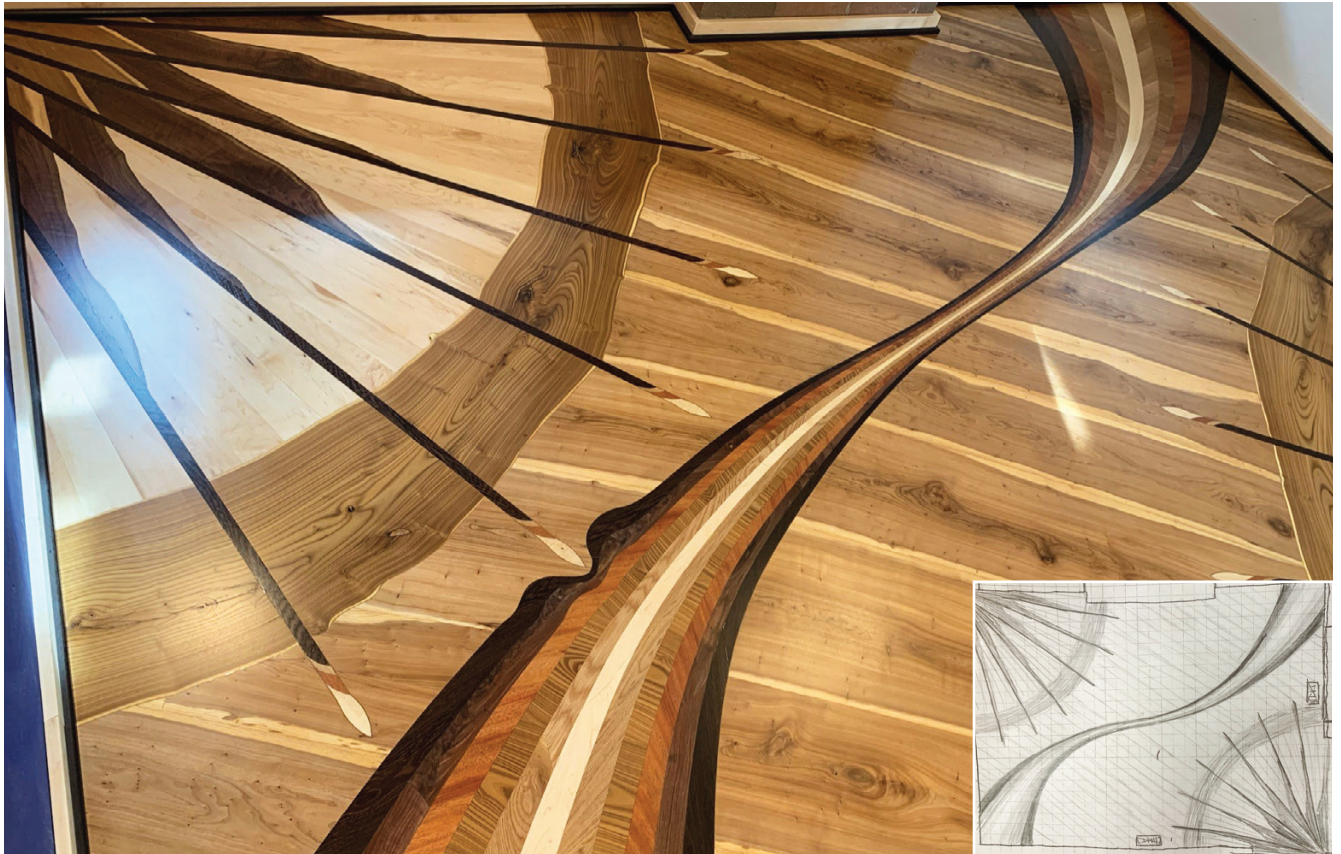


INTERIORS



Installing Custom Wood Floors Make designs pop with live-edge inlays and multiple wood species

BY TOM OURADA

I don't install many floors with live-edge inlays and other custom features like the ones described in this article (the market for these unique wood floors is relatively small and select), but I would if I could. I like the process of working with clients to come up with a design and the technical challenge of executing it using various wood species that I've sourced myself.

