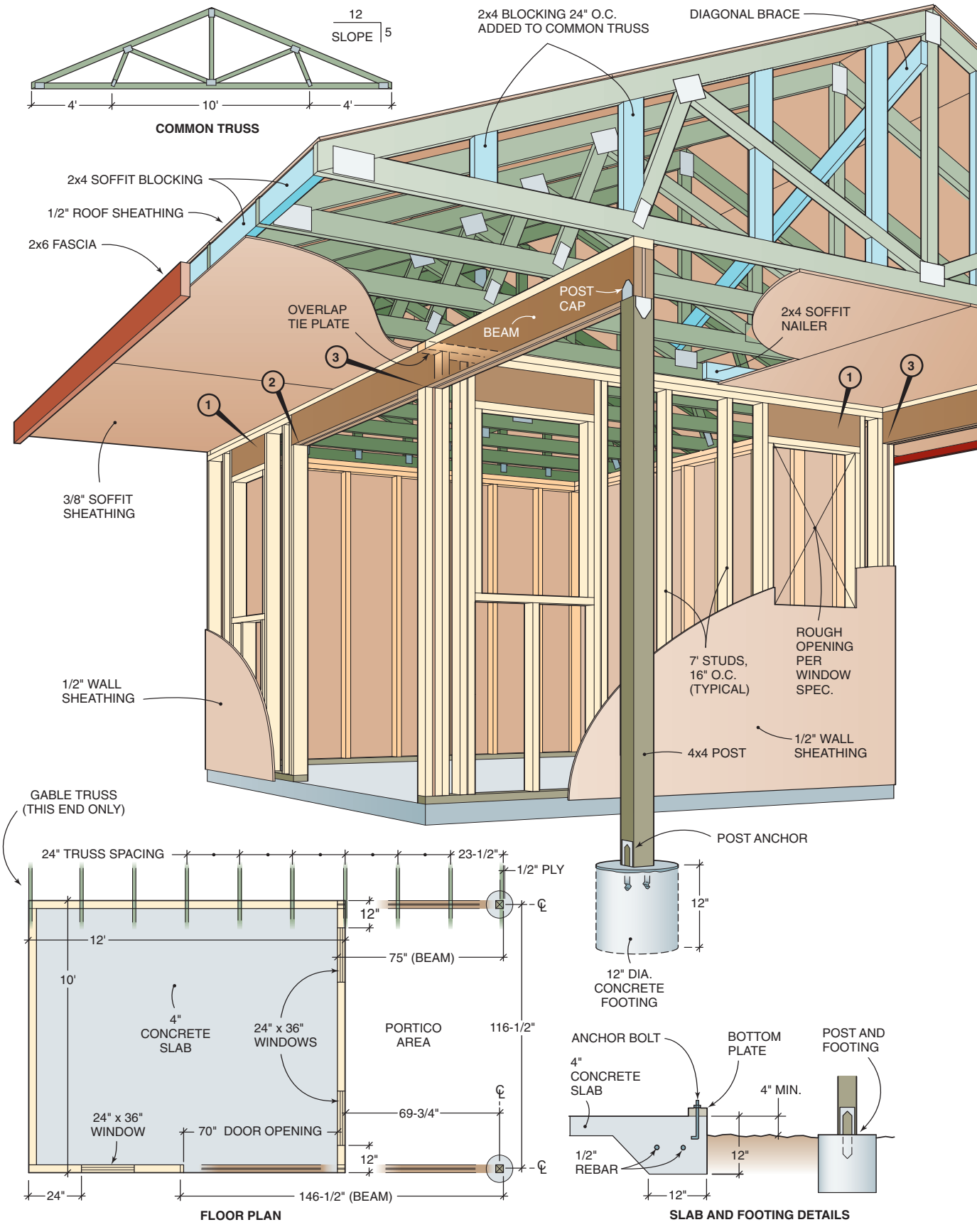


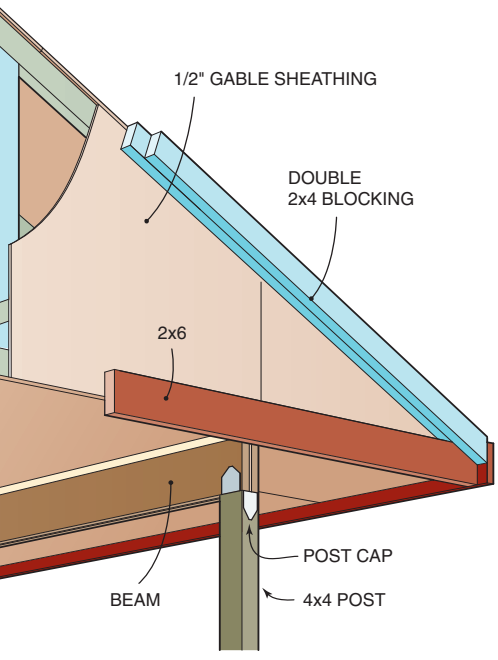
• Spacious interior storage • Wide sliding door for easy access • Bright

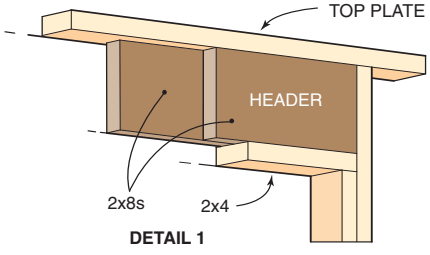
shed

skylit interior • Handsome cedar siding • Sheltered work/sitting area

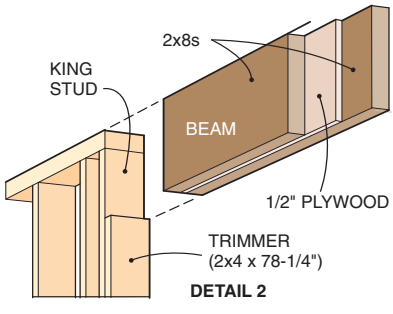
Figure A
Framing details







DETAIL 1



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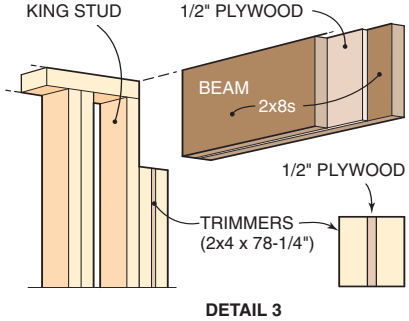


DETAIL 3

Who doesn't need a better place to stow all that stuff cluttering up the garage? Wheelbarrows, lawn mowers, bikes, fertilizer spreaders and lawn and garden supplies all steal precious garage space. A yard shed will not only free up your garage but also help you organize and neaten your home and let you park the cars inside again.

This year we've bent over backward to design a shed that's easy to build yet has lots of useful features. We combined standard 2x4 wall construction with prefabricated roof trusses to make roof framing easy, eliminate tricky soffit (eave overhangs) work and simplify trim details. We added an easy-to-build sliding door for wide shed access without the hassles or expense of swinging doors. Additional features include the open portico and wide roof overhangs. They'll shade you from the hot sun and shelter you from the rain so you can work in the open air or just relax.

