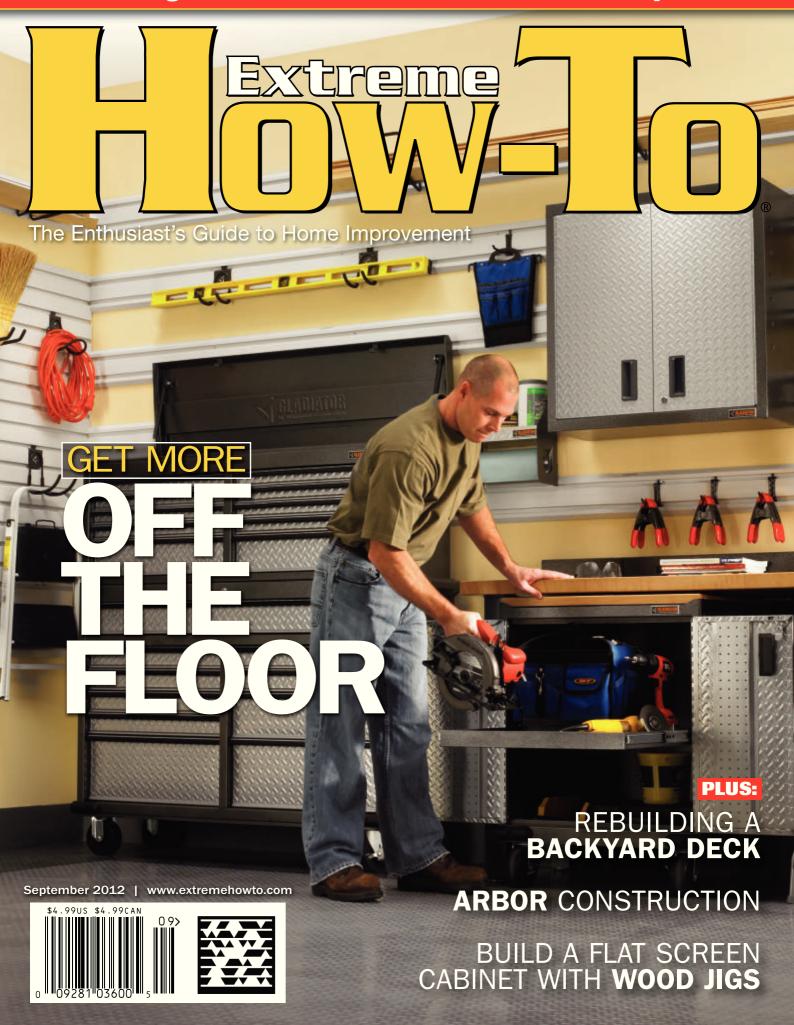
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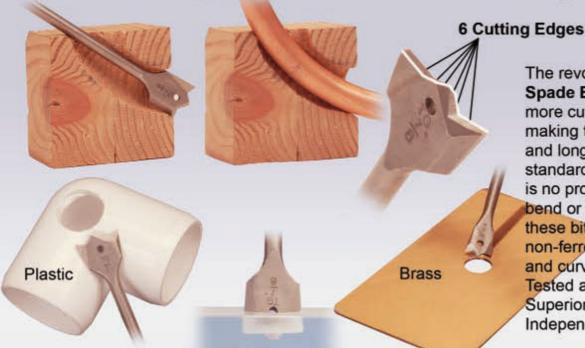
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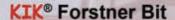
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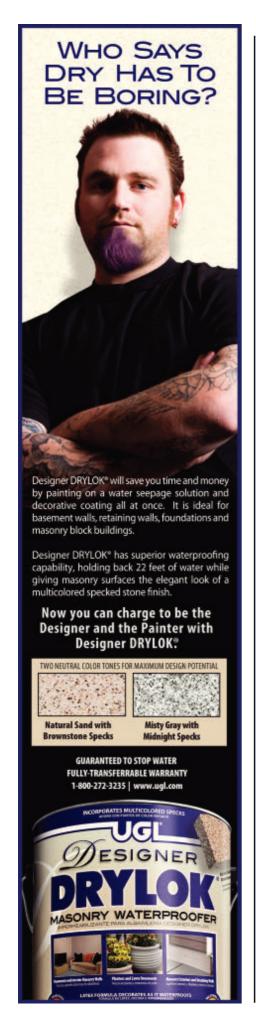


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From The Editor-In-Chief

hey say there are two sides to every story. That includes the story of where consumer products are manufactured, everything from tools and building materials to clothes and electronics.

A few months ago in Las Vegas I met John Quincy Adams IV, great grandson of a certain president of the United States. He promotes the use of a Manufacturing Facts certification mark to prominently display to consumers what percentage of a product is made in the U.S. and what percentage is made in other countries.

Adams explains that if a finished product is made outside the U.S., the country of origin is usually printed in an obscure location on the packaging, making it difficult for the consumer to find. He suggests that's because the manufacturer is probably ashamed that they are not making the product in the U.S. Adams wants Congress to pass a bill requiring manufacturers to put the percentages of product origin on their packaging, which he believes would encourage manufacturers to make a greater percentage of their products in the U.S. He reasons that manufacturers will want to show that their companies care about American workers—not just their bottom line.

On the other end of the spectrum you have the World Trade Organization and its recent "Made in the World" initiative. According to the WTO, "More and more products are 'Made in the World' rather than 'Made in the UK' or 'Made in France'. The statistical bias created by attributing the full commercial value to the last country of origin can pervert the political debate ... and lead to misguided, and hence counterproductive, decisions."

In other words, knowing where a product is made can influence buying decisions that may not be in the best interest of foreign manufacturers. So, to discourage favoritism for American-made goods (or UK- or French-made), the WTO wants to implement this generic system of "Made in the World" anti-labeling, the intent of which seems to be to conceal information from the consumer.

If you ask me, a more informed consumer is a smarter consumer, and the WTO's effort to dumb us down won't get any support from me. As far as "Made in the USA" products, I'm a pragmatist. Sometimes I buy foreign goods to save money; sometimes I buy American-made when I recognize quality craftsmanship or when I want to support a U.S. manufacturer. I won't advocate the Federal government forcing manufacturers to disclose every move they make in the production of their goods. However, I do think it's a great idea for American manufacturers to voluntarily shout from the mountain-

tops, or through a Manufacturing Facts label, their proud proclamation of "Made in the U.S.A." And I think it's a great idea for consumers to look for those labels, remember how we built this country, and factor that into their buying decisions.

Check out John Adams' website at MadeInUSAFacts.com. And let us know what you think on the EHT Blog—just visit blog.extremehowto.com.

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• I plan to convert my unfinished basement into a finished living space. When installing drywall on the basement ceiling, do the panels attach directly to the underside of the joists?

• Rather than attaching directly to the joists, the ceiling should have wood or metal furring strips attached perpendicular to the joists. In most houses the ceiling joists will be inconsistent, with their lower edges located at slightly different elevations that can result in an uneven drywall ceiling if directly attached. To install the furring, pull a string across the bottom of the joists and attach it to the opposite side of the ceiling. Check the string for high and low spots. High spots will need to be planed; low spots will need to be shimmed. For the furring strips, fasten wooden 1x3's or metal resilient channel across the joists, checking for level and shimming as required. Finally, install the ceiling panels across the furring strips, staggering the panel joints from row to row. A homemade "deadman" or T-shaped 2x4 brace will help hold the panels while you screw them into the furring.

What's the difference between normal carpet and "natural fiber" carpet?

• Natural-fiber floor covering is often selected for its environmental appeal, because the fabrics are generally made using traditional looms from sustainable resources. The products present a more "green" option than carpet, and the material is naturally more biodegradable. Natural fiber is similar to carpet in that it's soft and warm, but also suffers the same disadvantages of carpet, as it can trap dust, food particles and odor. It can also be badly damaged by water and difficult to clean.



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• I've seen a faux finish painting technique that combined two different colors onto a wall.
• What is this technique called and how do I do it?

• The two-tone technique you've seen is probably the result of using a glaze in conjunction with a standard base coat of paint. The glaze modifies the appearance of the base coat by partially con-

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cealing it with a translucent filter. The glazing technique can be "positive" or "negative." With a positive technique, you add glaze to the wall to enhance the decor. With a negative technique, you cover the base coat with glaze and then use a tool such as a sponge or rag to remove it, revealing the base color beneath. For more details on application techniques, search the internet for "faux finish glaze" or visit extremehowto.com.

• When building a cinderblock wall, should I fill the voids in the blocks with mortar?

.....

 We recommend filling the empty spaces of the blocks with sand topping mix or core-fill grout to ensure a solid core and strong wall. Increase the wall's vertical strength by inserting sections metal rebar into the filled voids to connect the blocks from course to course. You can also add horizontal reinforcement by setting laddershaped metal reinforcement grids into the mortar beds of every third course. Overlap the ends of the metal grids by about 6 inches. EHT



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Build a Flat Screen Cabinet with Wood Jigs

Off-the-shelf woodworking jigs help build this flat-screen TV cabinet.



By Michael Morris Photography by Daniel Morris

at-screen televisions are a great improvement over tube-type TVs. Today's plasma and LCD flat-screens are light-weight—most under 50 lbs.—and just a few inches in thickness (newer models are only an inch or so thick), which makes them perfect for mounting on a wall.

One problem with a wall-hung setup is that, when the TV is off, the screen presents a large, blank, blacked-out image. The solution is to hide the set inside an attractive, wall-mounted wood cabinet more appropriate to home décor.

To simplify the construction of this cabinet, I relied on four

inexpensive, easy-to-use jigs from the General Tools & Instruments "E-Z Pro" line. I used a dovetail jig to create a sturdy, wall-mountable framework; a mortise & tenon jig to make the recessed-panel doors; a doweling jig for attaching internal components including a shelf, drawer dividers, and reinforcing stretchers; and a pocket-hole jig to make quick work of drawers for remote control devices, instruction booklets, DVDs and other items.

In planning the cutting and construction sequence, I recommend that you first cut and assemble the outer frame before making final cuts to the internal



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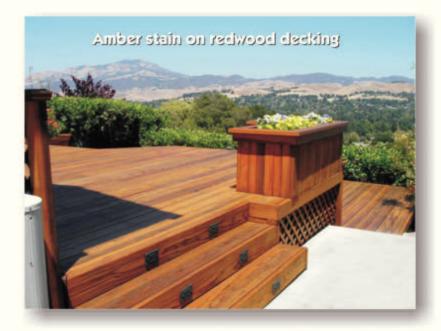
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components. This is because the half-blind dovetail joints used to connect these parts may require slight fitting adjustments, which could affect the other components' lengths. To be safe, cut and fit your dovetails before measuring the exact lengths of the shelf and the upper and lower stretchers. Also, if you are not familiar with any of the woodworking jigs mentioned above, be sure to make test cuts in scrap wood before attempting final cuts in costly materials.

This cabinet is sized for a 32-in, flat-screen set, Television measurements are based on diagonal screen size, so the actual outer measurements of this set are 31-in. wide, 21-in. high, and 4.25-in. deep. I added



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roughly two inches of clearance on all sides of the set within the cabinet dimensions, plus height for the drawers and shelf, resulting in an exterior cabinet size of 36-in. wide by 31-in. high. The 5.5-in. width of the (nominal) 1x6 maple boards used here, along with full-overlay doors, provided just enough cabinet

depth for a flat-screen set with a hanger mount.

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General's "Dovetailer" E-Z Pro Jig is a compact, all-in-one unit that guides your electric router to cut both pins and tails at the same time in the same setup. The kit comes with everything you need, including a 1/2-in. carbide dovetail bit with preassembled guide bushings to make full or half-blind dovetail joints. You can also use this jig to make other size and shape dovetails, or square-cut box joints, if you supply your own bits.

The cabinet frame is a simple open-faced box. After cutting the top, bottom, and side pieces to finished length, mark the board faces and intersecting corners to identify how they will be arranged in final assembly. This is important to ensure that the dovetail joints match up accurately after they are cut.

Begin the half-blind dovetail joint sequence by cutting the TAILS—the dovetail "fingers"—at each end of the top and bottom frame pieces. It's easier to set the jig and cut all the tails at one time before you readjust the jig guide to cut the dovetail PINS—the mating slots—and it will result in more accurately aligned joints.

The Dovetailer is simple to set up. First, align the jig's built-in gauge to the appropriate depth indicated on its scale; if you use the 1/2-in. dovetail bit supplied with the kit, as we did, set the gauge to the 1/2 mark. Chuck the bit into your router and—with the router turned off—place the router baseplate atop the jig, then adjust the bit depth so that it barely touches the gauge. Don't worry that the bit will

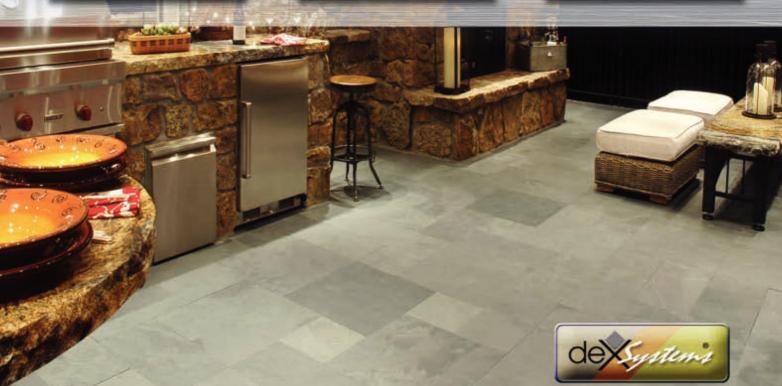


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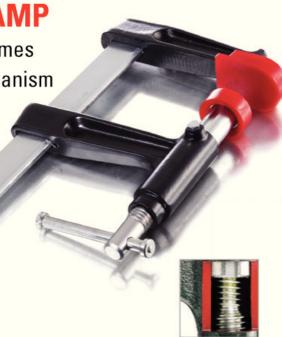
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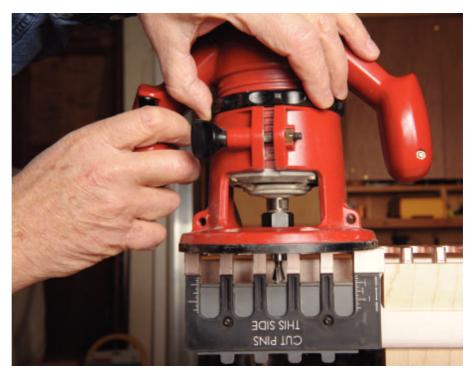


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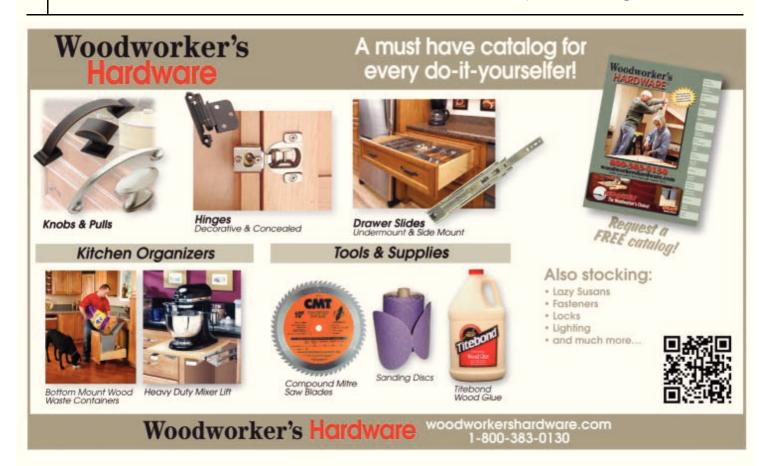
impact the plastic gauge during operation—when the router is positioned for cutting, only the guide bushing, not the spinning bit, contacts the gauge.

