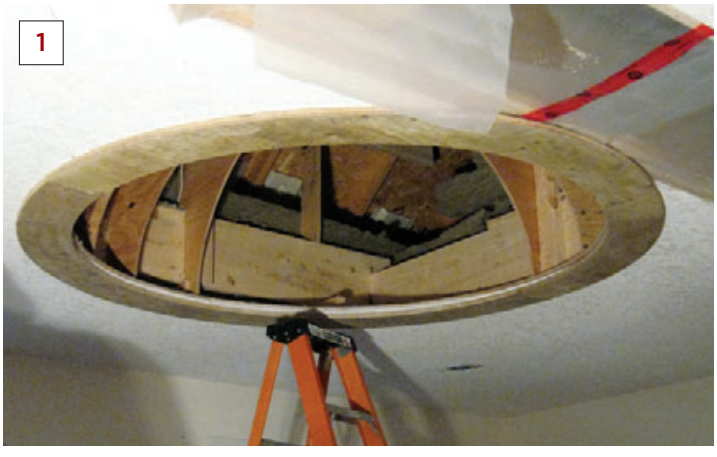
On the Job

Building a Small Ceiling Dome

by Roger Gadd

I'm a carpenter on Vancouver Island, British Columbia. For a recent project, my partner Rob and I built a recessed ceiling dome for a client who wanted a focal point in an otherwise conventional bedroom.

We started by drawing circles on the bedroom ceiling with a piece of string and a pencil to determine the dome's size. About 5 feet looked right. Then we cut out the drywall and reframed the ceiling joists to create a square opening slightly larger than the circle, with the same center point. We stiffened the opening by cutting a 4-inch-wide ring from segments of ½-inch plywood, aligning it with the edges of the hole on the attic side of the drywall, and screwing the drywall to it. We cut another ring from ¾-inch ply and screwed it to the outside of the opening, staggering the joints between segments **(1)**.

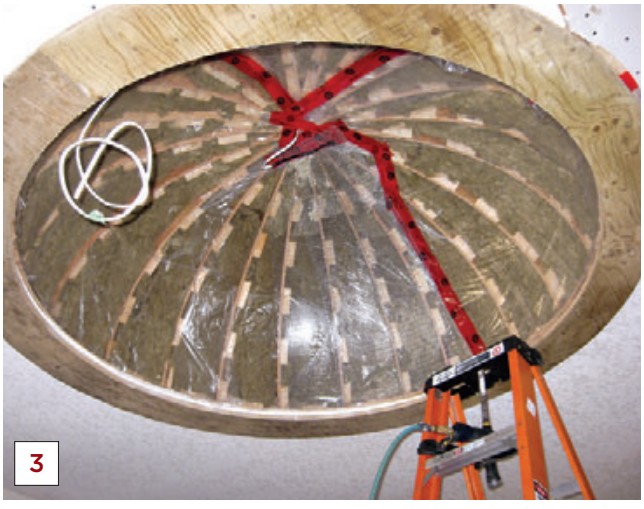

1

Next we framed the dome itself. Using the nail-and-string method, we created a pleasing ellipse that would produce a dome about 2 feet deep. We scribed this onto pieces of ½-inch plywood, then cut out curved "ribs" with a jigsaw. We stood the first rib square to one face of the ceiling framing and screwed it to the plywood ring and blocking fastened to the framing, then added another rib on each of the remaining three sides. The upper ends of the ribs were screwed to a cylindrical block that functioned like the keystone of an arch.

Once those first four ribs were in place, we added more between them until we ran out of space at the peak **(2)**. A small piece of plywood on the convex side, screwed to the central block and the converging ribs, acts as a gusset plate to tie things solidly together. The resulting frame is very strong — I could suspend my 200-pound frame from the peak with no deflection or movement.

