



Gazebo royale

How sweet to build a place where you can do whatever you like

By Wayne Lennox Photography Laura Arsiè



Top row: Two underside views of the roof structure, showing the rafters, collar ties, and flared rafter tails; floor structure and side panel. Bottom row: Plinth blocks and side panels, from inside; the storage box opens to reveal space for a cooler and more.

As soon as the hammering began, interest around the bay was piqued. First, a pedal boat cruised by; the pedallers had heard construction noise and wanted to see what was going on. Their compliments were enough to make this old builder's heart swell with pride. Then a neighbour showed up in her bowrider. Now she wants one for her place. And according to Enid and Doug the owners of the project—there has been a virtual parade of curious boaters ever since.

The inspiration for this "outdoor room" project came from an unusual direction—in cottage country anyway: the traditional buildings of Bali, Indonesia. There, the typical living space is an open, roofed pavilion with a raised floor, called a *bale*. Like an old-fashioned, one-room cottage, these uncomplicated, elegant structures are used for just about everything—eating, sleeping, working, lounging, and conversation. In public spaces, some are used for music and dance performances, others as temples.

We kept some Balinese hallmarks—the wide, flared eaves for shade and rain cover, the floor raised to bench height, the uncomplicated, four-square layout for maximum versatility—and used traditional Canadian cottage materials, such as cedar shakes for the roof instead of thatch. As well, we added a hidden, mouseresistant storage box that's roomy enough for stowing an air mattress, some folding chairs, your yoga mat, or a couple of trashy novels and some sunscreen. In the end, this outdoor room is an eye-catching hybrid that will fit your cottage lifestyle because, well, it adapts easily to your own favourite activities.»





After a lazy summer afternoon buried in a paperback, you've got a relaxed spot for a cottage catnap.

An eye-catching hybrid of Balinese pavilion and Canadian cottage

The basic structure

Since we built right on exposed rock, prepping the site was reasonably straightforward. If possible, choose a flat spot to simplify the build. With its hip roof, this project involves much work that's not at ground level—I recommend renting scaffolding to make the job safer and faster. As well, when you're working on the roof, a helper or two on the ground is really essential.

1. I rented a rock drill to bore four ³/₄" holes for 6x6 post saddles, seating their rebar anchors with an epoxy anchoring adhesive (available at industrial fastener suppliers such as Fastenal and Brafasco). Where the soil is deep, seat the posts in concrete-filled 10" Sonotubes. Position the saddles accurately, before you epoxy them, so they're plumb and square.

2. No matter how careful you are when setting the saddles in the concrete, you'll still need to adjust the posts for plumb and square. The easiest way to do this is by doing a test run with short pieces of 6x6 in the saddles, instead of trying to manoeuvre the heavy full-length posts. In most cases, you can use the offcuts from the posts. Because I was building on even terrain, I calculated from the plans that I'd need 9'1½" for each of the posts; leaving some margin of error, I could afford to cut 8" pieces from my 10'-long 6x6s. Check your own situation carefully before cutting. Shift the short pieces in the saddles as needed to get everything square and plumb, and then replace with the full-length posts, duplicating the adjustments you made with the short stubs. *Text continued on page 104*

{Where to Find It, page 166}





Illustration Len Churchill

Fig. 1c: VIEW OF JOIST END CUT

Build a solid structure with custom details



Hip roof rafters need careful cutting



Fig. 11: JIG FOR CUTTING RAFTER TAILS

A cupola crowns the gazebo



Fig. 15: RAFTER LAYOUT, TOP VIEW

Work patiently; double check before cutting

MATERIALS LIST

- 18 2x8 x 10' pressure-treated spruce: joists, beams, trimmers, storage box headers, bridging
- 4 6x6 x 10' pressure-treated spruce: posts (length may vary according to terrain)
- 21 5⁄4x6 x 10' cedar or pressuretreated spruce: deck
- 280 sq. ft. of 1x4 spruce: roof sheathing
- 8 2x4 x 8' spruce: side panels
- 12 2X4 X 10' spruce: top plates, moulding, corner brackets and nailers
- 12 2x6 x 10' spruce: common and jack rafters
- 8 2x6 x 12' spruce: corner braces, hip rafters
- 8 2x8 x 10' spruce: headers
- 1 2x10 x 12' spruce: plinth blocks
- 1 1x4 x 10' pine: cupola corners
- 2 1x6 x 12' pine: collar ties
- 160 lin. ft. of 1x6 tongue-and-groove pine: side panels, cupola
- 34" x 4x8 sheets of spruce plywood: storage box, cupola
 12 bundles of #2 cedar shingles

HARDWARE LIST

All hardware that comes in contact with pressure-treated lumber must be hotdipped galvanized or stainless steel, or have an ACQ-rated coating.