With the jig and router ready to go, make a center mark near one end of the inside face on the first board. I find it easier to clamp the board vertically against a workbench when cutting the tails, which positions the jig atop the board end and allows you and the router to work comfortably atop the jig.

Place the jig on the board end so that the legend CUT TAILS THIS SIDE is facing you on the flat horizontal surface, and align your center mark on one of the jig's central dividers. The outside or finish surface of the board should be facing away from you. It's not necessary to measure or position the board precisely in the jig—alignment of the tails



Before cutting the tails, set the jig guide to correspond to the router bit size and depth. First, set the guide to match the bit size (here, the guide is positioned at the 1/2 mark to match the 1/2" bit provided in the jig kit). Next, with the router turned off, set the bit depth to meet the guide, as shown.



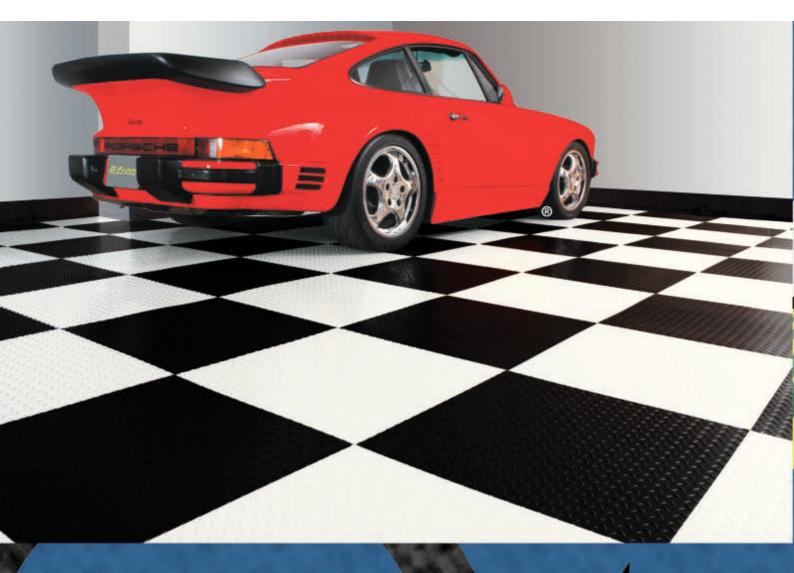


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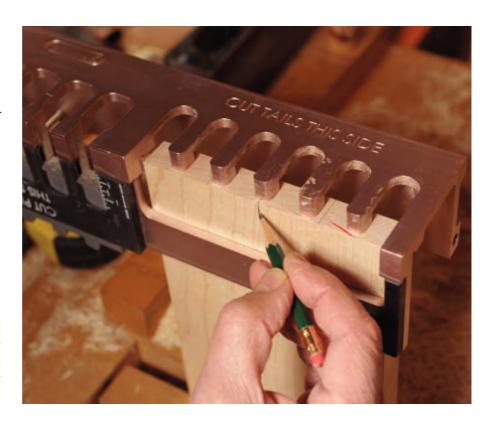


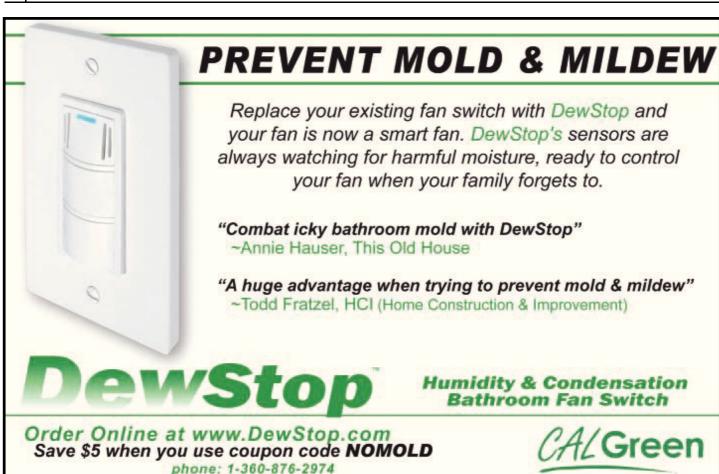
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and pins is done when the pins are cut in the next steps.

Tighten the jig's face clamp against the board, using the two thumb screws on the opposite side of the jig. Position the router baseplate flat atop the jig and rout the tails by following the jig slots. The guide bushing will prevent you from overcutting, but take care not to tilt the router, and cut slowly to avoid wood tear-out on the board faces. Rout all of the tails onto both ends of the top and bottom boards.

Mark the center of the TAILS board and align your mark with one of the jig guide dividers. Precise placement is not required at this stage.







To rout the pins, first reset the jig guide to correspond to the thickness of the wood (if you're using nominal 1x6 material, as we are, set the guide to the 3/4 mark), then position the jig on the end of one side board. For this step, it's easier to clamp your board flat on a workbench so that the words CUT PINS THIS SIDE on the jig are facing up.

Register the pins and tails by aligning each side board with its intersecting end board (which you

Clamp the TAILS board vertically against a workbench and secure the jig atop the board with the tails legend facing upward. Rout all of the cabinet tails before resetting the jig to cut the pins.



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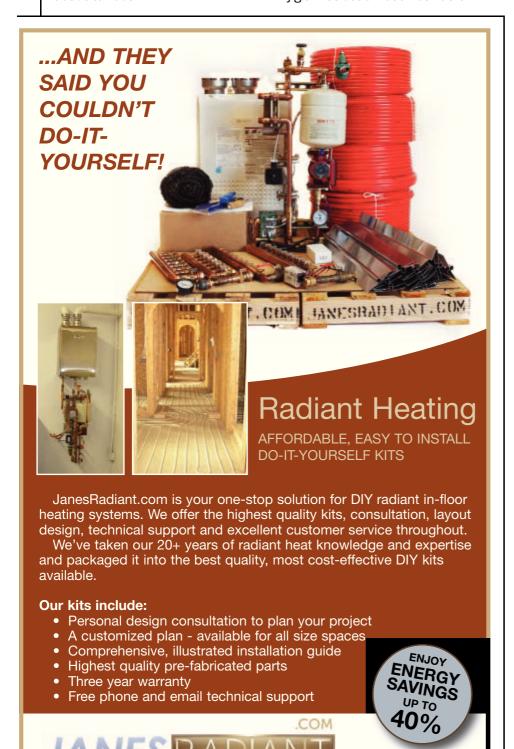
TOOL SCHOOL

previously marked). This is easily done by inserting the board's cut tails into the gray-plastic guide slots and simply lining it up against the PINS board you are about to rout.

Be sure that both the outside face of the TAILS board, and the inside face of the corresponding PINS board, are facing toward you as you look at the jig (the jig's instruction booklet has a

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Mount the PINS board horizontally, secure the jig to the board with the legend facing upward, and rout the pins as shown. The router bit's guide bushings follow the jig dividers for a perfect cut.



Align mating dovetail boards by first mounting the pins board in the jig; then insert the previously cut tails board into the jig guide as shown. The finish side of the PINS board faces away from you, while the finish side of the TAILS board faces toward you. Mark or number each piece to ensure that they match up during assembly.

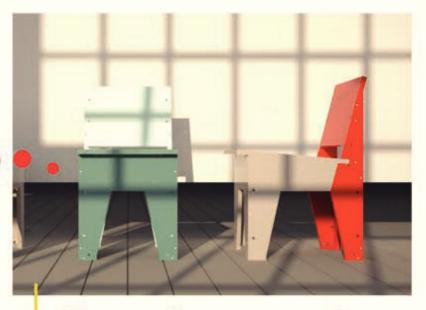
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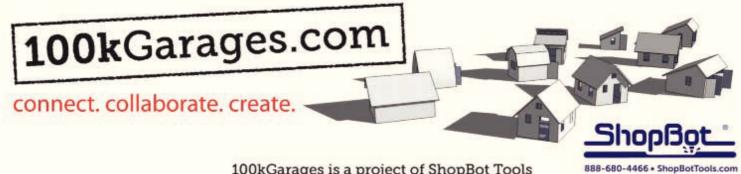
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TOOL SCHOOL

helpful illustration of this step).

After aligning your first PINS board, clamp it into the jig using the jig's thumb screws. When using any of the E-Z Pro jigs, be sure to clamp your workpieces

securely but do not overtighten the clamps—too much muscle can distort the wood or even the jig itself. Rout the pins on all of the side-board ends, then assemble and test-fit the cabinet frame components. Do not glue any of the components at this time. When you're satisfied with the cabinet frame fit, take precise measurements for the doors, drawers and two drawer dividers, shelf, and upper and lower stretchers.

FAST FASTENERS FOR FRAME PARTS

The stretchers help to squareup and reinforce the frame, and an angled lower edge on the upper stretcher allows it to also serve as a cabinet wall-mount. Start by cutting a 1x6 to length, then reset your table saw blade at a 30-degree angle and rip the board into two roughly equal widths. When you're ready to hang your cabinet, simply level and screw one piece to the wall with its angled edge facing up and out; the matching length, installed into the cabinet frame with its angle facing down, will nest securely into it.

Fit the top and bottom stretchers in place and mark locations for dowels. Two dowels, evenly spaced, are sufficient to anchor each piece; the upper stretcher attaches to the frame top, and the lower stretcher to the shelf



The E-Z Pro doweling jig can be quickly reconfigured and repositioned for placing dowels in any location, including board centers.

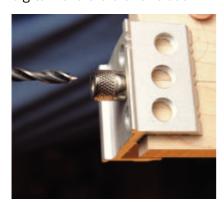


top. Also mark for dowels on the drawer dividers and their locations between the shelf and frame bottom.

The E-Z Pro Doweling Jig came in handy for this operation. When clamped in place, its interchangeable drill-guide inserts let you quickly place and bore accurately aligned dowels in board ends, edges and faces.

To make final assembly easier, I opted to fasten the stretcher ends to the cabinet sides with pocket hole screws. It took less than a minute to create each joint using the E-Z Pro Pocket Hole Jig. One screw at the ends of the stretchers is enough to lock them in place.

I also used the Pocket Hole Jig to make the drawer sides



Alignment indicators on the jig ensure perfect alignment of dowels on board edges or ends, as shown here.



Pocket-hole joints are a snap to make with this jig. The stepped drill bit and adjustable stop collar are included with the jig.

and backs, using 3/4-in. stock. Although dovetail joints are often employed for this, these drawers are narrow due to the shallow cabinet depth and don't require joints as complex or strong as

dovetails. With the E-Z Pro jig, setting up and cutting each pocket hole is a snap. The jig comes with a stepped drill bit and stop collar to make perfect repeat cuts every time.



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After cutting and assembly, pocket holes can be permanently or temporarily covered with accessory wood inserts. A supply of custom-fitting inserts is included in the E-Z Pro Pocket Hole Kit (also available separately).



The drawer backs are cut to sit atop the plywood, which can be fastened with nails or screws and later replaced if damaged.



Cut all the drawer components to size, then rout a 1/4-by-1/4-in. groove in the interiors of the sides and drawer fronts for the plywood drawer bottoms. Take care not to extend the front grooves beyond the side pieces.

MORTISING THE DOORS

Making inset-panel, stile-and-rail cabinet doors can be a difficult, exacting, time-consuming process, but there are ways to reduce the work—and cost, as in the case of solid-wood raised panels. This cabinet's panels are nominal 1/4-in. plywood (3/16-in. actual thickness), which makes them substantially less expensive and easier to create. Note: When buying plywood, it's important to choose one with a decent-looking "B" side, as both

faces will be visible when the doors are complete (and open during use). I used interior-grade mahogany plywood and stained both sides to match the cabinet wood.

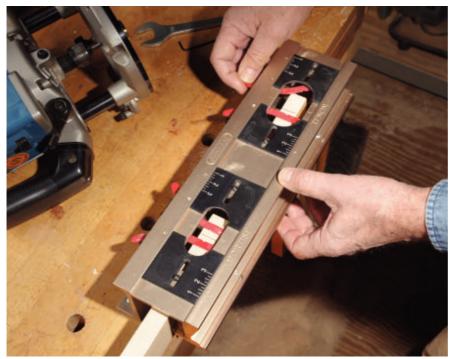
Another shortcut that results in a strong, professional-quality framework is to use mortise-andtenon joints instead of traditional "book match" routed stile-and-rail joints. Cutting precise-fitting mortises and tenons presents its own difficulties, but once again one of General's E-Z Pro jigs came to my rescue. Like the Dovetailer, the E-Z Pro Mortise & Tenon Jig is an all-in-one unit that lets you use a plunge router to cut mortises and matching tenons at the same time.

It takes just a few minutes to set up this E-Z Pro jig. Start by securely clamping or screwing it to your workbench to keep it stationary during operation. Then, following the unit's directions, adjust it for the thickness of your stock (in this case, 3/4-in.), and adjust the marked templates on the jig to correspond to the size of your mortises and tenons. The jig also provides everything you need to set up and cut with your router, including a 1/4-in. diameter upcutting bit and a quick-change guide bushing assembly that helps you center the bit (and lets you use other-size bits in future projects).

With the jig and router ready to go, cut the vertical cabinet door stiles to finished length. You'll rout the mortises—the cavities—into these pieces. Next cut the top and bottom horizontal rails, but add two inches to their total



TOOL SCHOOL



Matching mortises and tenons can be routed at the same time in the E-Z Pro jig. The positioning arms (in red) retract out of the way during routing.



length to allow for the 1-in.-long tenons—the cavity inserts—that will be formed at each end.