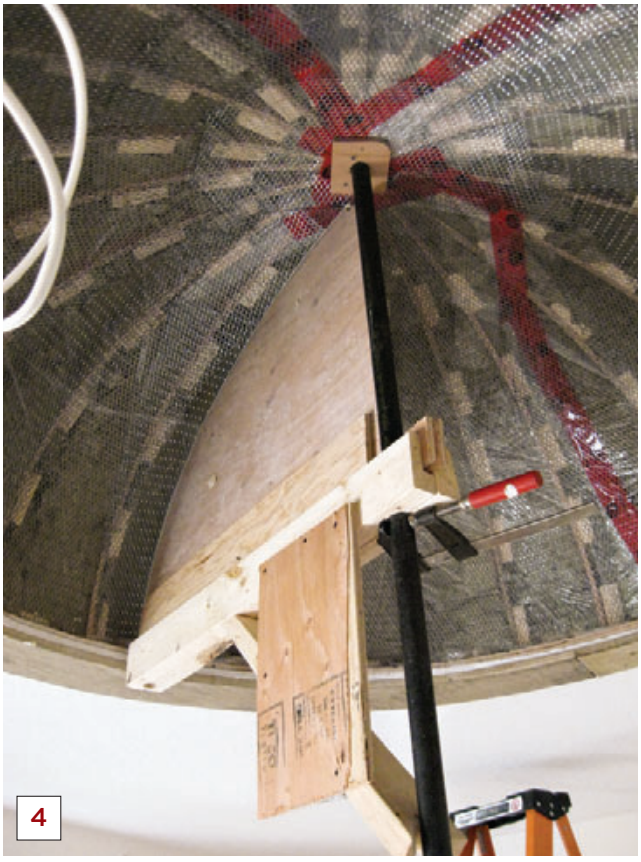
Next we stapled up a poly vapor retarder and a layer of stucco mesh pieced together from narrow strips (we added short nailing blocks to the ribs for better fastening). Now we were ready to finish the interior **(3)**. The small size of the dome worked against us here; there was little room to work and the surface was sharply curved. So we assembled


2


3

a self-centering, rotating screed out of one of the plywood cutoffs, a piece of one-inch black iron pipe, and some scraps of lumber **(4)**. The ends of the pipe fit into 1¼-inch holes bored in blocks secured to the apex of the dome and the floor directly below.

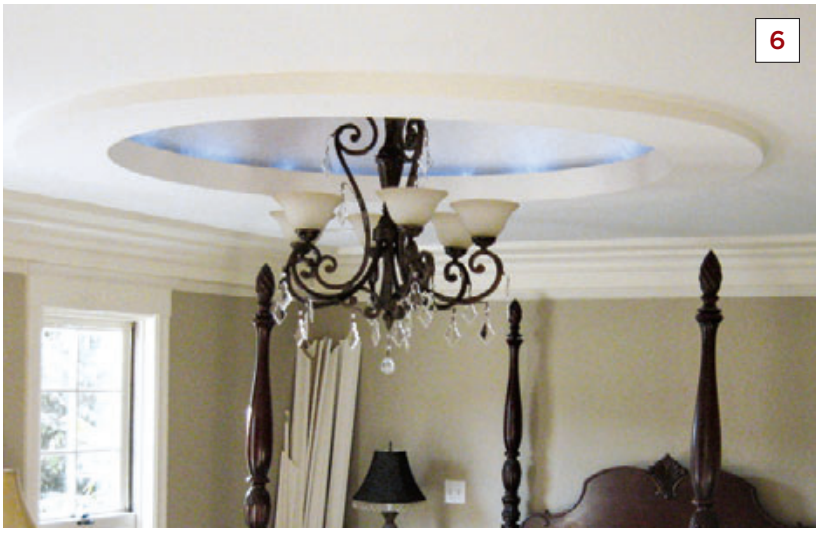
This solution worked pretty well. We pressed the stucco base coat into the mesh with gloved hands and turned the plywood screed to strike it off at a uniform thickness, working in sections because the material set up quickly. Since the plywood base ring was slightly smaller than the base of the dome itself — forming a ledge that would later accommodate a string of rope lights — we had to disassemble and remove the screed between coats. Then we used a belt sander to remove a small amount of material from the leading edge to account for the thickness of the next coat.


4

The base coat, second coat, and a final thin coating of drywall mud added up to less than ¼ inch of thickness overall. The final layer was the easiest, because the drywall mud remained workable for much longer than the cementitious layers had. And while the surface left by the plywood edge of the screed wasn't perfect — an effort to get a smoother finish by covering it with a piece of smooth plastic weatherstripping turned out not to make much difference — some additional spot-spackling and hand-sanding yielded a very satisfactory finish.

To finish up, we stapled flexible plastic corner bead to the raw edges of the plywood ring and mudded them. The exposed face of the ring received a skim coat of mud at the same time. Finally, we installed a ceiling medallion at the peak **(5)** and wired the rope lights and hanging light fixture **(6)**.


5


6

Because there were so many unknowns, we did this job on a time-and-materials basis. By the time we were done with some structural work in the attic and moving and rewiring existing ceiling cans, the overall cost came to nearly $10,000. Still, the homeowners were very happy with the finished product.

Roger Gadd *is a renovation carpenter in Ladysmith, British Columbia.*

Installing Sculptural Wall Panels

by Christopher Wright

As part of a recent whole-house remodel, we built a media room featuring a stainless steel fireplace surround set in an accent wall covered with sculptural panels **(1)**. Manufactured by Modular Arts (206/788-4210, modulararts.com), these interlocking 32-inch-by-32-inch panels have a gypsum core and a fiber-reinforced hard-shell surface. They come in about two dozen different designs; we used a pattern called Dune.

