

DECKS



Fiberglassing an Exterior Deck An easy-to-install weatherproof deck surface that you can walk on

BY NATHANIEL ELDON

Fiberglass is a common material for decks in my region of coastal New Jersey, especially when the deck is installed over living space, or when the client wants a porch roof that provides maximum protection from the weather. But when I talk to builders from other parts of the country, I find that this practice is almost unknown beyond the Jersey shore.

Fiberglass decks would easily work elsewhere, though. As with

most fiberglass work, the process is messy, but straightforward. The materials are readily available because many of them are also used in boat building and boat repair, a local industry for any area that has access to recreational or commercial boating. And the detailing of the sub-surface is not much different from that for an EPDM membrane or other flat roofing material. The deck in this project was a porch roof with parapet walls.

Photos by Nathaniel Eldon



BEGIN WITH A GOOD FRAME

A good product needs good bones. I sized and spaced the beams and posts as I would for any traditional deck design. I sized the joists in a similar fashion, while taking into account that the joists had to taper to pitch the deck surface enough to shed water off; a slope of $\frac{1}{4}$ inch per foot is optimal. To create the taper, we stacked the joists on sawhorses and snapped a chalk line across each joist's crowned edge (1). Once the lines were all snapped, a crew member ripped all of the tapers with a circular saw (2).

The deck for this project was more complex than most. It consisted of three sections that stretched across the front of the house. The two end sections were framed with a dropped beam, with the joists landing on top of the beam and extending past it. The center section had a flush beam, with the joists hung off the side of the beam and the tops of the joists flush with the top of the beam (3). The pitch of the floors was the same across all the sections, and the floor surface was flat and unbroken. Additional complications were that the end sections would be faceted where they overhung the porch below, and a parapet would run around the entire perimeter of the deck and act as a base for the railing.

Once the framing was completed, it was time to prepare the horizontal surfaces of the deck. Although this project was a renovation, we treated the deck the same way that we would new construction, gluing and nailing $\frac{3}{4}$ -inch AdvanTech T&G subfloor to the sloped joists (4).

The parapet walls were next, along with the framing for the overhang details. We framed the parapet walls with 2x4s, letting the framing extend up at each corner and facet to create posts, then we sheathed the walls with $\frac{1}{2}$ -inch CDX plywood.

To allow water to drain from the deck surface, we cut holes for scuppers into the sheathed parapet walls (5). The actual scuppers are made from 4x4 square vinyl sleeves (the same ones used to cover posts in the railing and fencing industry). These sleeves are set flush with the inside of the parapet wall sheathing and rest on top of the subfloor. We set the scuppers at a slightly increased pitch and let them extend through the parapet wall just beyond the edge of the roofing (6).

At this point, we started closely watching the weather forecast. It is critical to the process that we have dry weather for a couple of days in a row.



DAY ONE

Once we could see a weather window, we scheduled our fiberglassing contractor, Brian Scheeler, with Atlantic Shores Fiberglass. We needed the better part of a day to prepare for his arrival. We first put down an underlayment layer of $\frac{1}{2}$ -inch AC plywood on top of the subfloor with the sanded side up, staggering the joints of the plywood between courses (7). We glued down the AC plywood with construction adhesive and nailed it into the joists through the subfloor using ring-shanked nails.

Next, we milled $1\frac{1}{2}$ -inch-by- $1\frac{1}{2}$ -inch cant strips by ripping 2-by material at a 45-degree angle. Fastened along the corner where the flat deck and any of the vertical walls (house and parapet) intersected (8), the cant strips ease the 90-degree bend for the fiberglass mat that will eventually cover the deck, softening the transition and preventing voids from forming between the mat and the layers below.

We paid close attention to the detailing of the tops of the parapet walls. They were to be fiberglassed, but for added protection, we ran aluminum coil stock along the top of the parapets, inside and out (9).

After the fiberglassing was complete, we would tuck felt paper under the coil stock on the inside. On the outside, we'd run adhesive-backed membrane up and under the aluminum before applying the exterior finishes.

BRING ON THE FIBERGLASS

Once we'd completed the preparation details, the fiberglass contractor could begin his work. For those who aren't familiar with fiberglass, you should know that it tends to be nasty stuff in many regards. To avoid skin contact with the fiberglass resin and catalyst, it's always a good idea to wear gloves. And to avoid breathing the vapors of fiberglass resin, wear a respirator with an organic vapor cartridge, especially when working in tight, confined spaces. Because Brian was working a stone's throw from the ocean with its steady prevailing winds, he opted not to use a respirator when he did this project.

Fiberglass (polyester) resin and catalyst are also highly combustible and should always be treated with extreme care.

The fiberglass resin and the gelcoat (finish coat) that we use on these decks are a two-part mix. These materials are mixed with a

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hardener or catalyst. When a catalyst is added to the polyester resin, an exothermic reaction occurs, producing heat and curing the fiberglass. Typically, 1.5 to 2 ounces of hardener are used for each gallon of resin, but that is only a general guideline. The ratio can vary with air temperature and humidity, and it takes a little practice to know how much catalyst to add to a mixture in various weather conditions. When too much hardener is added, the mixture can become so hot that it starts smoking—and it will burn your skin if you touch it. I wouldn't jump into this type of work without some experience mixing and applying fiberglass.