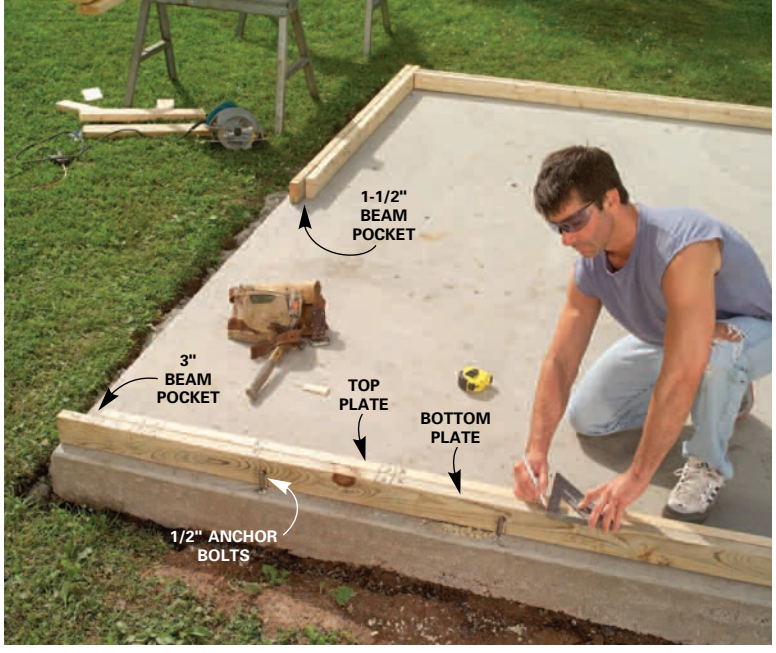
In this story, we'll show you the step-by-step process of how to frame and finish this shed. While time consuming, the process doesn't require any advanced carpentry skills. If you've done some framing and siding and a tad of roofing, you're qualified to tackle this project. We spent about $3,500 (excluding the concrete work) for top-grade materials. The materials lists below and on pp. 53 and 54 tell you what we used, but it's easy to shave off $1,000 or more by excluding some of the cosmetic trim (asterisked items on the exterior cladding materials list, p. 53), or substituting a less expensive material for the rough-sawn cedar. If you want to further cut costs, eliminate skylights and use standard shingles in lieu of the architectural-grade shingles.

Figure A

Rough framing materials

ITEM	QTY.
Framing materials	
4x4 x 8' treated (portico posts)	2
2x4 x 10' treated (bottom plates)	2
2x4 x 12' treated (bottom plate)	1
2x4 x 8' treated (bottom plate)	1
2x4 x 12' (top and tie plates)	14
2x4 x 7' (studs)	60
2x8 x 14' (door/portico beam)	2
2x8 x 8' (portico beam, window headers)	4
4x8 1/2" plywood sheets (roof and wall sheathing)	25
Roof trusses	
Common trusses	9
Gable end truss	1

ITEM	QTY.
Hardware	
16d cement-coated nails (framing nails)	15 lbs.
8d cement-coated nails (sheathing nails)	10 lbs.
1-1/2" joist hanger screws (connector fasteners)	1 lb.
Rafter ties (truss anchors)	16
H-clips (plywood joints)	36
Post anchors (post-to-concrete connection)	2
Post caps (post-to-beam connection)	2



1 **Cut the top and bottom plates to length (see Figure A), then mark and drill 5/8-in. anchor bolt holes in the bottom plates. Tack the pairs together and mark the window, door and stud locations.**

2 **Assemble the headers and nail them to the top plates. Then nail the full-length studs to both plates, and finally add the trimmers and other framing for the doors and windows.**

3 **Stand the walls and drop them over the anchor bolts. Nail the corners together and install the anchor bolt washers and nuts. Then plumb and temporarily brace each corner with a long 2x4 on the inside.**

Size it to suit

Because we're using standard wall construction and roof trusses, you can build virtually any size shed you wish using these basic construction techniques. The trusses we show are designed to handle the 4-ft. wide soffits. You can also order trusses with shorter soffits or a different roof slope. Our trusses have a 5/12 slope, which means they drop 5 inches for every 12 horizontal inches.

Contact your local building department and ask if a building permit is needed. Be ready to supply the exact location of the shed on your property along with dimensions and building details. Make a copy of **Figure A** and submit that along with a site plan and that'll probably be all you'll need. If you want to wire your shed, you'll need an electrical permit as well. For underground wiring details, see "Outdoor Light and Outlet," April '04, p. 59. To order a copy, see p. 5.

A few rented tools will save gobs of time

You'll only need an apronful of tools, a circular saw and a screw gun to build this shed, but a couple of rental tools will speed construction. A 6-ft. section of scaffolding complete with wheels and planks will simplify roof-related construction ($30–$50 per day; **Photos 7 and 14**). Set it up inside the shed and you'll have a safe, comfortable platform for setting the trusses. Set it up outside and it'll make sheathing the roof and installing the fascia boards and the first few rows of shingles much easier. If you're productive, you'll even have rental time left on Sunday afternoon to side the gable ends.

