Replacing a Deck

Production layout techniques allowed the job to move forward in the shop while rain drenched the site

by Lee McGinley

Last fall a homeowner asked me to prepare a quote for replacing some worn-out decking. The 15-year-old deck faced west and was exposed both to full sun and to heavy squalls that blow off Lake Champlain in this northwest corner of Vermont. The owners opted for the same wood species — 5/4 x 4 red meranti — but they wanted to preserve the natural finish more carefully this time around. They also wanted to avoid the nail pops that were common on the original deck. I did some hasty research on finishes and fasteners; my own concern was how to complete the job before serious winter weather set in.

I divided the job into several tasks, some of which I assumed would require a helper. I figured the job would take a total of 120 man-hours. The 600-square-foot deck had three levels, and there were several rock outcroppings I would have to work around. The five-sided upper level had runs of 23 feet, and the lumberyard could supply lengths up to 19 feet, so I calculated material accordingly.

I looked at two fastening options: face-screwing with stainless steel trim screws, and hidden fasteners. Blind fasteners are aesthetically sleek, but they have drawbacks. Some require you to make grooves in each deck board; some screw diagonally into one edge of the decking, which seems to create potential for uplift on the unfastened side (this was confirmed by feedback from my local lumberyard). Some clips are plastic and might flex under pressure; others are stainless but costly. Some of the systems

Figure 1. The surface of the 15-year-old deck was weathered and rough, and the nails were lifting out. On removing the old material, the author found that the framing was in good shape and accurately laid out.

Figure 2. Using 1x4s as story poles allowed the author to take the exact joist layout back to the shop where he could accurately cut the decking.

require fastening from underneath, which was not an option in this case because the joists are close to the ground. Still others require a bead of construction adhesive between the decking and joist to eliminate squeaks, which could be messy and would certainly add labor. With all of the hidden fastener systems I looked at, the decking would have to be spaced further apart than the $\frac{1}{8}$-inch gap recommended by most wood decking manufacturers.

So I decided that trim screws were the best option, and estimated accordingly. I figured if they should work loose in the future, they could easily be retightened.

Story Poles Speed Production

After winning the job, I revisited my plan. The deck had been built by a skilled local contractor; I had assumed the framing and layout would be good and wasn't disappointed when I removed the old decking (**see Figure 1**). Many of the joists were fairly close to the ground — less than 24 inches above grade. I could see it would be unwieldy to straddle the joists and move around. Also, the rock outcroppings prevented me from setting up a cut station close by. The deck is nearly 60 feet long, and the only staging area for materials was another 20 feet beyond. I wasn't looking forward to lugging

the boards to the site, then moving them back and forth several more times for cutting and fitting.

I wanted an approach that would reduce material handling, spare my knees, and save time. So I decided to create story poles for each of the three landings. The story poles would locate fastener pilot holes and determine cut lengths for each course. I would rough-cut the deck boards in my shop and predrill them, then take them to the site for final cutting and installation. I realized I'd have to be very careful with my story poles or I'd blow the potential labor savings. But the approach also meant that I wouldn't have to hire a helper.

To make the story poles, I spliced 1x4s together to get the overall length for each landing (**Figure 2, page 2**). I laid each story pole across the framing and marked the centers of the joists at the first course, then checked the layout against the last course to make sure there was no drifting. I created a layout pattern that would offset the joints a minimum of 32 inches between courses; the pattern repeated every five or six courses.

Prefinishing

I encouraged the homeowners to protect the decking by having all the surfaces prestained before installation; I did this staining before any cutting. I considered several stain products, paying close attention — since red meranti is a hardwood — to each finish's ability to be absorbed by the wood rather than just coating the top. We also wanted a product that would enhance the natural color of the wood. There are several products that claim compatibility with hardwoods, but on close reading of the preparation instructions and after talks with customer service reps, I realized that some of the claims are misleading and that the labor involved to make the product work would substantially increase the cost.

Although Mesmer's (messmers.com) had the best customer support — and surface prep for its deck stain was easy — the instructions also indicated that we needed to wait six to eight weeks before application. It didn't seem prudent to let the new deck suffer through a Vermont winter without any protective treatment, and neither the owners nor I wanted to split the job into two phases. So instead, I chose Ipe Oil (ipeoil.com). To make sure I got good penetration, I wanted to address mill glaze, which is a serious deterrent to absorption. Since I had over 2,000 lineal feet of decking to treat, I had it delivered to a local millwork shop, where they ran the boards good side up through a wide belt sander fitted with a new 120-grit belt — only an hour and a half of shop time.

The finish brushes on easily; excess is wiped off after 20 to 30 minutes. I set the decking on 8-foot-long sawhorses and could easily handle 25 boards at a time, sealing both faces

Figure 3. The author set up the cut station in his shop (A) parallel to a layout bench where he transferred the layout marks from the story poles to the decking (B) for crosscutting and predrilling. He followed a color-coded chart (C) to ensure the courses were cut and labeled accurately for installation in the field.