- 4 6x6 post saddles
- epoxy anchoring adhesive 8 3⁄s" x 10" galvanized carriage bolts, washers, and nuts
- $6\frac{1}{2}$ lbs of $1\frac{1}{2}$ " galvanized nails for shingles
- 50 #8 x 1½" deck screws
- 50 #8 x 2" screws
- 750 #8 x 3" deck screws
- 300 #10 x 31/2" deck screws
- 1 roll of roofing membrane
- (a.k.a. ice-and-water shield)
- 2 recessed handles
- 4 hinges
- 6' light chain
- Weatherproof wood glue
- 100 sq. ft. of fibreglass screen under decking (optional)

Bring this materials list to your local TIM-BR MART. To find a location near you, click here. 3. Add temporary diagonal braces to hold the posts in place (keeping the bottom 2' or so clear to allow room for the floor). **4.** Start building the floor structure by trimming the 2x8 beams and joists to 10' and cutting the optional scalloped end detail (see figure 1c). It's simply a 41/2"radius quarter-circle, easily made with a jigsaw. If you intend to stain or paint the beams and joists, this is the time. 5. Clamp the beams to the posts so their tops are about 9½" above grade (see note below). Level them, and drill ³/₈" holes to bolt the beams through the posts. For each pair of beams, screw or nail three short pieces of bridging in place (see figure 2).

Note: We set the beams 9¹/₂" above grade so that with joists and decking, the deck surface is 18" above grade, more or less comfortable bench height. If it were more than 2' above ground, we'd need a railing around it to conform to the Ontario Building Code (and common sense). On a sloped site, you may have to use longer posts and a railing on the downhill sides. **6.** Cut the ³/₄" plywood parts for the storage box and screw together (see figures 2 and 3). Before you cut, check that the box's bottom won't touch the ground; adjust its depth if needed.

7. Set the joists that frame the storage box on the beams and toenail in place. With a helper, position the box between the joists so that the top is $\frac{3}{4}$ " below the top edges of the joists and screw in place (see figures 2 and 3).

I placed the box near the most accessible side of the structure, finessing the location so that a gap between deck boards would align with the middle of the headers. Screw the headers and the trimmers to the joists and the storage box to the headers. Secure the short joists to the headers and the beams. Place the lid on the storage box but do not cut yet.

8. Fasten joists to the outside and inside of the posts with #10 x 3¹/₂" screws. Be sure to use screws approved for the newer, more corrosive AcQ pressure-treated wood. Position the remaining two joists on the beams and toenail in place. Cut bridging to length and nail or screw in place: three pieces between the joists straddling the posts and two between the others.
9. If you plan to enclose the gazebo with screen or mosquito netting, keep the bugs

from sneaking in through the gaps in the floor: Staple fibreglass screen over the joists, cutting out the opening for the storage box.

10. Attach the $\frac{5}{4}$ x6 deck boards to the joists with #8 x 3" deck screws. I used 21 boards exactly, distributed evenly across the floor. The easiest way to do this is to attach a board on each end and one in the centre. Add two more boards, each midway between. With those five boards as guides, position the remaining ones, evening out the gaps. Note that you'll have to trim two to fit between the posts. As well, the deck boards covering the storage box will need to be cut to allow the lid to open. Use your circular saw, with the blade depth set at 1", to cut those boards. 11. Once you've cut those boards, screw the appropriate pieces to the lid, with #8 x 1¹/₂" deck screws. Remove the lid assembly and cut the plywood through one of the deck-board gaps to split the lid into two manageable pieces. Install the handles and hinges, recessing the hardware. Two short lengths of light chain stop the lid halves from opening more than about 120°; if the lids open all the way they'll tear out the hinges. 12. From the offcuts of the boards that fit between the posts, cut four 6" pieces to

project out on either side of the posts where, without a lot of support, they need a solid connection. Drill two clearance holes in each piece and screw to the joists (the plinth blocks, to come, will add strength from above).