To save time when you're nailing, also consider renting a pneumatic sheathing stapler (**Photo 11**) and a roofing nailer (**Photo 14**). Each rents for about $30 per day plus the cost of fasteners.

Pouring the slab

We hired a concrete contractor to pour our floor: a 4-in. thick slab with edges

4 **Set, plumb and brace the posts. Rest a straight 2x4 on the beam trimmers. Level it and mark both posts for height. Cut off the posts with a circular saw.**

5 **Assemble the beams and set them on the posts and trimmers. Nail them to the stud walls and to the post/beam connector.**

6 **Nail "tie" plates over the top plates, overlapping the corners. Use 16d nails spaced over the studs below. Then nail plywood sheathing to the walls.**

thickened to 12 in. around the perimeter (**Figure A**). It cost us about $1,200. But if you've done concrete work before, you can certainly pour this simple slab yourself for $500 or less. Form it so the top is at least 4 in. above the ground to protect the wood trim and siding from water runoff and splashing. Embed two rows of 1/2-in. rebar in the footings during pouring to strengthen the edges. You'll need to order 4.5 yards of concrete plus any concrete you want for walks, patios or footings outside the structure.

TIP **Lay out the wall plates ahead of time, then mark on the forms where you'd like the anchor bolts placed (two on the short walls, three on the back wall) to ensure they won't end up in the doorway or beneath studs.**

Although we put a paver brick patio in front of the shed and under the portico, you can save time and money by pouring a concrete slab in those areas instead. Just make sure that the concrete outside the shed slopes away so water won't seep in under the walls.

Also dig footings to support the portico posts (**Figure A**). Use string lines to find the post positions, then dig 12-in. diameter, 12-in. deep footings and fill them with concrete to 4 in. below the slab height (to leave room for the finished patio floor). If you extend a concrete patio slab under the posts, increase the thickness of the slab to 8 in. in a 3 x 3-ft. area to support the additional weight. Otherwise, pour 12-in. diameter, 12-in. deep footings and use your string lines to accurately position post brackets in the wet concrete.

Wall and beam construction

Get started on your wall framing by cutting the treated bottom and top plates to length (see **Figure A** for dimensions and **Photo 1**). Mark and drill the 5/8-in. diameter anchor bolt holes, then temporarily tack the plates together with 8d nails and lay out the studs and win-

7 **Lay out the truss positions on the top plates. Erect trusses at each end of the roof. Center them, brace them plumb and toenail each one to the walls with 16d nails.**

8 **Stretch a string between the end trusses and align the intermediate truss peaks with the string. Lay out and tack them to a temporary "ribbon" board to keep them in place and aligned.**

9 **Screw truss clips to the tops of the walls and to the trusses with special 1-1/2 in. truss screws.**

dow and door openings. Note that the bottom plates on each side of the door opening and at the back corner of the portico are longer than the top plates. That's where the trimmers (beam supports) rest on the bottom plates (**Photo 1**) to support the portico and door opening beams.

Assemble each wall and set it aside to use the slab for assembling the other walls (**Photo 2**). After they're built, slip them over the anchor bolts and nail them together at the corners with five 16d nails. Plumb and brace the walls at the corners with the braces on the inside of the shed so they won't interfere with the wall sheathing (**Photo 3**).

Now stand, plumb and brace the posts and assemble and set the beams. Brace the posts back to the building, to each other and to stakes pounded into the ground to keep them plumb and solid for setting the beams (**Photo 5**). Nail the beams, then cap the walls and beams with "tie" plates, overlapping them at the corners (**Photo 6**) and over the tops of the beams. Drive two 16d nails at each end and at least one 16d nail every 16 in. Then sheathe the walls with plywood, driving nails or staples every 8 in. along edges and every 12 in. otherwise. After you sheathe the walls, you can remove the bracing, but leave on the post braces until the roof trusses are set and sheathed.

Now go ahead and lay out the truss positions on the tie plates using **Figure A** as a guide. You'll have a fair number of 2x4s left over from the wall construction, but don't worry. You'll need most of them for blocking to support the soffit plywood along the eaves and around the edges of the portico, for siding backers on the end common truss, and for diagonal bracing for the end trusses. Still have leftovers? Use them to build shelving in your new shed!

