Tips for Custom-Milled Trim

by Carl Hagstrom

Custom hardwood trim: Mention these words to finish carpenters and watch their eyes light up as they imagine awestruck homeowners fawning over their finish work. This is the realm of glory grabbers. Get it right, and you're a hero; get it wrong, and you've got an angry customer and an expensive fix.

But good craftsmanship isn't the whole story. Dealing with hardwoods requires a familiarity with various wood species, longer lead times, and more attention to costs. You also have to be well organized. When working with stock pine, you can drive to the lumberyard for a couple of extra boards if you run short. Not so with hardwood, where material shortages can turn into a major headache.

To successfully complete a hardwood trim job and make a profit, you must know something about how millwork shops operate. In this article, I'll pass along some of the lessons I've learned from dealing with the custom shops in my area.

Ordering Flat Stock

When a hardwood job calls for flat stock, your first move should be to throw away your standard lumber size chart. Rather than coming in standard widths and even-numbered lengths, it comes in the rough — unjointed, unplaned, and in lifts containing boards of various lengths and widths (see Figure 1, next page). Depending on the grade, these boards may have random defects, such as knots and wane, that have to be removed. Since you'll be charged

To save money and stay on schedule, plan carefully and provide your millwork shop with a detailed cut list

Figure 1. *Millwork shops get their wood in random widths and lengths. It's important to provide a detailed list of finish sizes so the shop can pick boards that minimize waste.*

for the price of the rough stock that your boards are cut from — as well as for the time required to cut out the defects — it usually pays to buy a higher grade of wood.

The list. To make the most efficient use of this rough lumber, the shop needs a detailed list of all the pieces you need (Figure 2). The list should include the wood species and its allowable visual characteristics (see "Know Your Woods"). Are knots acceptable? How about sapwood? Will any glued-up sections need to be color matched? Visual specs tell the millworker how to work the lumber pile, as well as determining how much waste there will be. If you're working with an expensive species like cherry, the savings can be significant.

Your list should also specify the size of each individual piece. Because there's no table of available sizes, as with softwood, you'll need to give the net measurement. The net measurement is the size of the finish board plus any cutting or waste-trimming. In other words, if you're installing 10-inch-wide hardwood shelves but will need an extra 1/4 inch to scribe them into place, then the boards you order should be 10 1/4 inches wide.

Don't make the mistake of combining lengths. If you need three 32-inch-long boards, list them that way, not as one 96-inch-long board; otherwise, the millworker will reject a 96-inch board with a defect.

An accurate list is especially helpful on large jobs, where the shop can order a lift of material in the proper sizes. If you're making a lot of door and window casings, for instance, the shop may order a lift of boards around 4 inches wide.

The list should also note how many sides will be visible after installation. Will there be one face and two edges (as in a casing), or just one face (as in a jamb extension)? If this varies from board to board, then make a notation for each board on the list. Even if you do your final sizing of the stock in the field, have the shop joint one edge of the board. It will be cheaper than doing it on site, and will give you one good edge to work with.

Color matching. In many species, there's a pronounced difference in color between the heartwood and sapwood. This difference is especially pronounced in glued-up stock. I've

Custom Millwork Order Sheet

Quantity	Width	Length	Thickness	Finished Faces	Finished Edges	Sanded Faces	Species	Species Characteristics/Notes	
4	2 5/8"	49"	3/4"	1	0	1	CHERRY	NO SAPWOOD, GUM IS O.K.	WINDOW (A) JAMB EXTENSIONS
2	2 5/8"	33"	3/4"	1	0	1	CHERRY	" "	WINDOW (A) HEAD EXTENSIONS
1	4 1/8"	41"	5/4"	2	1	2	CHERRY	NO SAPWOOD, NO GUM	WINDOW (A) SILL
2	3 1/4"	53"	3/4"	1	2	1	CHERRY	NO SAPWOOD, GUM IS O.K.	WINDOW (A) VERTICAL CASING
2	3 1/4"	40"	3/4"	1	2	1	CHERRY	" "	WINDOW (A) HEAD + APRON CASING
2	2 3/8"	33"	1/2"	N/A	N/A	N/A	OAK	MINERAL + SAPWOOD O.K.	FLOORING TRANSITION SADDLES (SEE ATTACHED DRAWING)

Figure 2. *A millwork list should specify size, species, and other characteristics for every piece of trim. This reduces mistakes and lets the shop accurately price the job.*

Know Your Woods

Choosing the proper hardwood species means knowing both your species and your customer. A small knot that you think adds character to the board may be totally unacceptable to your customer, but that same client may like the look of trim with occasional sapwood showing. You need to explain the options and come to some agreement. There are no right or wrong choices; the goal is to establish what your customer expects to "see" in a given species.