13. Measure 91¹/₂" up from the deck and cut the posts off at this length. I made a very simple jig: two scraps of 1x8 about 12" long, screwed together along the long edge. I screwed it to the posts in the appropriate position for my circular saw to make the cuts. No regular circular saw can cut all the way through a 6x6 so finish with a hand or reciprocating saw. I also used the jig to cut out the 1½"-deep notches for the headers (see figure 2b). 14. Cut the 2x8 spruce outer headers to length, as in figure 2, mitering the ends. Set them in the notches and screw to the posts with three #10 x $3\frac{1}{2}$ " deck screws on each end. Cut the inner headers, then screw or nail to the outer headers. followed by the 2x4 corner brace nailers (see figures 1b and 2). {*Continued on page 162*}

Brooklin Concrete is a distributor of FAST®

(fixed activated sewage treatment) – a Ministry of the Environment approved low profile septic system that requires 1/3 less tile field than a traditional septic system. On a per litre basis, FAST® offers the most cost effective and reliable treatment process – keeping your lake cleaner. Call us to learn how a FAST® system can be a win-win-win for you, your cottage, and the environment.

Serving cottage country since 1952

800.655.3430

brooklin.com

BROOKLIN | NEWMARKET HUNTSVILLE | HALIBURTON

GAZEBO ROYALE

{Continued from page 104}

15. Cut the 2x4 top plates to length, mark the location of the rafters (figure 14), and nail or screw to the headers, flush to the outside face.

16. Cut moulding strips for the headers by ripping 10' lengths of 2x4 to 1½" by 1½" (2x2 finger-jointed spruce is a good choice, too). Rout a suitable profile, cut to length (mitering the ends), and nail to the header face.

Brackets and braces

1. From 2x4s ripped to 3" wide, cut 16 bracket pieces, eight 32" long and eight 27" long. Cut eight corner braces from 2x6s, using the design shown or customizing your own. Note the mitre angles in figure 1a—they're not all 45°. If you like, rout the inside and outside edges, excluding the ends. Glue (with weatherproof glue) and screw (#10 x $3\frac{1}{2}$ " screws) these assemblies together.

2. Drill clearance holes and, using six #10 x 3¹/₂" screws, secure the bracket assemblies to the structure.

3. At this point, you can remove the temporary diagonal braces holding the posts and paint or stain the basic structure.

Rafters

Can I be perfectly frank? A hip roof can be a real challenge to lay out, cut, and assemble. A lot of the work is in the calculating and measuring. We've done that part, but you'll still need your wits about you, or you're likely to cut something backwards, and you need to take care, since much of the work happens at a height above ground.

Have a look at the rafter measurements and angles in the plans on p. 100. Each rafter has the same basic cuts—an angled end at the peak and a bird's mouth where it hooks over the top plate (the hip rafters also have angled cuts at the tail end)—but some key measurements differ with each type of rafter. The plans give you those specs. One trick to speed your work and improve accuracy: Each rafter tail and bird's mouth is identical for all the common and jack rafters, so cut one piece and use it as a pattern. Similarly, the four hip rafters match one another.

Many of the angled cuts are compound; that is, you'll set your saw to cut

a mitre and bevel angle at the same time. What's the difference between the two? Think of a compound mitre saw—when you swing the blade from side to side, you're changing the mitre angle; when you tilt the blade so it's no longer slicing straight up and down, you're changing the bevel. My 12" compound mitre saw certainly made such cuts easier, but many thousands of rafters have been cut with only a circular saw. Especially with the jack rafters, compound angles can make for a real mental workout, because you have to remember to reverse the cuts for half the rafters. I suggest you work stepby-step, cutting and installing the common rafters and hips, and then cutting the jacks, when you can see where they're going and how the cuts are oriented. If you do that, work patiently, and doublecheck before cutting, you should be fine.

Another challenge is that you're working with a natural material, with all its flaws and variations. For that reason, we've been slightly generous with the distance marked on the hip rafters (figure 8), so there's some wiggle room to trim at the peak end.

Stain or paint the pieces before you install them, as it's much easier to do on the ground.

Enough planning—let the fun begin! 1. Start by cutting the four common rafters, as these are the simplest, with no compound angles to worry about. Note that two are shorter by ¾"—half the thickness of a 2x6—at the peak end, because they butt up against the first two at the peak (see figure 14a). Use your framing square to lay out the bird's mouth cut.