Ordering and installing roof trusses

Ordering roof trusses from a lumberyard means that the truss manufacturer

10 Cut and nail blocking spaced every 2 ft. on the end common truss. Then scribe, cut and sheathe both end trusses.

11 Snap a chalk line 48-1/4 in. up from the truss ends and nail down the first row of plywood sheathing. Add plywood clips midway between trusses and nail on the second row of sheathing.

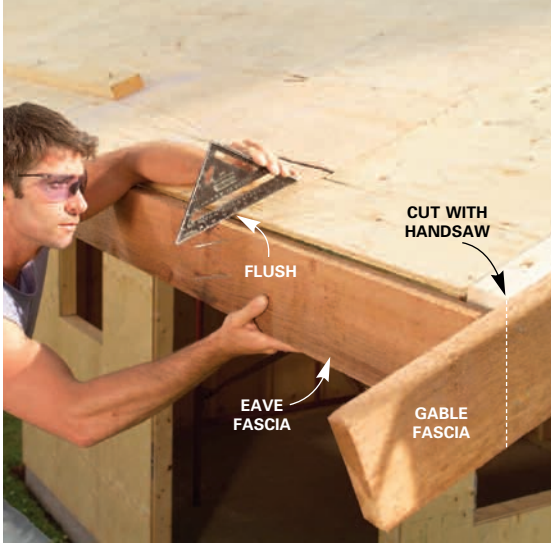
12 Nail two layers of 2x4s over the gable sheathing flush with the top of the roof to form small overhangs. If you plan to add skylights to the roof, follow the manufacturer's instructions.

will engineer the trusses to safely handle the spans that you specify. So you can order trusses to fit any span or width of shed without worrying about strength issues. To make a longer shed, simply order more trusses, one more for every 2 ft. of building length. Bring **Figure A** with you when ordering the trusses and the staff will be able to help you with the order. By the way, you can expand the portico, too. Make it as wide as 8 ft. and as deep as 12 ft. simply by using double 2x10s instead of 2x8s for the beams (but make the door height 2 in. shorter).

You'll be ordering two types of trusses: "common" trusses, the ones that can free-span open spaces, and "gable end" trusses. Gable end trusses have vertical 2x3 studs spaced every 16 in. to simplify siding installation (**Photo 7**). But they aren't designed to span wide open areas. Since the end truss at the portico doesn't have a wall beneath it, you'll have to install a common truss and add blocking for the sheathing as we show in **Photo 10** and **Figure A**.

Lay out the top plates for truss placement (see **Figure A**), then cluster the trusses toward one end of the building with the tips supported by the scaffolding. That way you'll be able to center, set and brace the end trusses and then stand each truss in sequence without shuffling trusses around. After standing the gable end trusses, plumb and brace them back to stakes driven into the ground before standing the other trusses. A great way to safely stand the gable end trusses is to use a couple of temporary 2x4 cleats nailed to the wall (**Photo 7**). They'll give you something to anchor the truss to while toenailing and adding bracing.

Lay out a nailing 2x4 "ribbon" with the same pattern as with the wall plates (**Photo 8**). Use the ribbon to place and hold each truss in position until you install the roof sheathing (**Photo 11**). String a line at the ridge to help center the middle trusses. Tack each truss in order to the ribbon and toenail each one to the plates (**Photo 8**). The metal



13 **Nail the 2x6 gable and eave fascia boards flush with the rooftop. Cut off the gable fascia flush with the eave fascia. Then fit and nail the 1x3 and 1x2 trim in place (Figure B, p. 53).**

14 **Staple No. 15 roof felt to the roof. Snap chalk lines every other shingle row to keep rows straight. Then nail on the shingles, allowing a 1-in. overhang. Staple more roof felt to the walls and install the windows.**

15 **Nail blocking between the roof trusses (see Figure A), then cut the soffit plywood to fit and nail it to the blocks and trusses.**

clips (truss ties) solidly anchor the trusses to the walls (**Photo 9**). After the trusses are in place, you may need additional diagonal bracing (see **Figure A**). The booklet that comes with your trusses will tell you exactly where to put them.