Below is a list of the species I've used, along with their visual characteristics. Though not all-inclusive, it will help you explain the options. If your job calls for a species not listed here, you should do your own research on it before sitting down with your customer. — *C.H.*

Cherry

The color variation between the heartwood and sapwood in a cherry board can be as pronounced as a blonde ponytail on a redhead. Cherry also contains small black streaks called "gum." Selecting for minimal gum increases the cost, while selecting for no gum may be cost prohibitive. Cherry darkens quickly when exposed to sunlight; it also "burns" easily during machining. A rotating cutter head that sits briefly in one spot on a cherry board will leave a black mark.

Red Oak

Although sapwood can be a concern with red oak, it is less so than with cherry because the color contrast is slight. However, red oak is subject to "mineral" staining — random, dark-colored streaks. Selecting for minimal mineral stain raises the cost.

Hard Maple

Light-colored sapwood is predominant in hard maple, so it's the preferred portion for woodwork. Hard maple may also have mineral stain. Because of its density, working maple requires frequent sharpening of cutting edges.

Ash

Ash has a grain pattern somewhat like oak's. Its sapwood is light yellow in color — a good choice for natural "blonde" woodwork. Selecting for minimal heartwood raises the cost.

Black Walnut

Walnut heartwood has a rich, dark, purple-red color. The off-white sapwood is usually selected out because the contrast is so great. Walnut is very expensive — better suited in price for furniture than for custom trim.

Birch

Birch is a hard, dense wood like hard maple. The heartwood is the preferred portion — selecting out the sapwood increases the cost.

Figure 3. *Many small shops have a selection of cutters that lets them crank out stock molding profiles on short notice. Often the shop can use several cutters in combination to match an unusual profile.*

Figure 4. *A profile gauge is useful for matching existing moldings that are no longer available. Include the cost of custom cutters — usually between $50 and $300 — to the trim estimate.*

seen cabinet doors in which three cherry boards had been edge-glued to make a raised panel, and where the center board was cut from sapwood. The center board looked like a vertical racing stripe.

You may like this contrast, but don't assume that your customer does. In fact, many customers insist that you even out color variations by minimizing either the heartwood or the sapwood, depending on the species — a process called color matching. Be sure to ask about color matching before bidding a job, because it nearly always raises costs. If only one part of the job is to be color matched (a fireplace surround, for example), your list should note which pieces to match. Also be aware that color matching only *reduces* contrast; it doesn't eliminate it. Be sure that your customer knows this.

Presanding. Ask if your shop has a drum sander — a machine that works like a surface planer, but has a sanding drum instead of planer knives. After being planed and jointed, flat stock is run through the drum sander using successively finer grits of sandpaper. My millworker uses 60 grit, 80 grit, and 120 grit. The stock arrives at the site ready to finish.

Presanding with a drum sander costs less than having someone do it on site. If your millwork shop doesn't have one, look around for a shop that does. If the job is big enough, you may be able to buy your hardwood at your local custom shop, then take it to a large production shop to be sanded.

Profiled Moldings

Few trim jobs require flat stock only. Even homes with square-edged casings and baseboards usually have at least some profiled shoe molds or door stops. Profiled moldings can be either stock or custom.

Stock profiles. Most finish carpenters start out using stock pine moldings from the local lumberyard. If your trim job calls for one of these profiles in hardwood, you may be able to purchase the molding from one of the large manufacturers that your lumberyard deals with. You will almost always pay less than you would to a local shop.

However, there are potential problems with mass-produced molding stock. Trim that sits in a warehouse for a long time can darken appreciably, providing a stark color contrast when installed near freshly run stock. I've also seen slight variations in shape between pieces (probably caused by the moldings being pulled from different runs) that make it impossible to correctly splice a long run of molding.