Mark a centerline for the mortise location on your first stile piece and place it into the left side of the jig (marked MORTISE). Be sure the mark is centered between, and snug up against, the jig's red swing-out positioning bars, then tighten the jig's face clamp to hold the piece in place.

Support the outboard ends of longer workpieces so they remain in position parallel to the jig's surface.

Next, mark a centerline on the end of a rail piece and insert it vertically into the right side of the jig (marked TENON). Again, center it beneath the positioning bars and tighten the jig's face clamp. Retract the positioning bars, and your first mortise and tenon are ready for routing.

Set the router bit to a 1-in. cutting depth, measured from the face of the guide bushing, and set your router plunge depth to 1-1/2-in. to allow for the bushing itself and the gap between the jig surface and the workpieces mounted below.

Begin by routing the mortise cavity. The guide bushing automatically centers in the template opening, so all you have to do is plunge the bit into the wood in a series of cuts from one end of the template to the other. Finish with a sweeping cut along the length of the mortise.

Next, move to the tenon side of the jig and, with the router plunge mechanism fully retracted, place the guide bushing into the template opening. Keep the guide bushing against the inner circumference of the template opening as you make successive plunges with the bit, moving the router in a clockwise motion.

Be careful not to let the bit wander inward and cut into the

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tenon. Finish with a sweeping circular cut completely around the now-formed tenon.

Remove the stile and rail pieces from the jig and test-fit them together. A close-fitting joint is desired, but if the fit is too tight, sand the tenon lightly. Also, depending on the thickness of your workpiece, a thin "flashing" or perimeter

Be sure to keep the router's guide bearing firmly against the template opening as you make successive plunges with the bit to cut away the waste wood. Finish with a sweeping clockwise cut around the opening's circumference.



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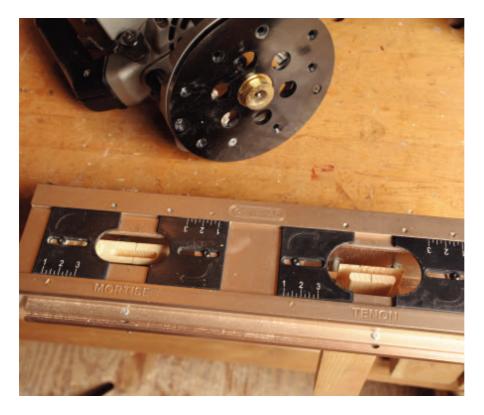
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"fence" of uncut wood may remain around the corners or outer edge of the tenon after routing. This is easily cut away using a razor knife or fine-tooth saw. Alternatively, you can reset the tenon gauge to allow the router to make a wider pass, which usually eliminates any flashing.

A thin wood flashing or fence, shown here behind the completed tenon, may occur depending on work piece thickness and is easily removed. Note the guide bushing (provided in the jig kit) installed on router base.



TOOL SCHOOL

FINAL ASSEMBLY

Cut all the mortises and tenons, then dry-fit both cabinet doors to check for size and squareness, and make any adjustments necessary. The next step requires routing a 1/4x1/4-in. groove in each piece for the plywood door inserts. A router table with fence is an ideal setup for this, or you can use a router guide, or dado blade in your table saw. Center the groove, but to ensure that all of the grooves line up uniformly when cut, mark each wood piece so that the sides you want to show on the front of the doors face you as you rout them.



Use a 1/4" straight bit to rout the door panel grooves. Center the cut in each frame piece and make several passes to the desired depth. Rout all frame pieces with face sides outward to ensure alignment.



The panel groove extends into the mortise cavities on the frame stiles, and stops just short of the tenons on the frame rails. Allow expansion space for the plywood panels when you measure the groove depth.



Before gluing, test-fit all door components. Make sure to square up the frames when the components are glued and clamped to dry.

Cut the plywood door inserts to fit, allowing for some slight movement in the grooves for natural expansion and contraction. During final assembly, take care to avoid gluing these "floating" inserts in place. After cutting, sanding and fitting, the overall finished size of our doors came to 18.25-in. wide by 25.5-in. tall.

The non-mortise, full-overlay hinges I chose for this project are less expensive, easier to install, and more decorative than most of the Euro-style cabinet hinges available (www.rockler.com). They also allow a full 270-degree opening, enabling the doors to fold back toward the wall for an unobstructed view of the television screen from any angle.

Finally, I prefer applying an initial stain coat to the individual cabinet and door parts before assembly, and then adding a second stain coat and finish after glue-up. If you follow this practice, avoid staining the joint areas, especially if you use oil stains that will prevent the glue from bonding. **EHT**



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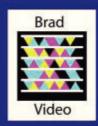
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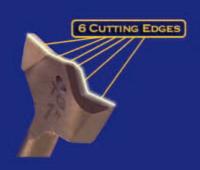




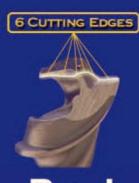








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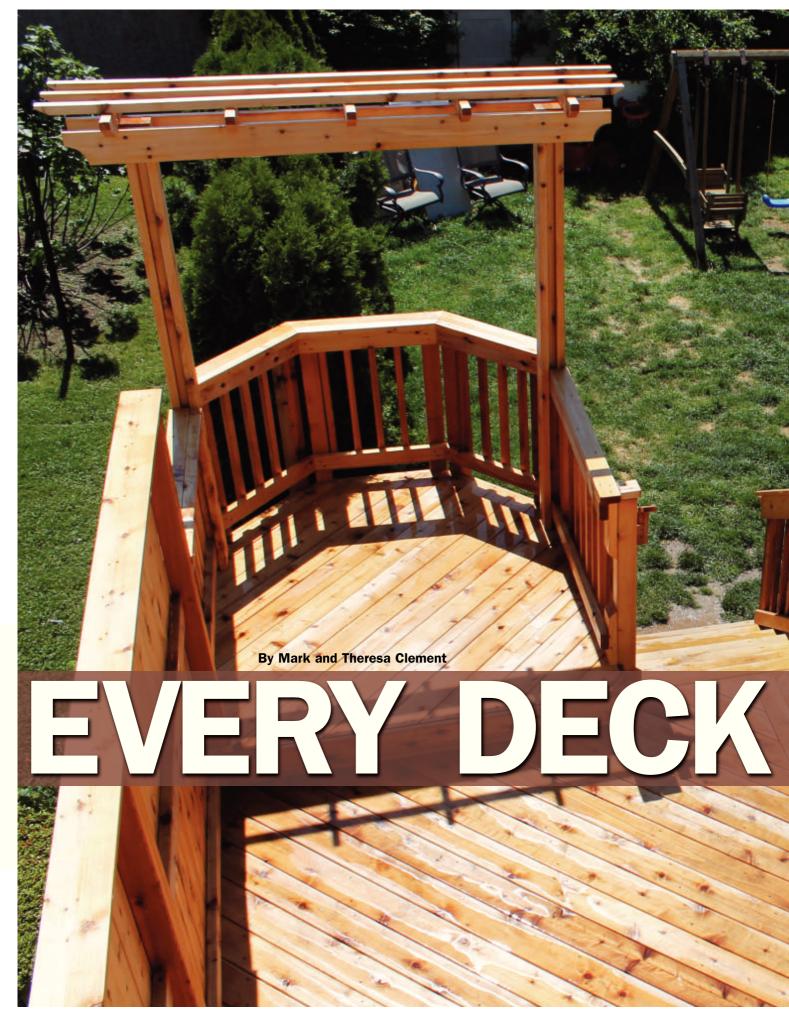


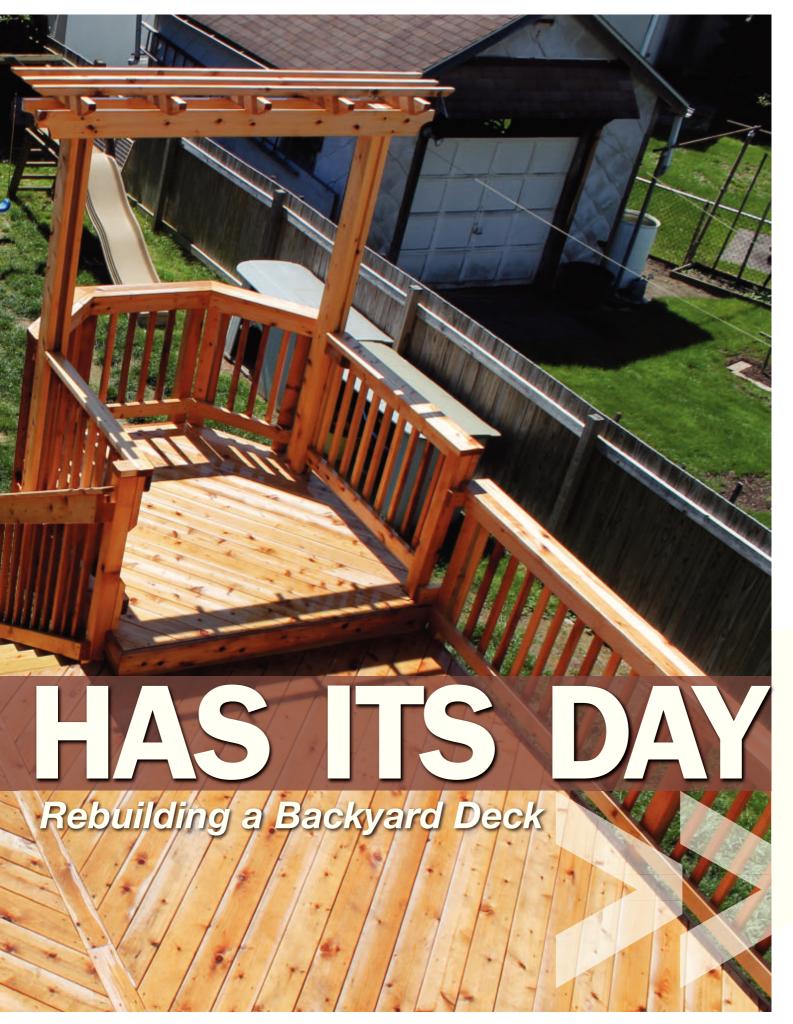






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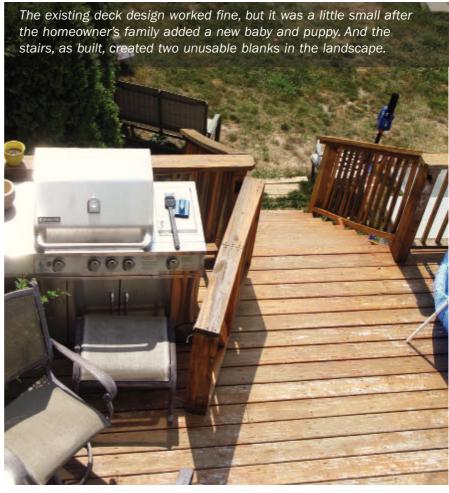


The beloved backyard deck, in historical terms, is a pretty new element in houses coming into vogue some forty or so years ago. What's more, decks are the only structure we build on the outside of the house that must endure what's called "wet service," i.e. rain, snow, sunlight, drying and so on. Yet, when it comes to popular DIY projects, my experience is that there is hardly one more desirable than building a deck-nor as potentially dangerous. While many DIY'ers I've met think it takes just a few weekends (pros and veteran EHT'ers know better) to slap a deck together, it's more complicated than that.

Adding to the confusion, until recently, there weren't enough deck-specific construction details in the building codes. Deck builders and inspectors borrowed from both common sense and standard stick-framing practices like joist spans and spacing. But the challenge was that typical stick-framed structures have "structural redundancy." In other words, double top plates interlock walls, joists span from bearingpoint to bearing-point, point loads go to the foundation and so on.

Due to the weather exposure and common construction inefficiencies, decks have a finite lifespan, usually around 20 years. Some decks are vastly underbuilt. Others are smartly built but have simply lived too long outdoors. And, still others just no longer match the homeowner's current outdoor living requirements. For any—or all—of these reasons, there are millions of decks that need to be re-built or at least need a re-boot.

On this deck, we encountered each of these issues and used that to design and build a better outdoor living space for the



homeowner and their growing family. The old deck had lived its life. The yard and neighborhood called for some sweet design features to maximize space, utilize dead space and to calm the busy view with what we call "static busters." That was the challenge. Here's how we met it.

DESIGN

We love the opportunity to reboot a design. The old deck was a basic rectangle with a center stair sticking out the front into the yard, creating a dead space on either side—too small to do anything with; too dark to plant anything symmetrically. It worked, but it was just OK.

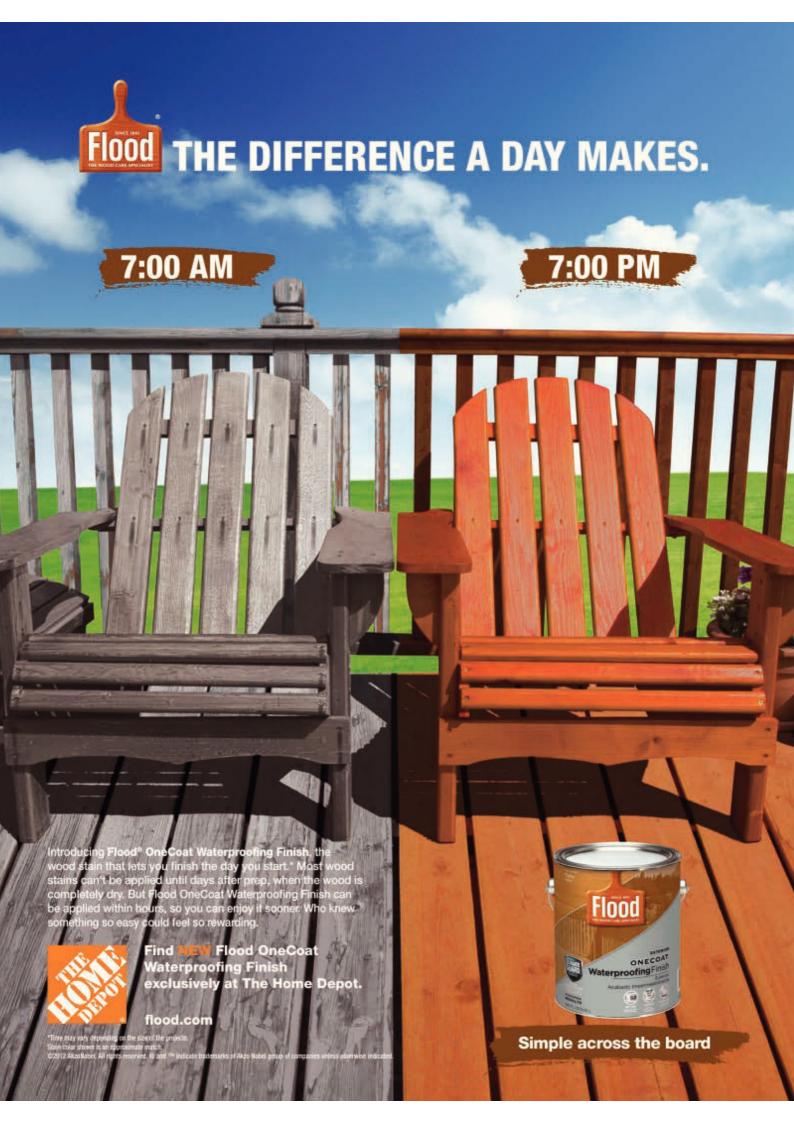
The new deck surface would surround the stairs with raised "islands." And since this is an

in-town home there's a lot of what I call "visual chatter" from the surroundings, which we quieted (static busted) by adding two pergolas on the islands and a diagonal decking pattern on the Western Red Cedar decking. Tie in a privacy fence and some simple trim details, and this backyard blow-out takes the space from bland to boo-yah!