I've been installing traditional hardwood and softwood floors for 15 years and began experimenting with these unique creations about nine years ago when my family was still walking on subflooring in our six-year-old home. A friend who had a mill was ambitious enough to help me slab some pine trees growing on my property, one of which was a "pistol butt," a tree growing out of and up a steep hill. The result-

ing 18-foot-long log was 26 inches wide with a 7-foot-tall curve—not to mention wet and heavy—but two days later, we had about 12 workable slabs. After they were dry, I used them to cover my home's subfloor with a design that won my first of six National Wood Flooring Association (NWFA) Floor of the Year awards. Certainly, my approach could be replicated on a less ambitious design, with similar results.

LOGGING AND MILLING

Over the years, I've accumulated equipment more suitable for a logging operation than for a flooring installer, including a 60-inch Alaskan saw—basically a frame that supports a large chain saw fitted with a 60-inch bar—and a couple of other semi-portable

Photos by Tom Ourada



The author constantly scouts for interesting trees from a number of sources. Sometimes he brings his portable Alaskan saw to mill a tree on-site **(1)**, but more often he hauls the logs to his home **(2)** to mill them into nominal 1-inch-thick slabs with his band sawmill **(3)**. The first slab cut reveals the log's grain pattern and color **(4)**.

sawmills wide enough to handle the odd-shaped logs that I like to transform into flooring. I also have a small trolley and a crane to handle the logs once I've brought them back to my shop, and a small kiln to dry the planks after I've milled the logs.

Where I live near Spokane, Wash., hardwood trees are vastly outnumbered by ponderosa pine, Sitka spruce, Douglas fir, and other softwoods, so I'm always on the lookout for good hardwood candidates for my projects. I've salvaged a lot of trees scheduled for removal from city parks and often work with private landowners who have unwanted trees, bringing my tree-climbing gear (I'm also a rock-climbing enthusiast) and chain saws to carefully limb them and drop them to the ground without damaging them.

Of particular interest to me are trees with a nice curve or crotch, which produces the interesting shapes that I like to use in my designs. Anything with a C- or S-shape that can sit flat on the ground is a good candidate for flooring.

After I've sectioned the downed logs and hauled them back to the "log yard" behind my house, I try to mill them as soon as possible—it is easier to saw wet logs than dry ones and, in hardwood logs, results in less cracking or splits. Wet softwood logs tend to develop a fungus that creates a nice bluing effect but will also lead

to decay and softness if not checked in time by kiln-drying.

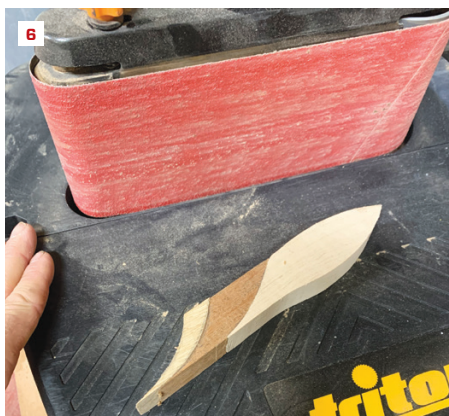
One lesson I've learned since I began milling custom flooring is that curved boards have to be cut thicker than straighter pieces to prevent "washboarding"—think wiggles on a lasagna noodle—when they are dried in the kiln. Of course, using pieces of different thicknesses makes getting the surface of the final floor in the same plane trickier than simply sanding the installed flooring smooth. Typically, I rough-saw boards to between $\frac{5}{8}$ inch to $1\frac{1}{2}$ inches thick, depending on their shape, species, and edge detail, before kiln-drying them to between 6% and 8% moisture content.