Figure 4. On site, the author used a couple of knock-down work surfaces for final trimming and scribing (A, B). The butt joints between individual deck boards were cut in the shop and the courses labeled and bundled for quick placement (C).

and edges. (On site, I treated all cut ends with Bodyguard End Seal; bodyguardwood.com).

I also used this step of the process to remove culls and separate the boards by length.

Cutting and Drilling

I set up two work areas in the shop. One, a 24-foot-long 2x12 on sawhorses, became my layout table. I fastened each story pole to the 2x12, then transferred the various course lengths to the decking, following a color-coded chart I created (**Figure 3, page 3**). Parallel to this stood my cutting station. I back-cut butting deck boards with a 2-degree angle, to help shed water and create a tight joint.

After cutting, I moved the boards back to the layout table and drilled pilot holes using a jig and a Smart-Bit countersink bit (starbornindustries.com). The Smart-Bit was sized for #7 stainless steel trim screws, and came with three pilot drill bits and a hex wrench for changing them out. Knowing that these tempered bits can snap easily if flexed, I had ordered extras but didn't need them.

While they were still on the layout table, I flipped over the boards for each course and marked them with a letter corresponding to my layout chart. I then bundled the two or three pieces making up the individual courses using 6-inch stretch wrap and delivered them to the site, where I stacked them in order for the section I was working on.

Installation

On site, I set up a cut station and a bench for my grinder, jigsaw, and trim router (**Figure 4**). I used a $\frac{1}{8}$-inch roundover bit to create an eased edge on square cut ends, and used the grinder and jigsaw for the intensive scribing I had to do

Figure 5. Jigs made with hardwood scraps and aluminum stock (A) sped up accurate drilling and spacing of deck boards. In combination with the use of a BoWrench, the spacers ensured near perfect spacing (B,C).

around the rocks. I also made several jigs to speed installation, mainly using ⅛-inch flat aluminum bar stock, which was ideal for establishing equal spacing between deck boards (**Figure 5**).

Since I had been doing so much of the prep work offsite, where I couldn't walk over and check the fit from time to time, I wasn't totally convinced that my story-pole brainstorm would work. So to be safe, I did the largest and easiest landing first. Fortunately, the planning paid off and it worked out well. In fact, because I accomplished so much of the work in the shop, where the decking stayed dry, I was able to move the job forward much more quickly than I had estimated. I watched the weather and installed the prepared courses when it wasn't extremely windy or pouring; on days when it was impossible to work outside, I prepped the next set of decking.

To be cautious, I didn't drill the pilot holes at the cut ends of the deck boards in the shop. Instead, I used a jig that aligned over the joint and spaced the holes ½ inch back from the end.

Fastening was straightforward. I used 3-inch-long #7 stainless steel trim screws from Manasquan (manasquanfasteners.com). The company's website has a calculator for determining the number of screws needed; it was right on. Of the 3,000 screws I purchased, less than a dozen snapped while I was driving them, mostly from hitting a hidden joist-hanger nail. When a screw snapped off, I drilled a ⅛-inch pilot hole on an angle next to the derelict, then drove in a 1⅝-inch stainless steel trim screw.

The five-sided upper landing presented a challenge, since its width shrinks — from 14 feet down to a sharp point — over a distance of 12 feet. Here, as the courses became shorter,

Figure 6. The author tried a flexible curve (A) but found cardboard more useful for scribing to the rocks (B). Some of the pilot holes, like the ones following a slightly skewed joist (C), were best drilled on site. The finished deck provides a stunning entry to the home (D).

I shortened the story pole progressively, but kept registration to the same joist throughout to preserve the layout.

Where the decks had open ends and I had room to maneuver a circular saw, I let the ends run wild, then trimmed them all at once using a temporary cleat screwed to the decking as a guide.

Where the courses butted against a rock, I ran the ends wild, leaving enough material to trim to the shape of the rock. In some cases, given the irregular shape of the outcropping, I didn't want to press my luck, so I waited until the boards were scribed before drilling any of the pilot holes. I used pieces of cardboard snagged from a local glass company as templates for shaping the deck ends, which I cut first with a jigsaw and finished with a grinder fitted with 40-grit paper (**Figure 6**).

Bottom Line

Precutting and predrilling shaved almost four days from the original labor estimate, even when counting the extra hours needed for planning and creating jigs.

Next time I'll estimate based on my original square-foot price, but I should still see an improved labor margin. Some of the other advantages I had hoped for panned out well: There was substantially less material handling, the screws lined up handsomely, and with less moving around on the job site I didn't need a helper. Besides not banging up my knees, I was able to do a lot of the prep work standing up, not hunched over. Finally, when I measured for course creep at the end of the job, I found there was less than ⅛-inch variation across the width of each level, which I attribute to accurate framing and the aluminum spacers.

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