DEMOLITION

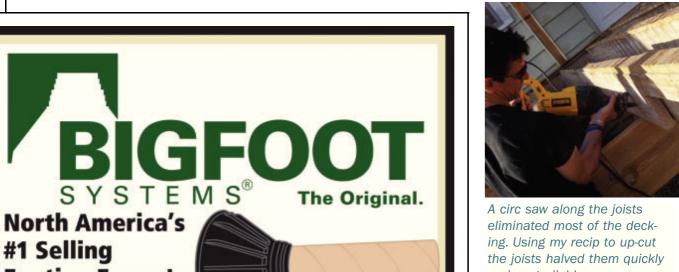
The first step to smart demolition is using the right tools and techniques. The second part is storing and getting rid of the debris in a way that makes sense for workflow and budget.

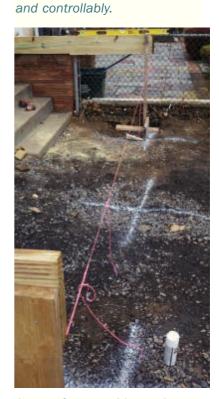
Tools and Techniques. There are lots of ways to disassemble a deck. For this deck, my go-to tools were the circ and recip



saws. To gain access to the joists—and to disable the "membrane" created by the decking—I got a bunch of cheap-o blades and ran my saw down each side

of the joists. This not only turned the deck boards into a type of easy-to-pick-up confetti, it exposed the joists, which I could then halve with my recip saw. I went through about 40 bucks in blades (I managed to hit every nail), but the deck was in pieces and being hauled out by lunch.





Layout for our mid-span beam was typical. We cut the joists to length, ran a string between and plumbed down for the post locations. On the ground, we marked each hole with a big X to keep on track.





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BUILDING BACK— CONSTRUCTION DETAILS

While many framing details for this deck are typical—we flashed and lagged a ledger to the house; spread joists on 16-in. centersthere are a few project-specific details that are good takeaways for similar projects.

Straight and Square. No mat-

ter what you build, you want to build it as straight and square as possible—a challenge here. Because this deck houses its stairs between two islands, that makes it a pretty deep structure at 23 feet away from the house. Once you get that far away from your layout control points, things like a slight curve in a joist can create big headaches down the road. So for the outside band joists we selected the straightest framing we had, then string-lined them once they were installed to make sure we ran true. Later on, when we pulled layout, we could count on accuracy.

Cantilever Beam. Our joists rest on cantilever beams, double 2x10s in this case, and making a solid connection between the beam and the joist bottoms is important.

Detail is also important. While many deck builders clip a 45degree chamfer on the bottom corners of the beam, we cut a half circle out of ours using a jigsaw.



For any project, but moreso for a deck this size, use straight lumber and check it with string before final fastening. A little mistake here is a big mistake later.



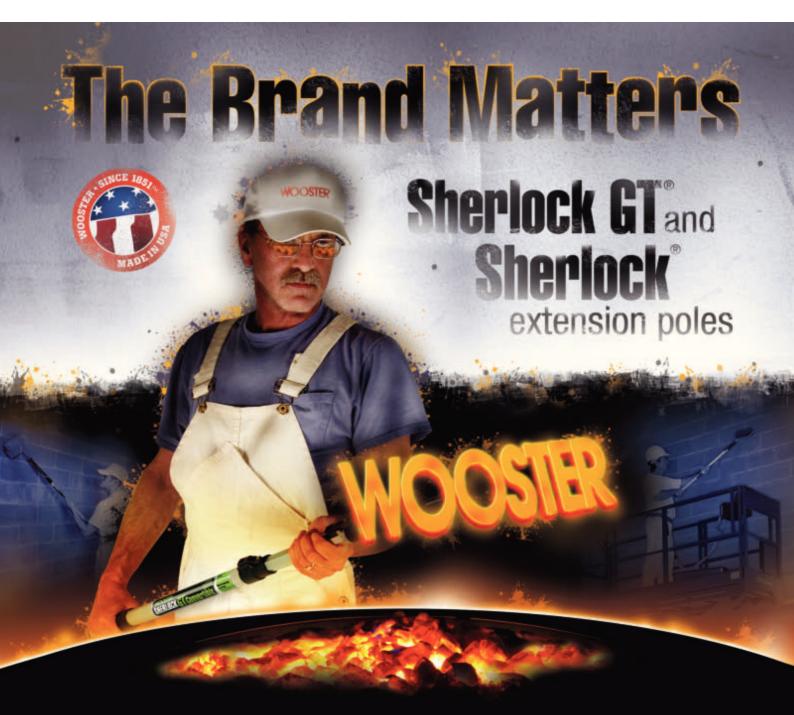
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Instead of using full temporary supports running to the ground, cleats catch the ends of our smaller beams.

While we like the way it looks and it sets our designs apart (even though I'm pretty sure we're the only ones who really notice), the semi-circle makes the beam-ends manageable with clamps. Instead of hoisting and trying to sink a fastener while death-gripping the board in place, we clamp it tight and take our time.

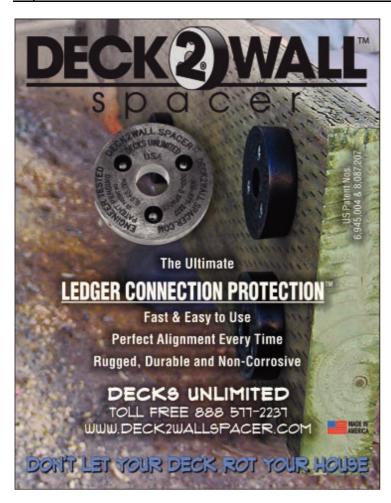
Temporary Supports. For most decks, we cut our outside band joists to finished length, then place the temporary supports (usually a 2x6) in the same location as the beam. This serves two masters: First, it supports the joists; second it serves as a temporary connection point for the cantilever beam.

On this deck, however, we had one long beam at mid-span

which we assembled conventionally. We also had three short ones (one for each island, one for the stairs) so it made more sense to build those temps a little differently.

We ran the island band joists (four of them) long, then held them on layout with temps. Theses joists were supported on one end by the mid-span beam and on the other by our temps. So instead of running more temps to the ground to carry the smaller beams, we simply used cleats (scraps of 2x) to suspend the beams in place until we could set a single post and base in the center. This minimized the labyrinth of supports otherwise required.

Another thing we did differently with these temps is we gave





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Instead of miters or "dog-ears" to the bottom corner of our beams, we make radius cuts which we scribe with a compass and cut with the jigsaw. It takes a little more time on the front end but saves gobs on the back end by enabling us to use clamps to set the beam. It also looks cool.



To spread the weight of this heavy frame, we ran mid-supports on the small beams down to a block laid flat to further distribute the load.

them a wide, flat base. Normally a 2x run to ground does the trick, however this deck was carrying a lot of weight, and the ground was wet enough that the lone 2x sank. It took more time on the front end, but I like this wide-base technique so much that I'll repeat it on all my decks from here on out.

Footing Tubes. I am not a big fan of footing tubes—not because they don't work, but because they are a major-league hassle to lay out. It's really hard to get the tube plumb in both directions and get the post to land in the center. What's more, if you set your j-bolt hardware in concrete before you set your post then make a mistake, well, now your problems are cast in concrete.

Here, I laid them out meticulously. It took a long time and we still had to tweak everything plumb and centered. The reason is that the minute you start placing concrete in the tube, it moves the tube. Next time, I'm either building my own footing tubes out of 1/4 plywood and 1x or I'm going to set and brace the post—with the hardware already on it—then place the tube below it and fill up concrete to my hardware.

DECKING

Design. One of the underlying elements of this large deck is to



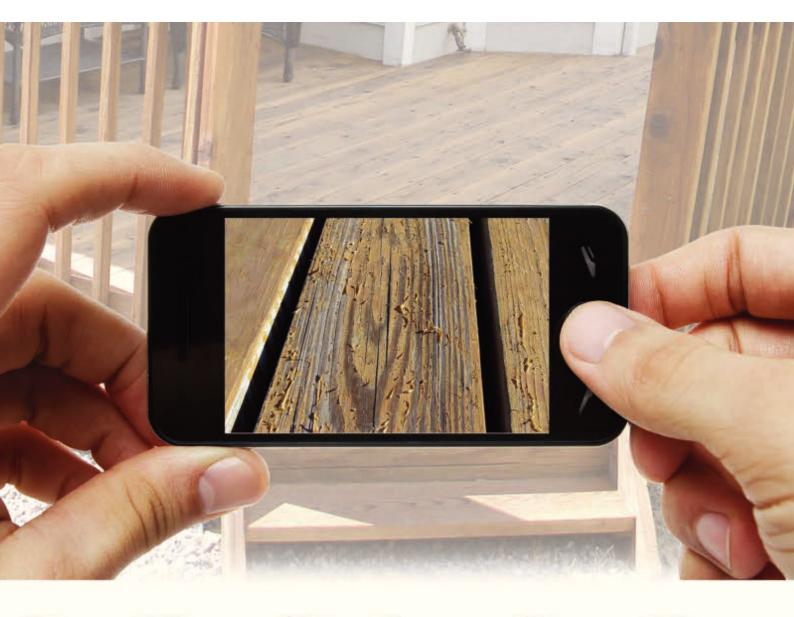
Ten-year old Lexi was a huge help when loading the Bagsters with debris.

create a unified sense of place, but one with smaller spaces to ease the wide-openness. Making places and spaces encourages them to be used rather than just be a big ole empty halo around the table and grill. It all starts with diagonal decking, and for this project we used knotty 2x6 Western Red Cedar. It's easy to work with, readily available, stable and awesome looking, plus it's both durable and green. For the framing and ground contact, we used pressure-treated lumber from Culpeper Wood Preservers. And I source it from a pro yard. It comes banded, straight as can

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be expected for framing and dropped where I want it, which is not always the case with off-therack lumber, delivered or not.

Installation Details. We ran a triple joist in the center of the deck space with 2x cleats on each side. We then ran a center "header strip" that each diagonal deck board ties into. On the raised islands, we reversed the

decking angle to add visual texture. This might seem esoteric, but it gives the eye someplace to rest within the deck space.

We ran the ends of the deck boards wild over the band joist, snapped a line and cut to fit as we would with typical decking. For the inevitable little triangle fillers, we cut these to fit then glued them in. To hold them fast



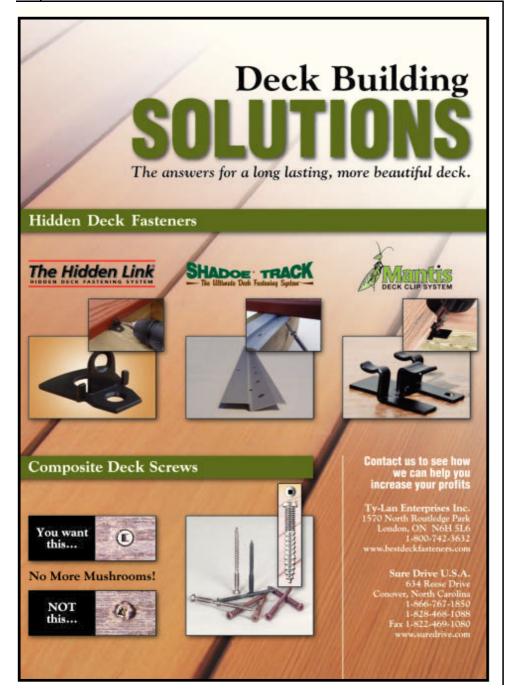
We ran the interior joists long, or wild, then snapped a line between the outside bands, squared down and cut to length. It's accurate and fast.

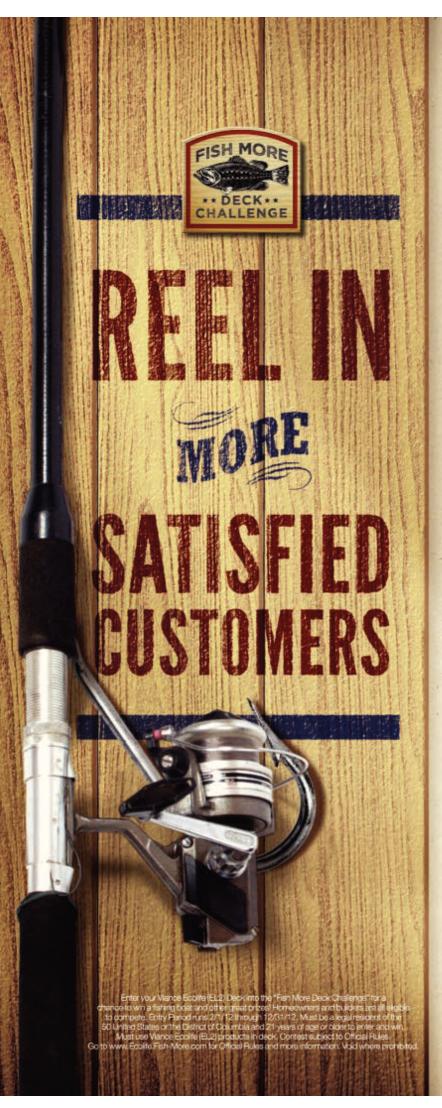


Diagonal decking will always leave you with a tiny filler piece at the end of a run. We cut them proud, glued them in place, then held them fast with a pre-drilled finish screw before cutting to final length.