Before mixing anything, Brian used a rotary grinder outfitted with an abrasive disc to soften and clean up any sharp or rough plywood edges (10). Then he mixed up a batch of polyester putty—similar to auto-body filler—and covered the nail holes as well as the plywood joints (11). He also puttied around the scuppers, filling in any gaps between the sleeves and the plywood.

The next step was “hot coating” all the deck surfaces by applying resin with a thick-nap paint roller. Working with fiberglass calls for many single-use tools—once the resin cures, paint rollers and brushes become rock hard. So Brian uses disposable products: cheap

paint rollers, disposable paintbrushes, and 5-gallon-bucket liners. For detail work, he also uses plastic or aluminum rollers that are reusable and that are made specifically for fiberglass work. These tools can be cleaned with acetone before the resin cures, but it's challenging and the fumes are dangerous.

Working from the top down, Brian began by coating the top surface of the parapet walls, rolling the resin 8 inches to 10 inches up each post (12). At the base of the parapet walls, he rolled the resin over the cant strip and up the walls about 10 inches (13).

On some projects that he's worked on with us, he has applied a strip of the fiberglass mat along the transition between the deck and the walls at the hot-coating stage—the mat strips help to reinforce and ease the transition between the horizontal and vertical surfaces. He skipped that step with this project, opting to extend the mat up the walls at the next step, on the second day.

At the thresholds of the doors leading onto the deck, he applied resin up the framing and sheathing. Finally, he put a liberal coat of resin over the entire flat surface of the deck. It should also be noted that Brian mixes only a little resin at a time. The working time of mixed resin is limited and a large volume of material will usually



“kick” more quickly. Smaller batches ensure that the resin does not begin curing before it is applied.

Once the hot-coat resin cures, the deck is temporarily sealed. A rainstorm would not be ideal, but it wouldn't ruin the project, at this stage.

DAY TWO

On the second day, Brian started by grinding all the hot-coated surfaces, again using a small grinder fitted with an abrasive disc. This process removes irregularities and abrades the surface for the next coat. When finished, he blew the dust off the deck with an electric leaf blower.

Next, he laid out 1.5-ounce chopped fiberglass mat over the deck surface. He let the mat extend up the parapet walls about 6 inches and lapped it about 4 inches into the scuppers (14). He used smaller scraps to complete the mat layer around the scuppers, both inside the parapet walls and where the scuppers exited on the outside.

He cut strips of mat about a foot wide for the tops of the parapet walls and let the strips extend up a few inches at each post and down

the sides of the parapet, overlapping onto the coil stock. At the door thresholds, we added temporary dam strips to protect the floors inside. Brian ran the mat up onto the dam strips, again adding small strips to complete the corners of the mat layer. At the seams in the field, the mat sections overlapped by 4 inches to 5 inches.

When all the pieces were cut, Brian began soaking the mat with the mixed resin, starting with the tops of the parapet walls (15). For the larger surfaces, he again used a disposable paint roller. For tighter details like inside corners, he soaked the resin into the mat with a disposable brush (16). When completely soaked with resin, the mat becomes transparent.

After finishing the tops of the parapet walls, he turned his attention to the door thresholds. This time he used a specialty roller to push the resin into the mat (17). The roller also helps to work out any voids or air bubbles under the mat.

Next, Brian worked on the base of the parapet walls, using a paint roller to soak the resin into the mat where it extended up the walls (18). Finally, he poured resin over the main surface of the floor and pushed it around with a paint roller until the entire mat was saturated and transparent (19).

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DAY THREE

Once the fiberglass-impregnated mat has cured (usually within a few hours), the deck surface is virtually watertight—think of the hull of a fiberglass boat. The horizontal surfaces are completely sealed, and the sealed surface extends up the vertical surfaces as well. But fiberglass boat hulls are smooth and opaque. The main task on the third day is applying the gelcoat, the protective finish that also protects the fiberglass from UV degradation.

The first step was to grind all the surfaces once again to roughen the surface and to smooth out any unevenness in the mat (20). As before, Brian used a grinder with an abrasive disc, and he blew off the dust with a leaf blower.

When the surface was abraded and dust-free, he applied the fiberglass gelcoat to the surface, beginning with the detail areas such as thresholds. The gelcoat is a two-part product that has the consistency of paint. Brian used a disposable paintbrush to make sure that all the nooks and crannies received a liberal layer of the gelcoat (21).

As with the resin layers, Brian used a paint roller to coat the tops of the parapet walls and the transition between the inside parapet

walls and the horizontal deck surface (22). Then he rolled the main deck surface and his job was done (23).

We waited overnight for the gelcoat to fully cure before we finished the carpentry details. At the door thresholds, we removed the temporary dam strips and cut the rough, turned-up edge of the fiberglass flush with the top of the finished flooring inside the house. The fiberglass on the thresholds and jambs acts as solid pans, eliminating the need for additional flashing pans under the doors.

The parapets on this project were finished with white cedar shingles on both sides. We covered the tops with minimal flashing and then we glued down an Azek board as the cap.

For many decks we've built, the gelcoat over the fiberglass mat is the final surface. Once it cures, it can be walked on and used long term; it makes a nice, hard surface underfoot and is resistant to scratching and scuffing. For clients who don't like the look or feel of the fiberglass, we glue pressure-treated wood sleepers to the fiberglass and then install wood or composite decking.

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