2. Cutting the flared tails on the rafters is quick and accurate with a simple jig (figure 11) screwed to your work surface. Screw the diagonal piece so your circular saw cuts from the corner of the tail end to the corner of the bird's mouth, as shown. I suggest putting a screw through the actual rafter, too, to hold it down while you saw. Number the pieces as you cut, so you can match them up later. 3. Hip rafters are next. Because their peaks tuck into the corner formed by the common rafters, they get a double compound angle, made by cutting from one side and then the other. For aesthetics, there's a double compound cut on the tail end too. As well, their tail pieces need to be longer, so adjust your jig before cutting.

Install these tail pieces on the hip rafters now, gluing and screwing them to the top edge as in figure 10. I rounded the bottom corner of the rafters with a jigsaw; a straight cut would work, too.

4. Begin rafter installation with the two longer common rafters. Toenail to the centre of the top plate and screw together at the peak. Add the two shorter common rafters (note the position of their top edges, figure 14a) and then the hip rafters, adjusting them as needed to fit by trimming at the peak end.

5. Next, cut the jack rafters, remembering that peaks for corresponding pairs must be reversed. Adjust the jig back to its first position to cut the tail pieces. 6. When installing the jacks, keep a long, straight board handy to check that their top edges are flush with the tops of the commons and the corners of the hips. 7. Now for the flared tails. First, snap a chalk line from the end of one hip rafter to another, atop the jack and common rafters. Glue and screw the remaining tail pieces, aligned with the chalk line, then trim the little pointed ends that stick out. 8. About halfway up the common rafters, measure across for collar ties. Cut two (with or without the decorative bottom notch) from 1x6 pine and install with #8 x 2" screws. Measure, cut, and install the other two. See figure 14. 9. Installing 1x4 spruce roof boards will go

g. Instanting 1X4 sprace root bounds will go faster if a helper on the ground cuts while you measure and nail. Start at the bend at the top of the flared eaves, work down to the rafter tails, then up to the peak. Mitre the boards at the hip rafters. (Note that the mitre angle changes slightly on either side of the bend.) I attached the boards with a nail gun, except right at the hip rafters, where a hammer gives more control, with fewer nails showing at the edge.

The shingles

Cedar shingles look terrific, but make up nearly one-quarter of the materials cost and are time-consuming to install (a consideration if you hire a builder). To save time and money, you can use asphalt shingles, though they're not a very green option. I recommend applying ice-andwater shield (a waterproof membrane) under shingles, but you can also use roofing felt. Remember to cut each strip of underlay about 6" longer than needed so you can wrap the ends over the ridges. 1. If you've applied asphalt shingles before, you know the basic principles of shingling with cedar. Start at the eaves with a double layer of shingles, offset so no gaps align and no nailheads are exposed. Leave a ¼" gap between shingles and use two 1¹/₂" galvanized nails, about $\frac{1}{2}$ " to $\frac{3}{4}$ " in from the sides and about 8" up from the bottom on each; nailheads should be driven flat to the surface. 2. With a cedar-shingle roof of this pitch, each course should have 6" exposed. To keep courses straight, snap a chalk line for each, measuring from the first course every time to prevent creep. Asphalt shingles won't need a chalk line, as they have reference tabs built in.

3. I found that some of the shingles (the ones that were damp from being stored on the ground) were more flexible; they were ideal to accommodate the bend formed by the flared eaves. Another tip: If you are adding the cupola, you don't need to shingle all the way to the apex of the roof. 4. Once the field of the roof is shingled, cover the ridges with a strip of shingles. One edge of each shingle is ripped at a 27° bevel, so the edges butt tightly. Note that the butt seams alternate from one side of the ridge to the other. As a timesaver, you can buy prefabricated ridge caps—cut, assembled, and ready to nail down. Don't nail down the last three or four courses of ridge shingles until the cupola is in place.

And now, an embarrassing confession because some readers will have noticed something amiss in the photos: There are no ridge caps on the main roof. To say that I ran into a time crunch before the photo shoot would be an understatement. When the pontoon boat arrived with the photographer and *Cottage Life* crew, we were still hard at work, having managed to get everything done except the ridge caps. They went on later. *Mea maxima culpa*.

Panels and plinths

1. To make the panel frames, rip eight 8'-long 2x4s to 1¹/₂" by 1¹/₂". To cut the dadoes in each piece, as in figure 4a, you can make multiple passes on your table saw, or use a router.

2. From these pieces, cut 16 stiles to fit between the deck surface and header (about 84", but measure your structure). From the offcuts, cut 16 rails 9" long.
3. Sight along the stiles, pulling out any that aren't straight (there are bound to

Premier Cottage Insurance Plan

HOMEOWNERS COVERAGE FOR YOUR COTTAGE!