Because Western Red Cedar is stored properly at our professional lumber yard and comes wrapped in plastic, it is at the proper moisture content—dry—when it gets to the site. For that reason, we use 16-penny spikes to gap it so it has room toexpand and contract with humidity changes.





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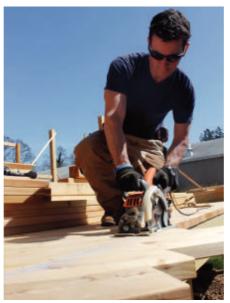
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When setting pergola posts, run diagonal braces back to the structure to keep them plumb and limit twisting until the rafter assembly is installed.



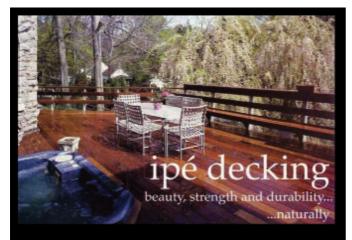
We ran our deck boards wild over the end (about 12 inches) then snapped a line between the front and back and cut them all at once.

while the glue dried we pre-drilled and set a finish screw.

We used 3-in. deck screws to fasten the 2x6 deck boards. And even though we spaced the boards, shadows made the joists hard to see. To stay on course, we periodically used our layout squares to project the line from one board to another.

ISLANDS AND PERGOLA

Corners. To create the islands and soften the lines of the deck, we mitered (aka "clipped" or "dogeared") the corners. Each miter cut in each part of the assembly is 22.5 degrees. Why? Multiply 22.5 x 4 and you get 90. In other words, even though the corner is clipped it still has to travel 90 degrees through space to change direction. It's tempting to use



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45-degree cuts here but it exposes end-grain. Using 22.5-deg. miters hides the end grain, making the assembly better looking and longer lasting. The miters for the guardrail assembly are also 22.5-deg. each.

Raised Islands. Raising the islands, by comparison to building the rest of this deck, is easy: simply toe-nail 2x8s on top of—and perpendicular to—the main joists at 16 centers. Once you reach the dog-ears, the joists are cut on a 45-degree angle and covered with the band joists.

Pergola Posts. We made the pergola posts by laminating a 2x6, 2x4, and 2x6 forming an "H" to create shadow-lines and remain stable. We interlocked the built-up posts with the rim joist using Fasten-Master THRU-lok structural screws. These meet



To create shadow lines, texture and stability we laminated 2x6 and 2x4 into an "H" shape. We left 11" off the bottom leg of one 2x6 to integrate with the deck framing.



Just like the framing for the island miters is 22.5 degrees, so are the cuts for the guard rail and top cap.



code and go in super-fast. While installing the posts, use angle braces (we used some 1-by rippers) to hold them plumb in both directions until the rafter assembly can be installed.



I ordered wrong and ended up with not enough 2x6 for the top cap but more 2x4 than I needed. So, necessity being the mother of invention, I improvised a 2-piece cap and it worked out great.

Stairs. There are a number of ways to attach stringers to framing but we like to trap them between blocking and toe-screw them, which means there is no way they'll wiggle loose over time.



We trap our stringers between blocking attached to the framing. Before fastening the stringers we use our torpedo level to make sure they are plumb and level.



Run the bottom rail on the stair nosings and lay out the back for miter cuts. Then put the top rail on top. Use your framing square to project the post height and angle in one move for marking.



Cut the stair post. Also, note the 22.5-degree miters on the framing behind.

For the guardrail rails, I use the posts for layout. I set the 2x4 rails on the stair nosing, then mark the backs. I then cut a compound miter to soften the square edge.

Pergola Rafters and Purlins. As with so many pergolas, this one is part art, part science. We used 8-ft. stock for the posts, which created an opening of 82 inches between the deck surface and the bottom of the 2x6 girder. It both looks and feels right. We always test these out before we make our final cuts because it's really easy to make a pergola too tall (looks silly and lost) or too short—people won't want to be under it (also, silly).

The girders are 2x6 with a 60-degree clip cut on the ends. The rafters are 2x4 with a 60-deg.





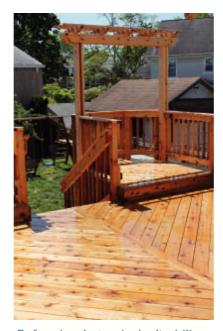
The privacy fence (4x4 posts with 5/4 decking slats and top cap) is a "static buster." In this case, the neighbor is a talker. The pergola quiets the other chatter from surrounding structures without blocking anything out. It creates a nice sense of place without imprisoning the space.

cut and the purlins are 2x2 ripped from full 2x stock on the table saw. The rafters are laid out carefully—8 inches inward from the end on each side, then in the center of the span. The interior rafters are centered between the left or right rafter and the middle rafter. Equal division and proportion is key for a pergola.

Once installed and part of the deck—along with the privacy fence—we have a destination for the eye to see something awesome without closing in, or closing off, the space. You can still see past it and into it. But various chatter like garages, roof vents, and the "talkative" neighbor fade gracefully into the background.

And that's the point. Decks done right are part of the yard and the outdoor experience. Making them fit with the space, the neighborhood, and the lifestyle are just as important as the construction details that bring them to life. **EHT**

Editor's Note: Mark & Theresa Clement are hosts of MyFixitUpLife.



Before leaving a deck site I like to water it down to clean away boot tracks and make it look primo before the big reveal.

The idea of a well-designed deck is to max out the land-scape and be part of the yard, not on top of or cut off from it. In this case we were able to get more deck—and more yard—in the same gesture.



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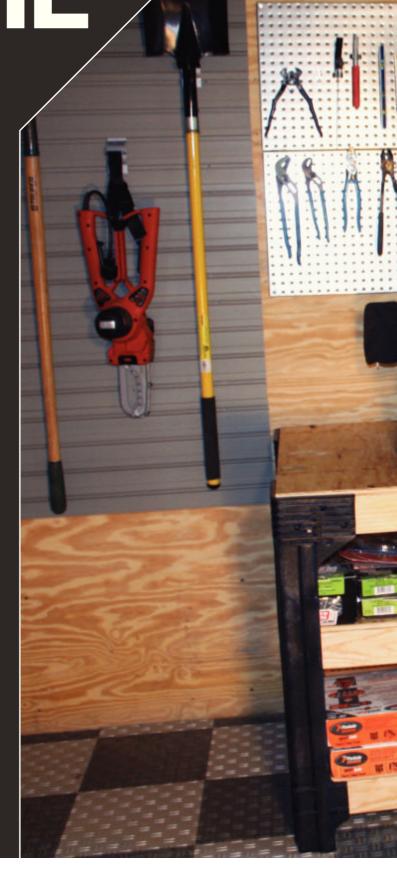
By Matt Weber

ver the years *Extreme How-To* writers have covered workbenches, tool shelves and shop-made storage cabinets of all shapes and sizes. Just check out our website at www.extremehowto.com to find all sorts of free, helpful tutorials on scratch-made projects that help organize your garage or workshop.

For this article we combined a few ideas, starting with a simple but versatile bracket system that simplifies the process of building a bench or shelves. We combined the new storage structures with a couple of wall-mounted tool organizers, and the end result was an orderly expansion of our workshop's westward wall. This kept tools and materials off the floor and created approximately 76 square feet of additional storage space, both vertical and horizontal.

TIME-SAVING SHORTCUT

I came across a bracket system called 2x4 Basics from F3 Brands at the 2012 National Hardware Show in Las Vegas. I was struck by the system's simple design and modular nature, which enabled a DIY'er to build a customized shelf system and/or workbench structure in



EHT takes a look at a variety of DIY-friendly storage products for the garage and workshop.



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a wide range of designs and configurations. Whether you need a broad work platform, a simple shop desk, a combination of desk and shelves, or a vertical storage rack for longhandled tools, if you can visualize your system made from standard 2x4 lumber, then you can probably build it with the brackets. The 2x4 Basics brackets are used to connect the structure's building components much like Simpson Strong-Tie products are used for building decks. The system eliminates the need for miter joints and cross-bracing and requires little more than a saw, tape measure and screwdriver for construction.

Plus, any building technique that saves time is worth a look. Working with all straight 90-degree butt-joints and prefab brackets spared me a lot of time that I'd otherwise spend measuring and fabricating shop-made brackets. I was able to assemble a triple-decker work table and a three-tiered storage shelf in just a few hours.



These four leg brackets combine with 2x4's and plywood for an easy-to-build bench.

F3 Brands offers a variety of brackets, including shed kits, bench brackets, etc. For this project I selected the company's WorkBench Legs and ShelfLinks, and designed my shelves to provide ample storage while economizing my trip to the lumberyard (www.2x4basics.com).



The bench and the shelves shown in this story require only straight 90-degree cuts for assembly.

TRIPLE-DECKER WORKBENCH

I used a single 4x8 sheet of 3/4-in. plywood to make my three work table shelves, which meant I had enough material to rip three equal sections, each measuring 4 ft. by 32 inches. The design of the leg brackets requires the shelves to be mounted on top of 2x4 support rails. This told me I needed to cut three sets of 2x4s that would each assemble into a rectangular frame with an outside perimeter of 4 ft. by 32 inches.

After cutting the components to size, begin assembly by fastening three of the longest 2x4 rails into the prefab legs. Each leg is made from structural foam plastic resin and includes preformed screw holes that guide 3-in. decking screws at an offset angle into the 2x4s. This toenailing effect creates a strong joint that cinches the corners tightly together.

Proceed to fastening the six short rails into the leg assembly. To keep the structure level during



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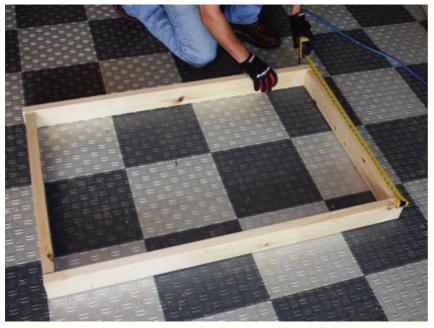


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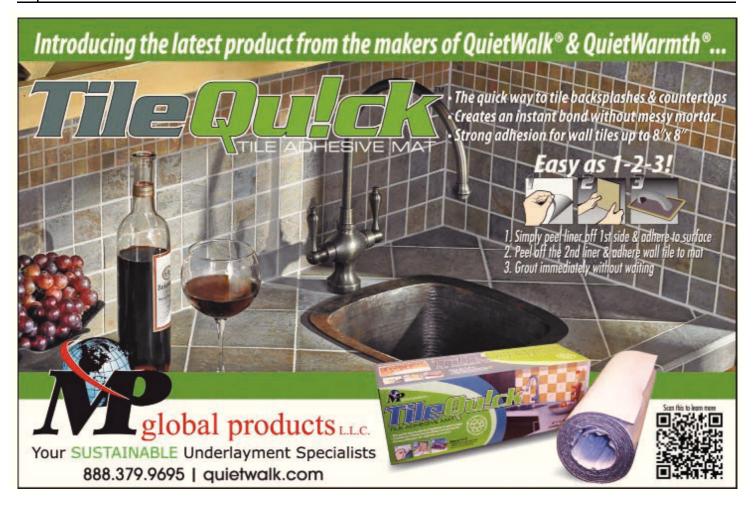


I cut the rails of the workbench to create a frame with an outside perimeter of 32x48", enabling me to rip three bench shelves from a single sheet of 4x8 plywood.

assembly, I temporarily propped the lower short rails on a couple of vertical 2x4 blocks.

Before adding the final two legs, you'll need to slip in the lower and middle plywood shelves, which should fit flush over the tops of the rails. Screw the plywood onto the rails with 1-1/2-in. wood screws. Once these middle shelves are in place, you can add the final long rails and the other two legs. The last step is to install the top shelf (the table top).

Note that I used sturdy 3/4-in. sheathing for my table shelves, which I felt would have plenty of holding capacity. If you choose to use 1/2-in. ply instead of 3/4, then I would suggest incorporating a diagonal 2x4 cross-member support below the table top, which will bear the most weight.

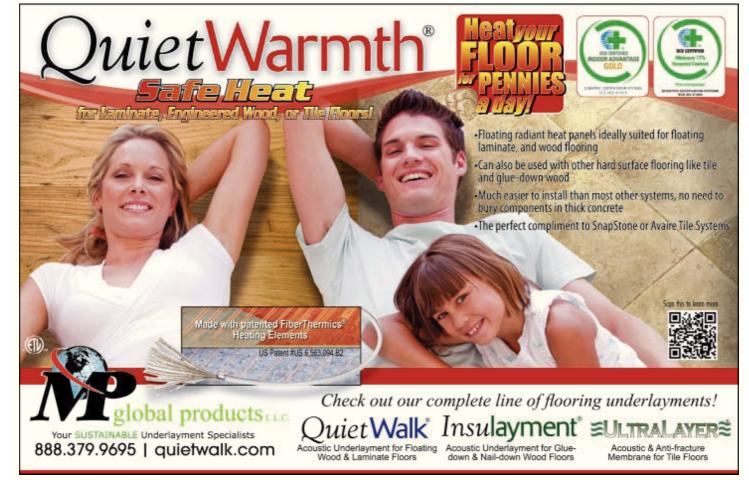




When cutting plywood, fully support the sheet on each side of the cut. In this photo, the top of Workmate bench beneath the saw guide is separated into two sections, creating a clear channel for the saw blade as it passes through the wood.

The 2x4 Basics bench legs include predrilled fastener holes at offset angles for toe-screwing the rails to create a secure connection.







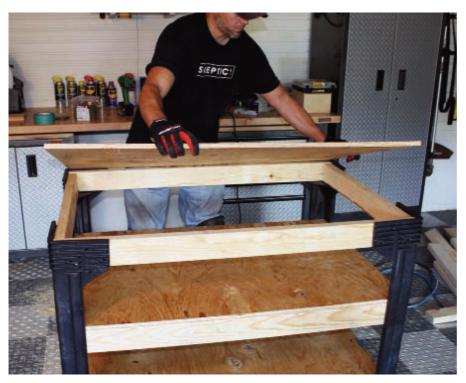


First, install three of the long rails, followed by the short rails.

Insert the bench shelves before installing the final two leg brackets.







Last step is to screw on the 3/4" plywood table top.

THREE-TIERED STORAGE SHELF

The storage shelf came together quickly and relied on six simple shelf brackets—two for the ends of each shelf. I cut the four legs of the shelves to 5-1/2 ft. each. You don't want to make it too tall, because the shelf rack can get top heavy and won't have the structural rigidity that you need for a durable storage unit. On the other hand, items such as miter saws and benchtop drill presses require significant overhead storage room, so I wanted ample room between the shelves. I settled on 5-1/2 ft. because it "felt about right"—not much science was involved.