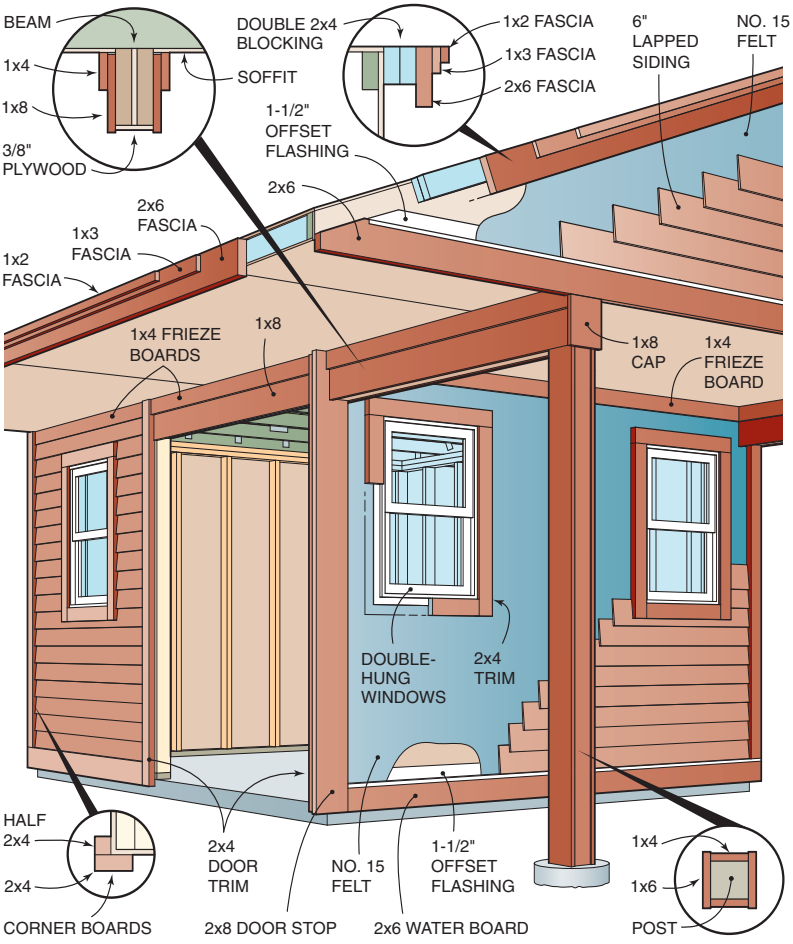
Nail on the plywood following a chalk line as we show in **Photo 11**. Lay the roof sheathing along the chalk line to keep the first row perfectly straight. We added plywood clips midway between trusses to tie the sheets together. That prevents warping that can show up well after the shingles are on. Offset all plywood butt seams at least one truss space on each row from the one below it.

Siding and trim

Begin the exterior finishing by nailing on the fascia boards. We show a three-part fascia made from a 2x6 and two 1x3 and 1x2 trim boards (**Photo 14**). You can simplify the fascia details by eliminating one or both trim boards. But whatever style you choose, it's easiest to cut and install the gable fascia first, leaving the eave ends long, and then running the eave fascia into it (**Photo 13**). Then cut off the overhanging gable fascia in place with a handsaw. We won't show you shingling details here. Use the directions on the shingle packages for installation procedures. Cut and install the 3/8-in. soffit plywood, adding blocking wherever necessary to secure outer edges that won't be supported by siding trim.

Start cladding the walls by stapling up No. 15 felt, starting at the bottom and overlapping each row by 2 in. Then install the corner boards and 2x6 "water boards" at the bottom (**Photo 16**). Lap the water boards at least 1/2 in. over the edge of the slab to keep water out. Cap the top of the water board with 1-1/2 in. drip cap flashing. Slit the felt and slip the flashing under it. Then cut and nail on the corner boards. Note that we made the corners from a full 2x4 and half of another one. Nail them together and put them up as a unit.