Our original plan was to finish only the fireplace wall, but we ended up with enough leftover material to wrap the panels around the corner into the adjacent butler's pantry, too.

Wall Prep

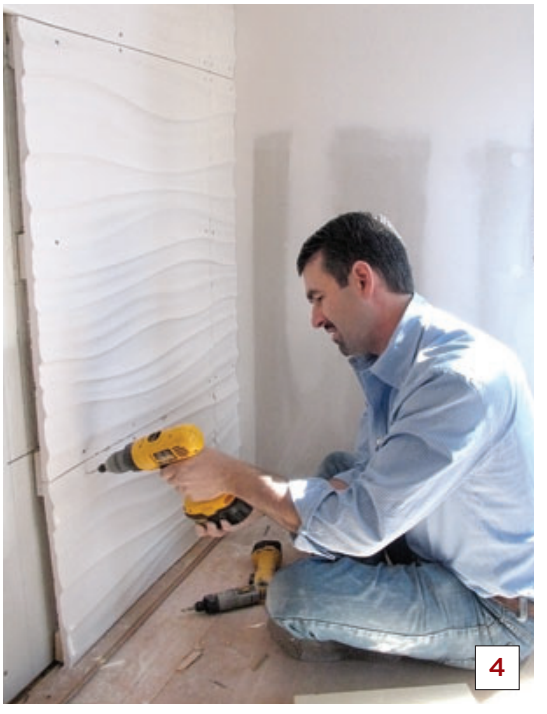
Although they're noncombustible, the panels are not fire-rated, so they have to be installed over drywall or another code-compliant substrate. In the media room, we installed new drywall over the existing wall framing. Since the framing wasn't very straight, we then flattened the wall with shimmed 1-by furring **(2, 3)**.

In the pantry, we installed the panels directly over drywall using mollies. This is a manufacturer-approved method that supposedly minimizes prep time if the wall is flat, but we found it to be slower than fastening the panels to a solid substrate.

Installation

We fastened the panels to the furring with galvanized drywall screws, driving them through countersunk holes predrilled by the manufacturer around the perimeter of each panel. When installing cut panels, we drilled our own countersunk holes **(4, page 30)**, but quickly learned not to drill in the pattern valleys. That's where the reinforced shell seems to be thinnest, making it difficult to avoid punching through to the lightweight gypsum core. We also glued the panels to each other at the edges with construction adhesive.

To cut the panels, we used a dry diamond blade mounted


4


5

in a small circular saw. Even though our saw was connected to a shop vac, this process still created a lot of dust.

Outside corners aren't covered in the manufacturer's manual, but the obvious solution was to miter the factory edges to allow the pattern to flow around the corner into the pantry **(5, 6)**.

Finishing

We filled the panel seams with two coats of a dry-mix spackling compound provided with the installation kit. We used the same material to fill the miters on the outside corner. A flexible application tool also included in the kit made it easier to apply compound over the uneven pattern.

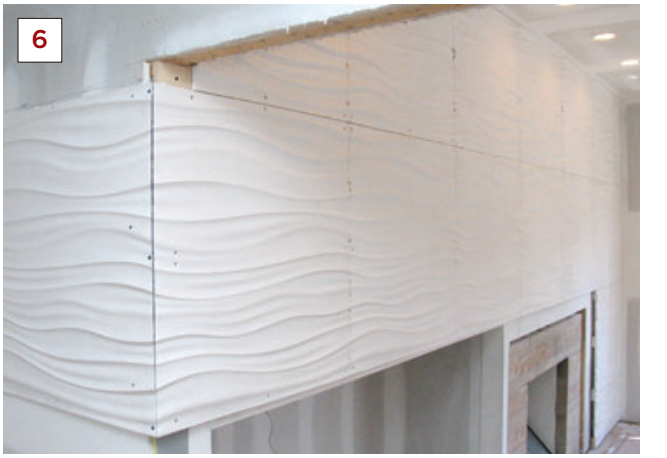
It took some finesse to sand all the joints smooth so the wall would look seamless **(7)**. We discovered that it's easy to over-sand and make a mess.

After sanding, we sprayed on a primer/sealer. The walls can be finished with any color wall paint, though flat finishes are best at hiding the seams.

Cost

At approximately $120 each, the panels cost about the same as extra-large format porcelain or stone tiles. Installation and finishing take about one man-hour per tile, according to the manufacturer. That seems about right for a first-time installer, though I suspect subsequent installations would go a little faster.

***Christopher Wright** is a contractor in Indianapolis.*


6


7