To get the most wood from an 8-ft. board, I decided to make the shelves about 32 in. long



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Six shelf brackets are the cornerstone of the 2x4 Basics three-tiered storage unit.

(squeezing three shelf lengths from each board with minimal waste). This meant the lumber order for the shelves was two 12-ft. 2x4's for the legs and four 8-ft. 2x4's.

When picking up your lumber, remember to inspect each board carefully and choose the straightest boards available.

First step in assembly is to screw two brackets to the underside of four 32-in. shelf boards, flush with the ends. Screw on the outer boards first, and then space the two inner boards equally (about 1/2 in. apart). This comprises the top shelf.

Next, partially assemble the middle and lower shelves by fastening the two inner 32-in. boards flush with the outer edges of the shelf brackets. Leave the outside

boards off at this point.

After cutting the legs to length, simply slip the legs through the holes in the shelf brackets. Screw the bottom shelf in place first. Determine the height of your middle shelf, check with a level and fasten it securely. Predrilled holes in the brackets will indicate fastener locations. The top shelf installs last.

After each shelf is fastened, measure between the 2x4 legs to determine the length of the final outside shelf boards. Cut to fit and install, which completes the unit.



Assemble the shelves first.



The shelves simply slide over the 2x4 legs. Fasten the shelf brackets in place and then complete the lower and middle shelves by cutting 2x4's to fit between the legs.











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WALL-MOUNTED STORAGE

Optimizing wall space for storage is an excellent way to economize space, and a wide variety of wall systems have flooded the market, offering modular hooks, straps, shelves, baskets and platforms that fit virtually any storage need faced by the DIY'er.

A few years ago we installed a full slat-wall system on the South wall of our workshop. We use it extensively and decided to expand the system onto our West wall. To avoid deflection in the slat-wall panels, we first installed 1/4-in. plywood over the studs. The plywood was installed with 1-1/4-in. drywall screws roughly every 16 inches. You can cut the plywood to size so the sheets break on stud centers, providing a solid fastening



A slat-wall system requires the installation of 1/4" plywood over the wall studs to avoid deflection in the panels.







The panels have interlocking edges and install with decking screws driven into the wall studs.

surface behind the edges. Or you can add blocking between the studs to create a solid nailing surface when the plywood edges extend beyond the studs.

Typically available in 1-by-4and 1-by-8-ft. sizes, the slat-wall panels are easy to install for a DIY'er. Use a stud finder to locate and mark the studs. Use a T-square to map and mark the stud locations on the panels and fasten with 2-in. decking screws. Slat-wall storage accessories include application-specific tool holders that simply "click" into the slats without tools. The mounting plates of each accessory can be moved and rearranged at any time.

A similar concept in wall storage can be found with traditional pegboard systems. Tool holders



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such as hooks, screwdriver sleeves, ruler clips and more can fit into the pegboard holes to for easy access to tools and ready visibility when you need to find that one elusive item. However, the pressboard material of standard pegboards tends to warp, swell or crack when it absorbs moisture. We installed an all-steel pegboard panel with a formed flange around the perimeter, making the metal panels 10 times as strong as conventional pegboard (www.alligatorboard.com). When mounted to the wall studs, the 20-gauge steel pegboard holds up the 90 lbs. Add tool holders as you need them and rearrange at any time.

We also installed a metal pegboard, which is stronger and withstands moisture better than standard pressboard.





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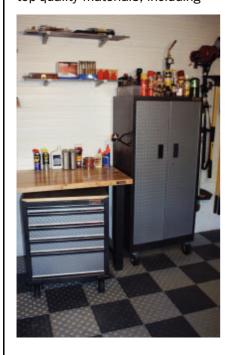


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MORE IDEAS FOR UPDATING YOUR WORKSPACE

Gladiator GarageWorks. If you spend as much time in the workshop as the *EHT* staff, an investment in ready-made cabinetry and storage accessories is something you won't regret. We use some select Gladiator GarageWorks products, including a rock-solid workbench, versatile tool drawers and a lockable shelf case. The storage components rest on steel casters and feature top-quality materials, including



heavy-gauge steel and solid bamboo or maple wood. We love the rolling cabinets, which tuck beneath the table when not in use, or they can be rolled to the center of the workshop to provide a handy new work platform. (www.gladiatorgarageworks.com)

Garage Door Insulation Kits.

Easily installed in metal garage doors for a more comfortable work environment in the garage, Garage Door Insulation Kits from Energy Efficient Solutions consist of foam garage-door panels that

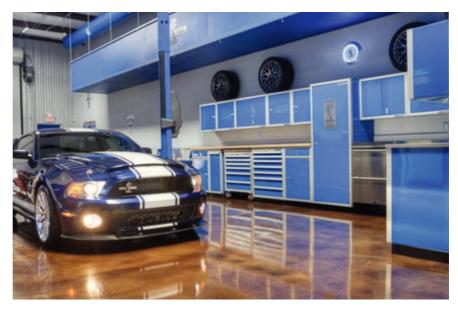


can drop garage temperatures by 15 to 20 degrees in the summer. The expanded polystyrene panels do not sag or fall out like the fiberglass-type garage door kits, and they also come with a high-impact protective coating for a finish that is clean and aesthetically pleasing. One kit fits single-car garage doors up to 9 ft. wide, or purchase two kits for double-car garage doors up to 18 ft. wide. (www.energyefficientsolutions.com)

Moduline Cabinets. Originally designed for the automobile racing industry, Moduline Cabinets are

top-quality modular aluminum storage and tool cabinets designed and manufactured in the United States. Featuring a sleek, modern design that will complement most any décor, they include full ball-bearing slides on the drawers, double wall door construction, and each cabinet has its own sealed and anodized frame, allowing each piece to stand alone. With almost endless configurations. Moduline cabinets are designed to adapt with your changing storage requirements. (www.modulinecabinets.com)

Flow Wall Cabinets. The slatwall system installed in the EHT workshop is manufactured by Flow Wall, which has expanded its product line to include cabinet systems that snap into the wall systems like the other tool holders. The cabinets are constructed from a high-density press board with textured PVC laminate in charcoal grey. The company's designer doors are constructed from high-quality MDF with radius corners wrapped in durable thermoformed laminate. They're easy to assemble and hang directly on the panels using a patented



cleat-and-bracket system. Simply attach the brackets to the wall and hang your cabinets. The cabinets are designed so the load is distributed evenly on the wall, so you can store heavy and bulky items with confidence. (www.flowwall.com)

New Roll-Out Garage Flooring.

The unique new roll-out garage floors from Better Life Technology, LLC, have all the attributes of BLT's traditional rolled flooring—easy installation, protection from stains and cushioned noise reduction—as well as multiple other benefits. This new concept offers a full series of designer floors to provide the look of hardwoods, granites, marble, epoxy or the classic black-and-white checkerboard. Custom looks and images are also available, as in crests, names or favorite pictures.

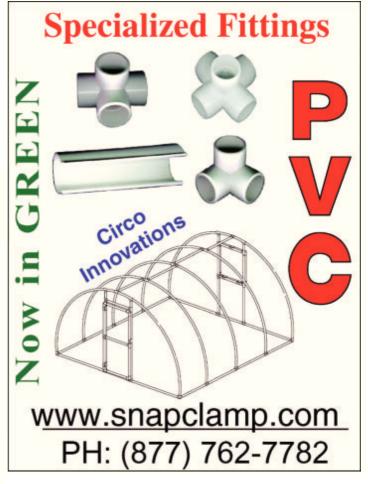




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3rd Hand Work Support.

Create your own freestanding conveyor system using the FastCap 3rd Hand work-support products. Great for cutting long trim pieces and 2x4's into shorter pieces with a miter saw, the 3rd Hand system also makes one-person cutting of plywood and sheet stock on a table saw much easier and safer. The unit pictured includes a 3rd Hand Tripod, an Upper Hand support and is topped with a 3rd Hand Roller Top. (www.wwhardware.com)



Hyloft Ceiling Units. Diamond Storage Concepts offers a wide range of Hyloft ceiling storage units designed and engineered not only to fit in any garage with any ceiling truss configuration, but also for any environment. Specifically, a limited amount of sway is engineered into the products to absorb and disperse energy from forces such as earthquakes. Extremely durable but light in weight to reduce the overall load put onto the ceiling, each product is backed by a lifetime warranty. (www.hyloft.com)

Racor 450 Rack. Racor's Model PLM-1R multi-purpose wall storage rack can hold the heaviest of items—up to 150 lbs. on each of three tiers for a total of 450 lbs. It provides a heavy-duty storage solution for the largest of ladders, metal piping and lumber. The 450 Rack is also handy for oversized items like patio umbrellas, skis, surfboards or other bulky items that get in the way. The three tiers are 16-in. deep and come pre-drilled if you want to fasten your own shelves to the rack. (www.racorstoragesolutions.com)



Racor Ladder Lift. The "number one" bulky storage problem in the garage is where to put the large, heavy ladder. The new Racor Ladder Lift is an easy way



to store any ladder overhead and free up garage space. Ladders can weigh up to 150 lbs., so it's not easy to lift them onto wall hooks. The Ladder Lift uses a rope-and-pulley system along with a fixed hook that is mounted on the ceiling. Homeowners can easily lift and lower a 150-lb. ladder up to 12 ft. by simply lifting the ladder onto the fixed hook, attaching the strap to the bottom of the ladder and pulling on the rope with an 8:1 mechanical advantage. (www.racorstoragesolutions.com)





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Build a wooden rose arbor to enhance your home's outdoor appeal.



A ROSE BY ANY OTHER

By Clint C. Thomas, Esq.
Photography by Zoe Thom

Photography by Zoe Thomas

ebster's New World Dictionary defines an arbor as a place shaded by trees or shrubs, or, especially, by vines on a latticework. Most men would define an arbor as a "honey-do." As in, "Honey, do this for me." This is just what happened to me. My wife, Shellye, asked that I build her an arbor for two running rose bushes that had been neglected for many years.

The two bushes were growing on either side of a cement walkway that led from a patio to the children's play area. The yard between the patio and the fenced-in play area is terraced, causing the pathway to slope downward from the patio. Fortunately, the rose bushes were located at the bottom end of the walkway on level ground, making the installation much easier than if they had been growing on a slope.





DESIGN FOR THE SITE

To begin this project my wife cleared away the unwanted foliage around the rose bushes and along either side of the concrete walkway. By clearing the ground, she provided me with an unencumbered work area to lay out the posts that would support the arbor. My wife wanted to have three posts on either side of the walkway, so I

A ROSE BY ANY OTHER NAME

took some basic measurements of the area in question and found that it measured 6 ft. in length and slightly over 9 ft. in width. I divided the 6-ft. length into equal thirds and dug holes 12 in. deep at the 1-, 3- and 6-ft. marks. I dug these holes with a post-hole digger.

I learned a handy trick for digging holes in hard Earth. Dig as much as you can and then fill the hole with water from your garden hose. Let this sit several hours and repeat the process. After the water from the second filling has settled deeper into the ground, dig out what dirt you can and then repeat this process if needed.

I repeated the same layout process on the other side of the walkway, making sure that I measured from the outer most edge of the walkway to the center of each of my of holes to ensure that the posts on both sides of the path would be the same distance from the path. In other words, you don't want to have the posts on the right-hand side 2 ft. from the edge while the posts on the other side are 3 ft.

from the edge. This would look unbalanced to say the least.

Length and width measurements are not the only ones that need to be taken at this juncture. The majority of the construction on an arbor is on its top. Therefore, it is of paramount importance to make sure that all of the posts are the same height. Very few pieces of Earth are completely flat. It seems like everywhere has its ups and downs. The best way to rectify this problem is to start in one corner and treat it as your control point. I chose to start in the corner that gave me the most room to maneuver and that was on the higher end of the walkway. Remember, the ground that I was working on was flat, but the walkway sloped from a higher terrace down to ground level. Therefore, I had to make sure that a person taller than 6 feet would not hit their head when they started down the walkway.

By measuring up from the walkway's highest point and then taking another vertical measurement from the bottom

of the walkway at ground level, I determined that I needed to use 10-ft. 4x4 posts for the support beams. The first foot of each post would be buried in the ground and this would give me another 9 feet for headroom. This may sounds excessive, but once you take into account a 2-ft. tall terrace on the high end of the walkway it only leaves 7 feet of clearance. Most doorways are 6 ft., 8 in. high, making my 7-ft. height just about perfect.

BASE CONSTRUCTION

Start with the control post and cement it into the first corner hole. Be sure that you check for level and plumb. This can be done by holding a twenty-four inch level on two adjacent sides of the 4x4 post and moving the post until the bubble reads level on both sides. A handy gadget is a post level, which is made to fit over a corner of a post and will give you two measurements at once.

Follow this by standing another post in the hole at the opposite



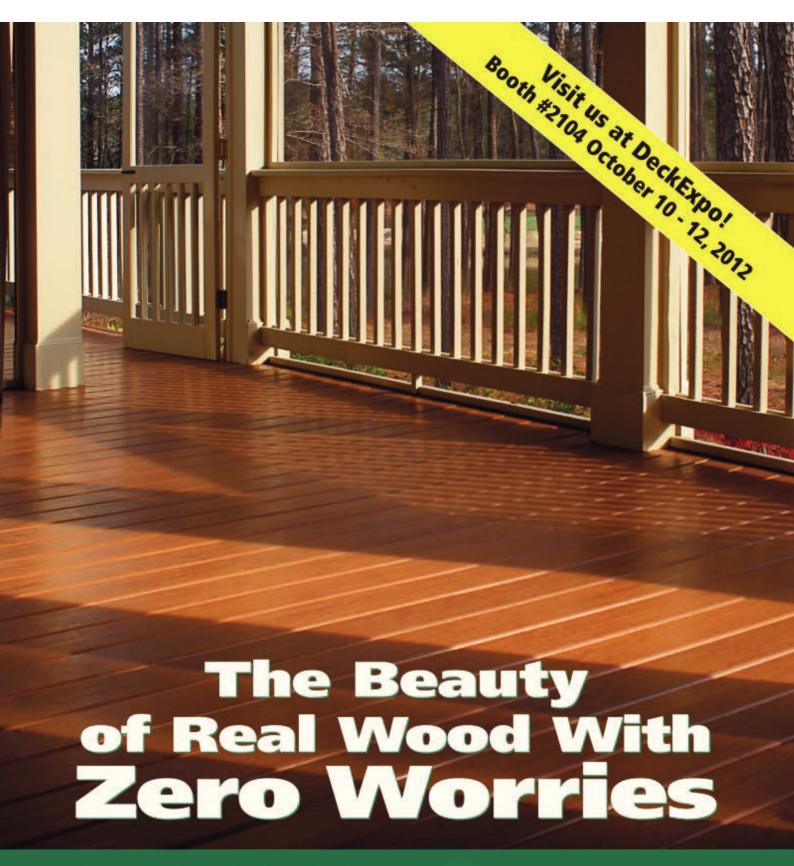
The arbor's post holes were spaced 3' on center.