Figure B
Exterior cladding details



Exterior cladding materials

ITEM	QTY.	ITEM	QTY.
Roofing			
Rolls of No. 15 organic felt (roof and wall underlayment)	2	1x8 x 12' (beam fascia)	1
Squares of shingles (roofing)	4	1x8 x 8' (beam fascia)	3
Bundle of ridge shingles (ridge cap)	1	1x6 x 8' (post casing)	4
Siding and trim (rough-sawn cedar)		1x4 x 8' (post casing)	4
4x8 x 3/8" (soffit plywood)	8	1x4 x 10' (frieze boards)*	1
2x6 x 14' (water board)*	1	1x4 x 12' (frieze boards)*	2
2x6 x 12' (water board)*	2	1x4 x 8' (frieze boards)*	4
2x6 x 8' (water board)*	1	3/4 x 8' (cedar lap siding)	32
2x6 x 10' (gable bottom boards)*	4	3/4 x 12' (cedar lap siding)	42
2x6 x 12' (gable fascia)	4	**Hardware**	
2x6 x 10' (eave fascia)	4	2" siding nails (3/4" siding and trim)	10 lbs.
1x3 x 12' (gable fascia)*	4	3" siding nails (1-1/2" trim)	5 lbs.
1x3 x 10' (eave fascia)*	4	1-1/4" roofing nails (shingles)	10 lbs.
1x2 x 12' (gable fascia)*	4	5/16" staples (roofing felt)	1 box
1x2 x 10' (eave fascia)*	4	4d galv. box nails (soffit plywood)	1 lb.
2x4 x 8' (corner boards)	5	1-1/2" x 10' drip cap flashing (gable base and water boards)*	8
2x4 x 12' (window casing)*	3	**Windows**	
2x4 x 8' (door trim)	2	2' x 3' vinyl double-hung windows*	3
2x8 x 8' (door stop)	1	2' x 4' No. 106 Velux fixed skylights*	2
1x2 x 14' (door track valance)*	1	No. 106 skylight flashing kits*	2

* Optional parts

16 **Install all of the exterior trim as shown in Figure B, following the numbered sequence in the photo.**

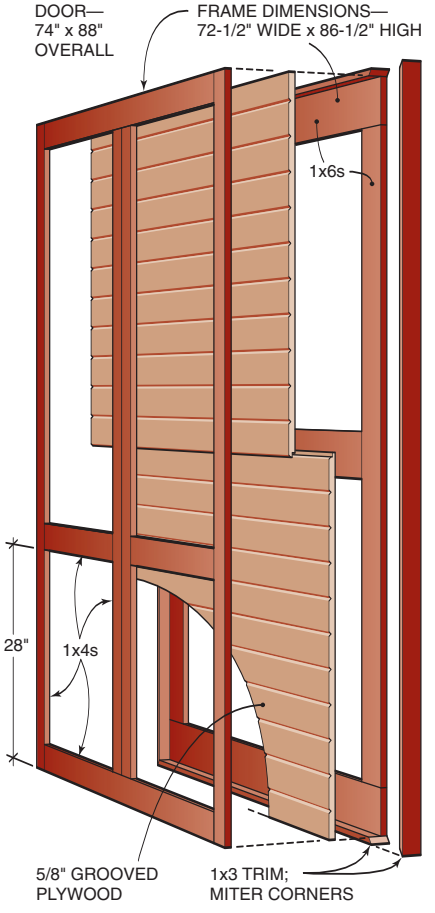
17 **Scribe and cut the siding to fit, then nail it through the sheathing into the studs with siding nails.**

18 **Cut the door parts using Figure C as a guide. Lay out the 1x6 backside frame and glue and screw the plywood to it using the plywood to square the door.**

Yard shed

Since the windows are well protected from weather, you don't have to flash them to keep water out. Simply trim them with 2x4s. Finish the top of the walls with 1x4 frieze boards, and clad the beams and posts with 3x4-in. thick trim as shown. Side the walls, leaving 1/8-in. gaps at the ends of the siding for caulk.