Beware of stock hardwood trim that has been milled with dull cutter knives. This leaves a ripple pattern on the surface. Such marks may be hardly noticeable when the trim shows up at the job site, but they really come to life when the finish is applied.

The use of a small shop doesn't guarantee that you won't have such problems. But because you get to do business with the people who do the work, rather than with an outside sales force, there's a greater chance that you'll get what you want. Many small shops keep a library of cutters (Figure 3), and can produce a variety of stock moldings on demand. For a given molding profile, you'll pay more to a local shop than to a large millwork supplier. However, hardwood trim customers tend to expect higher quality than the average homeowner. They're willing to pay a bit more for a good job — and tend to get very upset if things aren't just right — so it's risky to go to a large company just to save a few bucks.

Custom profiles. If you need to match an existing nonstock molding, or if a designer specifies a unique profile, you still may not need a custom profile. If you're matching an adjacent room rather than another piece of trim in the same room, you may get something close enough by building your own custom profile from two or more stock moldings. It will certainly cost less. A built-up profile may also satisfy the customer's desire for something different from the usual stock options.

Figure 5. *Good organization is a clue to a shop's professionalism and ability to meet deadlines. This shop uses a wall of drawers to systematically organize small pieces of hardware.*

Figure 6. *Adequate lighting is critical for doing safe, precision woodworking. This shop has plenty of general lighting as well as task lighting for specific machines.*

If a built-up profile won't suffice, your shop may have to make or order a set of custom cutter knives. Try to find a shop that has experience with custom work. As with anything else, the more custom jobs a shop has done the better they'll be at delivering on their promises. For instance, someone who hasn't run a lot of custom trim may not know that some profiles require two cutter knives. If it takes a couple of weeks to get a custom knife and only one shows up the week you need your order, you have a problem. Your safest bet is to give the shop a piece of the existing trim, but if the existing trim can't be removed, you can make a full-scale drawing of the existing molding profile by using a profile gauge (Figure 4). These gauges have a series of "fingers" that conform to the trim.

When matching painted profiles, the main requirement is to match the grain type. Open-grained woods like oak or ash take paint differently than closed-grain woods like poplar.

Custom moldings are expensive. The cost of a set of custom cutters will depend on how hard it is to produce them — the more intricate the profile, the more expensive the cutter. When cutter costs are added to machine setup time (it can take 45 minutes to set up a new cutter), total startup costs can range anywhere from $50 to $300, regardless of the amount of trim you need. Add up the costs of the millwork before submitting any bids. Even when estimating a time-and-materials job, it's a good idea to establish the millwork cost early on, so your customer has a chance to consider alternatives. Also give the shop as much lead time as possible — it can take as long as a month to complete a custom molding job.

Shopping for a Millwork Shop

How do you tell if a millwork shop is any good? Other contractors are a good source of referrals, but if you're faced with a particularly demanding job, you may want to talk to various millworkers and visit their shops. Look for the following:

- ***Well-maintained tools.*** Accurate work requires well-kept machines. If you see rust on the machinery, that should set off some alarms. Look also for poorly arranged dust collection equipment. In my experience, a poorly maintained shop is more likely to miss its deadlines.
- ***A neat work environment*** (Figure 5). It's tough to produce neat work in a sloppy shop.
- ***Good lighting*** (Figure 6). If you can't see well, you can't work well.
- ***Power feeders*** (see photo, page 39). A power feeder feeds stock through a shaper at a steady rate. This reduces burns and chatter marks. A power feeder is also a good safety feature, since the millworker's hands never get near the cutterhead.

You'll also want to evaluate the shop's business policies. Is their paperwork organized? If the shop can't find your list, they can't do the work. Do they return quotes quickly and provide firm lead times? If the lead time isn't accurate, you can't set your schedule. Do they have samples of finished wood species and trim profiles on hand to show your customer? Are they patient with customers who don't understand the intricacies of working with hardwoods? If not, I wouldn't do business with them. Impatience is the last image you want to convey to a customer who is paying a premium for hardwood trim.

These guidelines are general, to be sure. But given the number of intangibles that come into play when buying hardwood trim, it's nearly impossible to be more specific. It's possible, for instance, that the shop that looks most disorganized may do the best work, on time and on budget. But if you're in doubt, it's best to try out a new shop on a small job. ■

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