A tightly pulled string helps to keep the posts in line.



Use a level to check that each post is plumb.



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end without any cement. The best method to check if the two posts are level is by using a string and a line-level. I hammered a small finish nail into the top of each post before I erected them and ran a high-visibility colored string from the control post to the post at the opposite end and hung a line-level from it. The height of the post at the opposite end, and any posts in between the two ends can be raised or lowered by adding or removing dirt from the holes. Be sure to tamp the bottom of the hole to compact the dirt if you add any dirt to the hole. Otherwise, it will naturally settle, causing the post to sink which can then create possible structural problems over time.

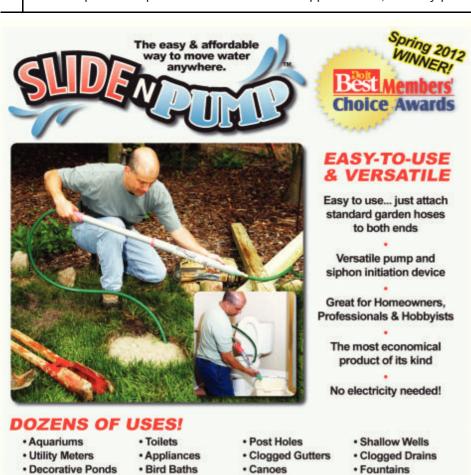
Once the two corner posts are cemented into place it is an easy task to position the middle post. Make sure that it is no higher than the string line



Once you're sure of placement, anchor the posts with quick-drying concrete.



Slope the concrete away from the posts to shed water.



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We used a line level on a string to mark the placement of the 2x6 band that surrounds the top of the posts.

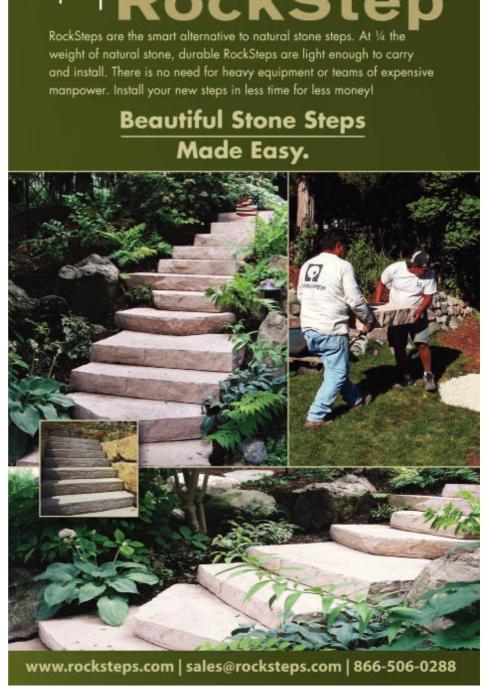


Use a tape measure to determine the length of the first two 2x6 boards.

running between the two end posts, and to be doubly safe, have someone hold it level and plumb and then stand back and look down the axis of all three posts. They should all line up in a perfectly straight row. If they do not, then you will need to adjust the malfeasant post accordingly. This is why it is a good idea to dig each post hole to a larger diameter than is needed— you can make small adjustments to the post by simply moving it around inside the hole.

A word of caution should be given here. The old adage of "measure twice, cut once" is very important when performing this type of project. If the posts are out of alignment along any axis then the entire project will be off. The last thing that someone wants to do is cement six posts into the ground only to

find out later that some of them are too tall, or even worse, too short or not in a horizontal line with the other posts. So, measure, measure and measure some more.



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Once all three posts are set in place on one side it is now time to set the other three on the opposite side. This is done in the exact same way, except that it is important to make sure that the second set of three posts are the same vertical height as the first three. This is also done with a line level. Work off of the original control post on the first side and stretch the string across the walkway to the corner post immediately opposite it. Using the line-level as the guide, add or remove dirt from the hole to adjust the height of the new corner post.

Once all six posts are anchored into the ground with cement it will be necessary to wait three days for the cement to harden and cure before you begin any



The arbor is supported by two rows of three equidistant 4x4 posts.







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other construction. This is one of the reasons that this type of project makes a perfect weekend project. The posts can be set one day and then the top can be built the following weekend.

ARBOR TERRACE

The construction of the top of the arbor will go much faster than erecting the posts, since the time-consuming part of checking multiple measurements is done. Begin building the top by wrapping a 2x6 band around all four sides. I chose to use 12-ft. long pieces of treated 2x6 across the front and back of the arbor so they will overhang each side by a foot. For aesthetic purposes alone, I cut a decorative pattern on each end in each of these one foot spaces. Any pattern can be used, and almost anything can be used as a template' I used a carving from a piece of antique furniture because my wife and I liked the curved shaped.



We used an old piece of furniture to create a template for the decorative detail on the ends of the boards.



We then used the template to mark the decorative profile on the board ends.



Cut the curved profile with a jigsaw.





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Sand the contour to clean up any rough edges.



Use a Speed Square to mark bolt locations where the 2x6 boards intersect the posts.



The rafters are connected to the posts with through-bolts that must be predrilled through the 4x4's.

Attach all four pieces of 2x6 with carriage bolts, making sure to use flat washers on either side. I found that it was easier to mark where the posts would fall on the front and back pieces and then drill holes in the center of the marked areas while they were still on the ground. My son, Sterling, and I then held each of these two pieces in place against the support posts and marked

the location of these holes with a pencil. This way we could drill accurate holes in the posts without having to hold a heavy board in the air at the same time. We attached the front and back

pieces first and then filled in between these with 2x6 for the sides of the band.

With the top banded all of the way around all four sides, the next step was to attach rafter



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pieces so they were running perpendicular to the front and rear horizontal pieces. A simple measurement revealed that the best spacing for these pieces would be every sixteen inches on center. By extending my tape measure along the length of each of the front and rear horizontal pieces I was able to make a mark every 16 inches.

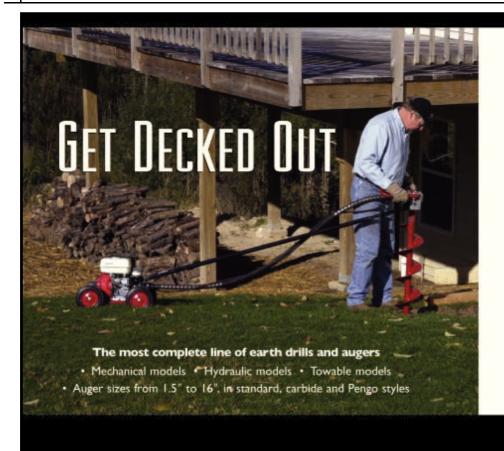
Each rafter will need to have the same decorative pattern cut into it as the front and back horizontal pieces, and they will also need to have the edges sanded to remove any rough edges. I found that it was easier to attach these with 3-in. long outdoor decking screws, toe-screwing them at an angle.

Once the top was built the final step was to attach 1-in.

Connect the rafters with 1/2" lag bolts, nuts and washers.

Hanging the 2x6 boards is a two-man job.





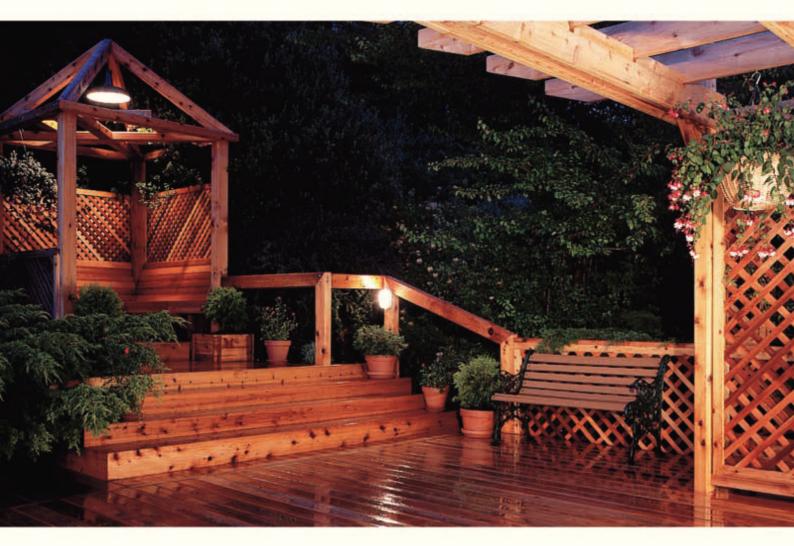
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long horizontal strips on each side that the roses would grow through. To save money, I opted to buy six pieces of 1x4x8 treated planks. I then ran these through my table saw with the

fence set to give me exactly a one inch wide finished product.

These strips were installed with screws directly into the 4x4 support posts. Another word of caution is recommended here.





Use a level to make sure your structure is true.



We carefully measured and marked the post locations on the rafters before lifting into position.



The top of the arbor is wrapped on all sides by a 2x6 band, consisting of two decorative rafters and two square-cut 2x6 boards that fit between them.

Pressure-treated lumber can become extremely brittle, and a 1-in. wide strip is prone to splitting or cracking when a screw is run through it. To remedy this problem, I pre-drilled the screw to the same diameter as the screws. For added security, washers can be added to the heads of the screws.

The final part is to determine the layout of for the horizontal



Install the square-cut 2x6 pieces between the first two rafters to complete the top band.



When marking the band for placement of the rafters 16" on center, the pencil mark depicts the next 16" point in sequence. The red mark is placed 3/4" back from the pencil mark. This will guide the nominal 2x6 board to be centered directly on the 16" mark.



We attached the top row of decorative rafters by toe-screwing them to the top band with 3" decking screws.



the shaped boards of the top band and space them 16" on center.

> Measure the post height and divide it by the number of horizontal strips you'd like the roses to grow through.



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strips. This will vary with personal preference as much as it will with every project. The best way to do this is to hold a tape measure along the outside edge of each corner post extending from the ground to the top of the support post. Then, decide where to mark your lines. For my project, my wife and I chose to have these horizontal strips one foot apart, so I made a pencil mark every 12 inches on one post and used a laser level to shoot a line across the other two posts.

Like all of my classmates in school, I never thought that I would use any of the math that we were being taught. I was convinced things like fractions, geometry, and how to determine area were a waste of my time to learn. Fortunately, my father thought otherwise. Many construction projects utilize all of those mathematical formulas and rules that I shunned as a child. Building an arbor is a simple process with the application of a few of those mathematical principals. If a person can use a tape measure accurately and can dig a few holes in the ground, then they can build an arbor and turn a "honey-do" into a "honey-done." **EHT**



We used a laser level to cast a laser site-line over the posts to easily mark the 4x4s for placement of the 1" horizontal strips. We spaced the horizontal strips 1' apart. Be sure to predrill the strips for the screws to avoid splitting the wood.

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The Lowdown on Painting Tile

A Frank Look at What You Can Expect



By Matt Weber

n my experience most professional painters recoil at the idea of painting ceramic tile. It's not a quick job, it requires extensive prep work, the end result may not meet a homeowner's expectations, plus the craftsman in question is unlikely to make much money off this particularly time-consuming project because, after all, it is "just a paint job."

And, for the inexperienced painter, there is definite potential for failure when painting tile if they don't exercise the time and patience to do the job correctly. The trouble with tile is the slick, glossy surface to which paint products don't easily adhere. The surface must be meticulously

cleaned, and any debris or small amount of moisture that remains on the tile surface will prevent the primer and paint from bonding.

Other considerations include the condition of the tile and grout joints. If the tile is damaged, paint won't hide it. The same holds true for shoddy grout joints—don't expect the coats of paint to fill gaps or holes in the joints. And, don't even consider painting floor tile, because the paint film will not hold up to foot traffic or standing water.

And finally, you must choose the right products. Not any old paint and primer will suffice, and a fine spray-application of several coats is the only way to achieve an acceptable finish. Despite all that, I can say from first-hand experience that the job can be accomplished successfully. Four years ago my wife and I moved into a "fix 'er upper," and I had a huge catalog full of major projects ahead of me. I needed to prioritize my hit list, and the tiled shower surround of the master bathroom offered the opportunity to do so. We decided the lemony yellow tile color had to go, but the tile installation itself was in fine shape, with the original grouting in like-new condition.

Now, I had heard the warnings: "Don't paint it ... It'll never work ... The paint will peel." I didn't listen. My reasoning: I had a ton of projects ahead of me, but limited time and budget, and maybe painting the tile would buy more time. Heck, even if it lasted only a year, that meant I could ignore the bathroom for a year, thin out the honey-do list, and then be in a better position for a full shower remodel.

So, I painted the tile. Four years later, the paint is still holding with no signs of failure. Since I had more success than I ever expected, I decided to repeat the procedure in another shower. This time, I shot a few photos of the process. Here's how I approached the project:

MANAGE EXPECTATIONS

This project takes a few days, due in large part to drying times. Plus, every step in preparation must be executed with precise detail, otherwise you risk poor adhesion of the paint, the film will peel and the whole project will look crummy. If you're impatient and have a tendency to

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cut corners, this project is not for you.

Also, the paint finish won't have the same hardness or glassy surface of the original tile. Even when applying the paint with a sprayer, you should expect some degree of visible texture over the tile surface.

Finally, unlike a full remodel, painting the tile will not add value to your home. However, if

done correctly then it may make it easier to sell when the time comes, due to simple aesthetic reasons. For example, modern home-buyers may prefer a fresh, white shower surround over one tiled with 70's-era yellow porcelain and dirty grout joints.

Painting tile and grout works best with small grout joints, usually 1/8 inch or less. The sealing of the grout joints, in my opinion, is one advantage of painting the shower. Once the original grout sealant fails, grout can become brittle, discolor and provide a porous breeding ground for mildew. Sealing the entire wall surface encases the joints in primer and paint, which retains the look of the grout lines but reduces their susceptibility to mildew and grime.

PREPARATION

Closely inspect the tile and grout joints. You can make minor repairs in the grout, but if you have a lot of loose tile, do not proceed with painting. You may have to remove and replace all the grout, but painting over failing grout is a sucker's move. In my case, the grout lines were



Inspect the tile grout and make any necessary repairs. In some cases, a full grout removal and replacement may be required. In this case, the joints were only 1/16", so we made a few minor repairs with a paintable siliconized adhesive caulk.