DESIGN AND LAYOUT

Before I design a floor, I like to meet with the clients in the room where the floor will be installed. In addition to getting a feel for their personalities and interests, I like to find out how the room will be used and what kind of furniture it will have. Drawing on both this discussion and my mental inventory of the pieces of wood that I have on hand, I sketch out three or four design ideas using paper and pencil. Usually, the final design meshes elements of these preliminary ideas that I've sketched out.

Once we've settled on a design, it's time to transcribe it to the

INSTALLING CUSTOM WOOD FLOORS



Working in his shop, the author uses a small band saw to cut wood pieces to fit the design (5) and cleans up the cuts with an oscillating benchtop belt sander (6). He creates the design in sections, starting with the big pieces (7). Smaller pieces are then cut to fit to complete the design (8). After one section is done, the author dismantles the pieces and starts working on the next section, repeating the process until the design is completed.



floor. The design is the big idea, but it's the wood that dictates how it is executed on the floor. I find that the wood pieces start designing themselves as I rearrange them according to their grain patterns and colors. I begin with the big pieces to balance the flow, tacking them in place using flat-head screws with small shanks that leave only tiny holes. Then I work in the small pieces.

I lay out the design on the floor of my shop, working in sections and varying the species to create contrasts and patterns. Russian olive is one of my favorites because of its color and grain, but it's tricky to work with because it's brittle and tends to crack. Wenge is a dark wood that I like to use to create contrasts, but I also sort of dread working with it because of its super-sharp splinters.

To cut out the desired shapes for a design, I primarily use a small 10-inch Rikon band saw, though I occasionally use a jigsaw too. I've tried using a scroll saw but abandoned it after breaking too many blades.

In the flooring community, one of the marks of a good installation is a tight fit, which is difficult to achieve with small pieces and complex shapes. For this type of work, it's critical to know the three sides of each line—inside, outside, and middle—and to pay close attention to where you are making the kerf. After I've cut out a piece, I check and re-check the fit, adjusting the cut as necessary until I'm satisfied (my goal is to use as little filler as possible). Then I

smooth out and back-bevel the cuts using an oscillating bench-style belt sander with the table tilted about 2 degrees.

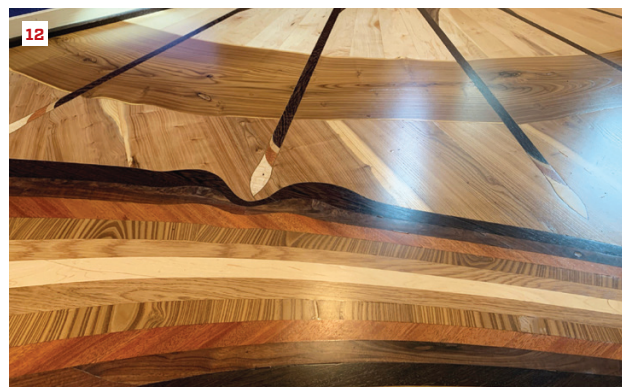
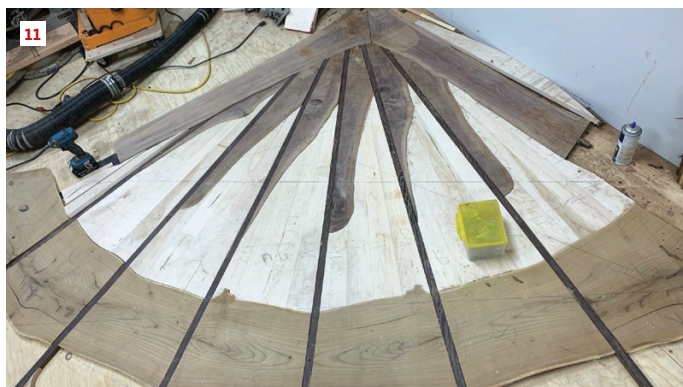
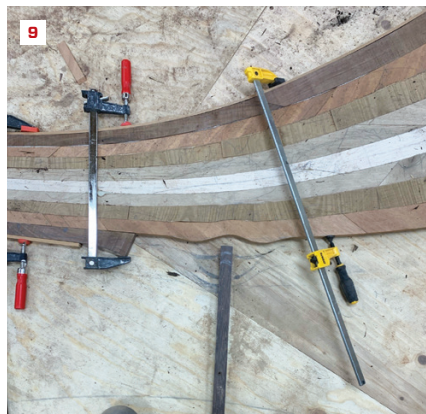
Along with a tight fit, flatness is a hallmark of a good floor installation. Because I'm working with flooring pieces of varying thickness, I need to do a lot of hand planing and sanding. I start by leveling out the high spots on the backs of the big pieces with a power planer to make them as flat as possible, checking them often with a straightedge before tacking them to the floor with screws. When pieces are less than 1/2 inch thick, I laminate them to 1/2-inch plywood backing before cutting them out.