Figure C
Sliding door details

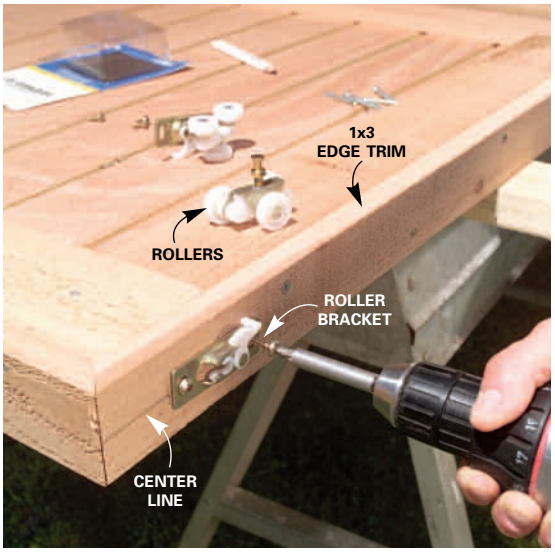


Sliding door materials

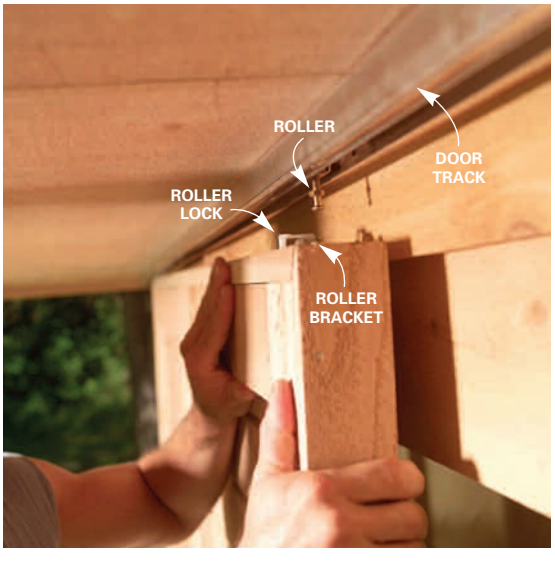
ITEM	QTY.
4x8 x 5/8" (grooved fir plywood siding)	2
1x4 x 8' (front door frame)	4
1x4 x 6' (front door frame)	3
1x6 x 8' (back door frame)	2
1x6 x 6' (back door frame)	3
National V13B Gate Latch	1
Johnson 1120 series pocket door hangers	1 set
Johnson 100 series 6' pocket door track	2
Door handles	2

19 **Glue and nail the front side frame through the plywood and into the backside frame with 2-in. nails. Space the center trim boards 3/16 in. (a carpenter pencil's width) apart.**

20 **Cut the 1x3 trim and glue and screw it to the edge of the door. Position and screw the door roller brackets to the top edge.**



21 **Screw the track to the soffit framing (drill new holes as necessary). Slide the rollers into the track, then slip the rollers into the brackets and lock them into place.**



In the opening photo, you'll see decorative brackets. We cut those out of 2x8s with a jigsaw. Use any curve you wish and cut a 60-degree angle on the top and a 30-degree angle on the bottom. Toenail them to the corner boards and soffit with 8d galvanized finish nails.

Building the sliding door

We chose a sliding door for this shed because it is easy to build, trouble free and best of all, gives a clear 6-ft. opening for wide access. Building a sliding door isn't as tricky as you might think. To build this door, you simply glue, screw and nail the front and back frames to a plywood core. Cut the two sections of plywood to length and width (see **Figure C**), lay them together and use them as a guide for measuring the lengths of the door frame parts.

Assemble the door on the shed floor to keep everything flat and square, and dry-fit the parts before gluing and fastening them (**Photos 18 – 19**).

To hang the door, screw the roller tracks to the soffit (**Photo 21**). You'll need two 6-ft. tracks mounted end to end. You may have to drill additional holes through the track so the screws hit the trusses. Slip the wheel trucks into the track, mount the brackets on the top of the door (**Photo 20**) and then, with a helper, lift the door onto the tracks. The directions that come with the rollers will give you the details.

Finishing touches

If you choose natural wood siding, it's best to protect it with an exterior finish to keep it from graying over time. We coated our siding with two coats of Penofin clear oil finish. Although it's not visible in the photos, we stained the soffit undersides with a moss green opaque stain for added contrast.

Art Direction • BECKY PFLUGER
Photography • BILL ZUEHLKE
Technical Art • EUGENE THOMPSON