Choosing the Right Wood

by John Leeke

While working on restoration projects, I'm often asked questions on wood selection. On a recent job in Virginia, a contractor was looking for a low-cost substitute for expensive vertical-grain fir flooring for an exterior porch deck. For projects like this, I have two methods for deciding what wood will be best for the job.

Two Ways to Select Wood

The first and easiest method is to look at the kind of wood that has been used traditionally. If woodworkers over the years have used a certain wood for a particular application, then I trust their collective judgment. In New England, for instance, the common wood for porch decks has been "hard pine," which usually means red pine or fir, selected for heartwood and straight grain. But in Virginia the traditional wood of choice might be "heart pine" or long-leaf yellow pine. Check historic-house museums to learn which woods have been used in the past. Then ask local millworks to find out what wood is commonly used today for that application.

When the modern use differs from traditional and historic applications, consider another approach. Rather than simply use the traditional wood, consider all of the options to find which wood best suits the job. This requires a lot more effort, but it can result in better performance and more personal satisfaction (perhaps one of the main reasons we like working on older buildings).

Performance. To begin, consider how the wood must perform. In this case, stability was important since the deck boards must lay flat. With a climate that has wide swings of humidity from season to season, a wood that swells and shrinks from moisture as little as possible would be best. The softwoods, including he cedars, firs, pines, and redwood, are more stable than most hardwoods. Among hardwoods, mahogany and teak are also very stable.

Protection. Since paint is the best protection from moisture and weather for exterior woodwork, the wood's ability to hold paint is important. The cedars, redwood, and eastern pine, western pine, and sugar pine are easiest to keep painted. Redwood, eastern white pine, douglas fir, cedars, and white oak are resistant to decay, whereas most western pines and red oak are not.

Workability. Next consider how easy the wood is to work with. This is especially important if you're milling the boards yourself. If the boards have tongue-and-groove joints and nosing on the ends, machinability is important. Machine cuts will be smooth and even on the pines and mahogany, but the cedars, douglas fir and redwood are splintery. They may require extra sanding and touching up.

Availability. Finally consider cost and availability. Mahogany or edge-grain douglas fir may be the ideal woods for your floor, but they may bust your budget. And special orders may take more time than your schedule allows.

To make the final choice, I often start with a list of available woods. I decide which of the characteristics I've mentioned are most important. I cross off the woods that don't meet these requirements and end up with one or two woods that have the right balance of properties.

A Case Study

A wood question came up in my work on the cupola I discussed in my may '89 column (see Figure 1). Would pressure-treated lumber be appropriate to replace the railing on the cupola? In this case, the railing was "old-growth" northern white pine with few defects; the annual-growth rings were closely spaced. Serious wood deterioration affected less than 10 percent of the railing and most of that was at the lower joints and rails.

I asked how and why the existing railing failed. Here, movement and paint failure (due to heavy paint buildup) had let water into the joints. Also, nails had rusted away letting the bottom rail slip down to the deck where it caught debris; decay soon followed (see Figure 2).

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Solutions

Will replacement with pressure-treated lumber help solve these problems? In my experience, pressure-treated lumber resists two forms of deterioration: insect attack and fungal decay. This is backed up by the manufacturers' warranties that "guarantee against structural damage by termites or decay."

But wood deteriorates in several other ways, including surface checks and warping. Pressure-treated lumber is available in both construction grade and finish grade. The wood itself is usually plantation-grown southern pine. This wood seldom has more than seven or eight annual rings per inch and sometimes as few as two or three per inch. The per-inch ring count is a good measure of a wood's quality. Higher ring counts mean more late wood, which is denser, stronger, and more naturally decay-resistant. Wood with closer annual rings holds paint better.

Figure 1. *Because of the quality of the wood—old-growth northern white pine—this deteriorated railing was repaired rather than replaced. A pressure-treated replacement would likely have checked and warped.*

Figure 2. *This railing, which fell to the deck and decayed, was beyond repair. The replacement used corrosion-resistant screws and nails, and the joints were sealed with Sikaflex caulk to keep moisture out.*

Pressure-treated lumber must weather for several months before it can be painted. During that time the surface develops checks and other conditions that limit the performance of paint.

Recommendation

In this situation, the original wood was mostly intact and it would protect against deterioration better than the pressure-treated wood. I recommended that the existing railing be repaired with special attention to sealing the joints. The railing repair could be done in one of three ways. If there is massive deterioration, a section would have to be replaced with new wood. If only a small section of wood is decayed, epoxy could do the trick, or you could cut a wood dutchman (a wood patch cut to fit) and glue it in. If the joints are good and tight, paint will seal them. Otherwise, apply caulk. I recommend Sika's Sikaflex multi-caulk. Also, corrosion-resistant nails or screws made from stainless steel or Monel metal (an alloy of nickel and copper) should be used.

A Columnist Request

After sharing my work with all of you for more than six months, I'd like to hear from some of you. If you have questions or knowledge to share, write me care of *The Journal*.

If only a small section of wood is decayed, epoxy could do the trick.

I have found through my work as a cabinetmaker, finish carpenter, and preservation consultant that sharing what I know brings many fruitful returns. I'm sure you'll find the same. ■

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