Once I'm satisfied with the fit of the pieces on a section, I dismantle it and move on to the next section. Most of these floors are installed in homes that are far from where I live in eastern Washington, so after I'm done laying out the sections and cutting the pieces to fit, I pack everything up, load the floor and my installation tools into my van and work trailer, and haul it all to the jobsite for installation.

INSTALLATION

Unlike with blind-nailed strip flooring, which I install over a vapor retarder like Aquabar paper underlayment, these floors are glued directly to the subfloor with Bostik GreenForce adhesive, which also acts as a vapor retarder. First, I lay out all the pieces I precut in my shop, again screwing down the big pieces (using the

To create the swoosh pattern on this 12-by-17-foot dining room floor, the author laminated various species together, including maple, white oak, Russian olive, black walnut, and wenge (9). Those same species were used to create the radiating corner pieces (10, 11). After carefully leveling out the floor with a power planer and various sanding machines, he buffed the surface, then applied a sealer coat and two polyurethane finish coats; no stain was required to enhance the wood's grain and color (12).



same holes) and making adjustments as needed until everything fits tightly together. Since nothing ever goes back together exactly the way it fit in my shop, I bring along extra material and my tools so I can recut pieces as needed.

Then I pull up about a 4-by-8-foot section of the floor, spread Bostik adhesive on the backs of the pieces with the manufacturer-recommended notched trowel, and glue that section down. To hold small, pointy pieces flat to the floor while the adhesive cures, I pin them with special scored screws that are designed so that their heads will break off about 1/4 inch below the surface of the flooring (Squeak-No-More Pro Floor Repair Kit, squeakyfloor.com). Then I move on to the next section.

After the floor is glued down and has set overnight, I level out the high spots. I can't just jump onto the floor with my multi-head sander because of the mixture of relatively soft woods like poplar and hard woods like wenge or Japanese elm. So I start with a power planer to take down the high spots, checking the floor often with a straightedge. Then I go over the entire floor with a Clarke Super 7R edging machine fitted with a 16-grit open coat sanding disk. Next, I go over the floor with a Lagler Hummel 8-inch floor belt sander, beginning with a 40-grit belt, then switching to a 60-grit belt and changing the angle about 10 degrees. After that, the floor becomes more like a normal floor; I sand it with a Trio machine and finally,

prior to finishing, buff it out with a HydraSand multi-head sanding assembly fitted to my buffer for the highest grit recommended by the manufacturer of the stain or the sealer coat.

FINISHES

I'm not opposed to using water-based stains to add color to a design, such as a wildlife-themed floor featuring a portrait of a deer that I installed for a neighbor. But for the most part, I prefer to let the wood species speak for themselves as they acquire a patina over time. In my area, which experiences a wide range of humidity over the course of a year, I've found that oil-based finishes tend to work best.

I start by popping the grain by spritzing the floor lightly with water from a garden sprayer and spreading the droplets with a T-bar. After the floor has dried, I apply a Duraseal stain coat (if desired) and sealer coat, followed by two finish coats of Fabulon oil-based polyurethane satin finish. Before applying the final coat to the floor, I buff it with a maroon pad with three thin strips of 180-grit sandpaper attached to flatten any debris in the finish while prepping the dried finish for better adhesion of the final coat.

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