RENTAL COVERAGE AVAILABLE

Buildings & Contents Theft • Vandalism Snowload • IceDam

Stand alone policy designed to suit your needs

1-800-563-1641

Fax: (905)788-9202 www.cottageinsurance.com

Brought to you exclusively by Mason Insurance Brokers Ltd.

Serving Ontario since 1919

Come visit us at the Spring Cottage Life Show!

GAZEBO ROYALE {Continued from page 163}

be a few). Plan to use these against the posts, where you can straighten them out. 4. Cut 10" pieces from the 1x6 tongueand-groove pine—136 pieces in all, so a jig or a stop on your mitre saw is well worth setting up. Assemble the panels by gluing and screwing a bottom rail between two stiles, drilling a clearance hole first for #8 x 3" screws. Slide the pine into the dadoes, ripping the last piece to fit. Glue and screw the top rail to the stiles. **5.** Add a routered profile to the outside edges of the stile that's not attached to the post. Sand, stain, or paint as desired. 6. Drill clearance holes along the panel's inside perimeter (the wider edge): three in the post-side stile and one in each rail. Screw in place with $#10 \times 3^{1/2}$ " screws. 7. I added simple plinth blocks to dress up the base of each post, using 2x10 boards with a 45° bevel ripped along the top edge. As well, I routed an optional chamfer detail along the outside corners of the posts, starting about 4' from the floor and finishing 3" below the header.

Cupola

The cupola is optional—it serves no functional purpose—but it sure does add a crowning flourish.

1. Cut the ³/₄" plywood sides for the base, bevelling top and bottom edges to 40°, and glue and screw (or nail) together. Cut and install two scrap pieces inside the box (see figure 12), aligned with the top edge. These will make it easier to screw the top securely to the box. Cut eight corner trim pieces from pine 1x4s, again with an angled 40° cut at top and bottom, and a 45° bevel on one side where they'll meet at the corners. Attach so the edges are flush with the bevelled edges of the box. **2.** Cut 1x6 tongue-and-groove as siding to fit between the corner trim, and nail to the box, positioning it so the pieces don't project beyond the bevelled edges (rip the top one if needed).

3. Cut four plywood triangles to make the pyramidal top and four 20"-long backer blocks out of scrap 2x4 ripped in half with a bevel of 36°. Assemble the top, screwing through the sides (#8 x 1½" screws) and into the blocks. For visual interest, I added a 2x2 frame, ripped from 2x4s, around the inside of the pyramid's base. Shingle the pyramid as you did the main roof and stain or paint.

 Because the cupola is heavy, it goes on the roof in two pieces. With a helper, carefully lift the box up onto the roof.
 Position it, level it, and screw it down through the sides into the roof deck.
 Lift the pyramid top in place—watch for nail ends—level it, and screw through to the scraps you installed earlier. A dab of caulking will hide and seal screw heads.
 Complete the main roof's ridge cap up to the cupola.

Mosquito net

There will be many glorious summer afternoons when you can enjoy your outdoor room open to the elements, and other days (and nights) when you'll need something between you and the bugs. We've left it to you to decide how (and if) you want to enclose the sides—so much depends on your site and how you plan to use the gazebo. One approach is to make screened panels that fit tightly within the sides. You will have to block off the gaps between the rafters, either with screen stapled in place, or wood cut to fit.

If the view out one side isn't the best, or if strong winds prevail, fill in a wall or two, extending the side panels or using materials that match your cottage. Another idea is to adapt Japanese shoji screens the traditional grids of wood and rice paper used there as walls and doors—to a Canadian cottage by using translucent white plastic panels instead of rice paper.

For a softer look, use mosquito netting. A mosquito net from a camping supply store, sized to cover a double bed, can be secured inside the roof, sultan's-tent style, but it won't be long enough to drape down to the deck as well. For that, you could adapt a screen-wall kit that's intended for those ubiquitous backyard canopies. The kits are easy to find at Canadian Tire and other stores that sell outdoor furniture.

Wahwashkesh Lake cottager Wayne Lennox designed the jigsaw puzzle storage board in the Oct. '07 issue. Look for him—and the gazebo—at the Spring Cottage Life Show, March 28 to 30.

For step-by-step plans to build the L-shaped deck that wraps around the gazebo, visit cottagelife.com/lowleveldeck.