Disassemble all components of the shower that you don't want painted, which in our case included a shower door, handles, faucet and towel bar. Mask off all permanent fixtures as necessary.



Scrape away any old caulk or adhesive.

mostly intact, and the joints were thankfully only 1/16-in. thick. With such minor hairline repairs to make, I filled the few problem areas with a siliconized latex adhesive caulk that resists mildew. I tooled the joints smooth and allowed them to dry.

Disassemble any components of the shower that you don't want painted. I removed a towel

bar, shower handles, faucet and shower door assembly. Use plenty of painter's tape to mask off any permanent fixtures as necessary, and prepare for some overspray when painting.

Remove any traces of old caulk or sealant. In my case, the door of the shower had been lined with silicone sealant. Use a sharp paint scraper to carefully remove all traces of the sealant. Silicone does not accept paint, and such traces of sealant provide a good example of the tricky areas that must be completely cleaned before the primer can be applied.

Scrub the tile surface from top to bottom with a stiff-bristle brush using a heavy-duty foam tile cleaning agent. Pay extra attention to cleaning the grout joints.



Pay close attention to detail. In this case the the old silicone that lined the shower door had seeped into the grout joints. I used a Hyde paint scraper to carefully dig out all traces of the sealant, which would otherwise prevent the paint and primer from adhering to the surface.



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Next, sand the entire tile surface. Even if your primer of choice suggests on the label that sanding the surface is not necessary, sand it anyway. It couldn't hurt, and it may help. I used 180-grit abrasive in a random orbital sander to lightly abrade the surface, which helps dull the gloss to promote better primer adhesion. Be thorough when sanding; I used a detail

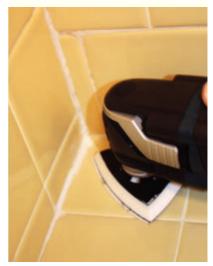




Using a foaming tile cleaning agent to thoroughly scrub the entire tile surface and grout joints.



I recommend sanding the entire surface with a random orbital sander using 180-grit abrasive.



To access the corners of the shower I used a detail sander with a pointed tip. After sanding the entire surface, give the shower another thorough cleaning.



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sander with a pointed tip to access tight corners of the shower stall.

I then re-washed and rinsed the tile surface and allowed it to dry. I used an electric fan to keep air flowing and to dry the tile faster. Before applying primer, I recommend giving the tile surface a final wipe-down with rubbing alcohol. The alcohol will help remove any traces of film

on the tile surface and will also quickly evaporate without leaving moisture.

PRIME & PAINT

Once the shower is completely dry, apply a thin coat of primer from top to bottom. I recommend applying the paint with an HVLP sprayer. This type of sprayer stands for High Volume/Low Pressure, a spray technology that can create a very fine finish. The model I used is the Control Spray Double Duty from Wagner, which features a two-stage air turbine for a continuous flow of material and air. It features a three-position cap to adjust the spray pattern, and material flow is easy to control with a variable trigger. I particularly like the fact that this sprayer is simple to disassemble for easy cleanup, which takes about 10 minutes (www.wagnerspraytech.com).

When preparing the paint, check the viscosity of the product to make sure it will spray effectively. Most HVLP sprayers include a small, plastic test cup that you fill with paint and then measure the time it takes to drain from the hole in the bottom



Choosing the the right paint and primer is critically important. I used a water-based primer specifically designed for hard-to-paint surfaces. For the paint, I chose a high-gloss, alkyd-based industrial enamel from Sherwin-Williams, intended for protective and marine coatings.

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I applied the primer and paint with an HVLP sprayer from Wagner Spray Tech. This High Volume/Low Pressure sprayer can create a very fine finish on the tile surface.

(the product manual provides drain times for specific products, i.e. latex, oil-based, shellac, etc.). Refer to the paint product's instructions for the recommended thinning agent.

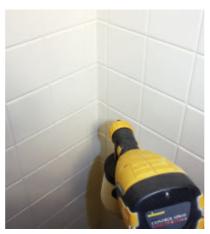
When using a sprayer, keep the gun about 7 inches from the wall surface and hold it perpendicular to the wall surface, moving in even, overlapping coats. Don't swing the nozzle back and forth over the surface, which will result in uneven application. Be thorough and patient, keeping the coat consistent but still thin. Practice on some scrap cardboard before hitting the tile. DO NOT APPLY A THICK COAT. Thick coats result is sags and runs, which is a messy nightmare to clean off the tile-and if the drips harden, you're painted tile will look like junk. Additionally, ensure thorough coverage by alternating your spray pattern between coats from horizontal to vertical application.

The primer I selected was a water-based product that was marketed for hard-to-paint applications and glossy surfaces.

Make sure your primer has the same indications and that it is compatible with your alkyd top-coat paint. I applied two thin coats of the primer, allowing time to dry between them.

The paint I selected was an alkyd (oil-based) industrial enamel from Sherwin-Williams. Another option is a two-part epoxy paint, which some professionals claim is superior for painting tile. However, I chose the alkyd because I had success with it in the past, plus I was painting in a very confined space with poor airflow. The bathroom in question had no ventilation, and the alkyd paint generates less fumes than the epoxy paint. (Breathing is important to me.)

Whereas the water-based primer was not very noxious, you'll need a respirator when spraying the enamel. Although, the enamel generated less fumes than the epoxy, there were still fumes to content with. Plus, I was painting near a gaspowered furnace and water heater in an adjacent room. According to the paint container, the fumes were potentially combustible, so I had to extinguish the pilot lights every time I applied a coat of paint—and I



The adjustable tip of the sprayer enables a choice of spray patterns for either vertical or horizontal application.



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applied five thin coats. Keep this in mind if planning such a project, because the people living in the house can get cranky when the hot water is off. And, because the alkyd paint takes a lot longer to dry than latex, the shower may be intermittently out of commission for a few days.

MAINTENANCE

As I mentioned, our previous tile-paint project is still holding strong four years after application. However, we've also been nice to it. The painted tile will be much easier to clean than the old tile because of the smooth, continuous film covering the porous grout joints. Take advantage of this feature by cleaning the shower with non-abrasive spray cleaners that agitate the surface and can then be rinsed off without scrubbing. Even with

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DO IT YOURSELF

a thorough paint application, it may or may not be possible to accidentally scrub off the paint with a stiff-bristle brush—something I'm not about to find out. **EHT**



Here's the freshly painted shower.

NEW TOOLS FOR YOUR PAINTING PROJECTS

HYDE POUR & ROLL—The new Hyde Pour & Roll is a two-piece paint accessory set that allows you to pour paint safely with no spills or simply paint right from the can with a roller. The set includes a paint-pouring spout that snaps into the inner edge of your paint can to eliminate the mess of pouring paint. It also functions as a brush rest while you paint. Also included is a roller grid for use with a 4-in. roller. The grid attaches to the pour spout in either of two positions, one for use with full paint cans and a second for use with partially empty cans. (www.hydetools.com)









PERFECT MATCH STAIN MARKER—The Perfect Match Stain Marker works like a syringe and can be filled with water-, oil- or lacquer-based stains for a perfect match. It's a great tool for touchups and highlighting on cabinetry, furniture, mouldings and wood floors. Extra marker tips are sold separately. (www.woodworkershardware.com)

THE MINI ROLLER FLEX—This flexible new extension handle from McCauley Tools is designed to make it easier, faster and safer to paint hard-to-reach areas. No other painting extension arm bends instantly and holds in place at any, precise angle. The handle features a soft grip as well as strong nylon extension-pole threads that are "stepped-in" to tighten firmly on any standard extension pole, broom or mop handle. (www.mcauleytools.com)







NEW TOOLS FOR YOUR PAINTING PROJECTS

XL ELITE BRUSHES—The new line of XL Elite brushes from Purdy takes the guesswork out of selecting the right paint brush. XL Elite brushes are extremely versatile and can be used with all paints and stains, indoors or out. The brushes have a unique blend of bristles designed to achieve a perfect finish and be easy to clean when using thicker paints. The blend of Chinex and polyester filaments allow for better shape and stiffness retention, plus the stainless steel ferrule won't rust. Choose from a number of brush sizes and styles. (www.purdy.com)



KRYLON RUST PROTECTOR—The new Krylon Rust Protector offers dry time in as little as eight minutes for top-notch performance without the wait. The longer paint takes to dry, the greater the chance that foreign debris will stick to the surface. And for outdoor projects where wind and weather are factors, fast dry-time is extremely important. Rust Protector is available in both sprays and brush-on formulas and in a wide range of colors and special finishes, including gloss, semi-gloss, satin, flat, metallic, hammered and textured. (www.krylon.com)



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What's Under Your Topcoat?



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Switch Hitting

Paint your electrical plates to match your wall color.



By Rob Robillard

othing creates more immediate impact than a fresh coat of wall paint, especially when it's a color that pops. The problem arises when you choose a great wall color and then you're stuck looking at those white or beige outlet and light switch covers. Not only can this be unattractive but it distracts from the newly painted wall color. After all: Who wants a glaring white plastic switch plate as the focal point of a beautifully bright or deeply colored wall décor?

Almost any wall plate can be painted, even your thermostat. Paint them—but do it right! I have detailed below a step-by-step guide showing tips and techniques necessary to paint

your outlet and switch plates and have a quality end result.

COMMON ERRORS

Sometimes it's easier to start with what to avoid—thus, this list of common mistakes:

- 1. Failing to sand prior to priming
- 2. Skipping the priming step
- **3.** Not cleaning the dust off the covers prior to priming or painting
- **4.** Painting the electrical switch or outlet
- **5.** Not allowing your primer or paint to properly dry

6. Sanding or painting the wall plate while attached to the wall

Remember that improper techniques can lead your paint finish to bubble, peel or chip and look awful!

PREPARATION

Henry Ford once said, "Before everything else, getting ready is the secret of success." Taking a few steps to get ready will ensure a successful project. Most paint jobs fail because an important step in the preparation phase was skipped or done poorly.

A poor paint job often manifests itself in paint failure such as flaking, chipping, mildew, bleed spots, or paint peeling in sheets. Following basic paint preparation steps is easy and will ensure a job that will withstand the wear and tear of our busy lives.

Consider your location to paint these wall covers. Outside may not be the best location if it's windy or too hot. Sometimes a workshop or even the room you're working on is the best location in which to paint. You may even consider laying Kraft paper or a tarp on a work table or the floor.

Begin by removing all of your wall plates, including telephone and cable plates. Thermostats can be painted as well. Use a screwdriver to do this. Not removing the plate from the wall is a rookie move and will not result in a professional, quality job—and you risk getting paint into the switch or outlet mechanism.

Tip: If you're not painting the screws then put them back into

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SKILL SAVVY

the outlet or keep them safe in a plastic bag for retrieval later.

Lightly sand the surfaces of the wall plates with 220-grit sandpaper. Sand the entire surface that is seen when the plate is on the wall, including the edges. Sanding is important to de-gloss the plastic and create etching so the primer adheres well. Skipping this step may cause your paint to prematurely fail.

Wipe with a tack cloth or damp rag after sanding to remove dust. A friend of mine often says on the jobsite: "Proper preparation prevents piss poor performance." Don't skimp on the prep!

PRIMING

Using oil-based spray primer (I use Cover Stain), spray all of the plates until completely coated.

Tip: Cut open a large cardboard box on one side, leaving three sides up. Use the three sides as a shield to catch and control overspray from your spray can. Test your spray can pattern on some cardboard to learn how the primer comes out. Sometimes new nozzles sputter at first and need a few seconds of test spraying prior to going to work.

When using spray products, always work in a ventilated area. Shake the can well before using, and shake it throughout the



Sand the switch plates with 220-grit sandpaper.



Sanding de-glosses and etches the surface so the primer adheres better.

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Learn more at www.wernercompactextensionladder.com



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Coat with an oil-based primer.



Apply the primer in very thin coats.

operation to keep the mixture consistent. Hold the can 8 to 10 inches away from the wall plates. Move the spray can back and forth to apply the primer smoothly and evenly.

Avoid over-spraying, which causes drips or runs in the primer.
Don't spray too close or too much. Try to prime in several thin coats as opposed to a thick coat. Thinner coats are always better than a thick coat

Allow the primer to dry according to manufacturer's recommendations. Failure to wait for the primer to properly dry may cause your paint to fail. After the primer has dried, apply a second coat if you did not achieve complete coverage.

SANDING BETWEEN COATS

If you're looking for perfection, I recommend sanding between your primer and first finish coat. Use 220-grit paper to lightly

sand the wall plates. Focus on removing any bumps or bubbles. Sand in only one direction. If you sand too aggressively, scratches will be visible through the top paint coat.

Wipe off the sanding dust with a tack cloth or damp rag.

PAINTING

I recommend using two coats on light switch covers because

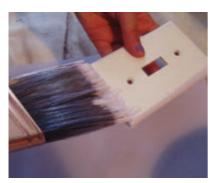




Allow the primer to dry, then lightly sand to remove bumps or bubbles using 220-grit sandpaper.

they see so much abuse. Electrical plug covers can probably get by with one coat.

Using a quality paint brush, apply wall color paint to the electrical plate. If holding the plate—paint the edges first. Apply only as much paint as is needed to cover completely and evenly. Apply paint to the entire wall plate. When you have the plate completely covered in paint, finish off with long, smooth brush strokes, all in the same direction. Brush from one end of the cover to the other side.



Apply the top coat of colored paint with a paint brush, starting at the edges.

Tip: Do not paint the actual switch or outlet. Getting paint into an electrical mechanism can be dangerous and may interfere with the proper function of the electrical component.

Wipe up any drips with your brush or a rag. Carefully place the wall plate cover down to dry.

Tip: If you leave fingerprints while placing the cover down, simply use your paint brush and lightly brush from one end to the other to eliminate the print.

Allow the paint to completely dry for 24 hours before mounting to a wall. If additional color coverage is needed you can lightly sand the first coat, remove dust and apply a second in the same fashion.

PAINTING THE SCREWS

Painting the screws is easy. To do this you will need a section of cardboard box, insulation board or Styrofoam to act as a pin cushion to hold the screws in place.

Place all of the screws, threads first, into the cardboard

or Styrofoam, leaving the screw heads exposed. Space the screws approximately 1 inch apart. Lightly sand the screw head with 220-grit sandpaper. Remove dust from the screws and the "pin cushion." Apply primer with a spray can and allow to dry.

Apply colored paint with a paint brush. Let dry.

If you're a perfectionist or just like to "do things right," these steps will help you avoid the common errors and allow you to match your electrical plates to your wall paint like a professional. **EHT**

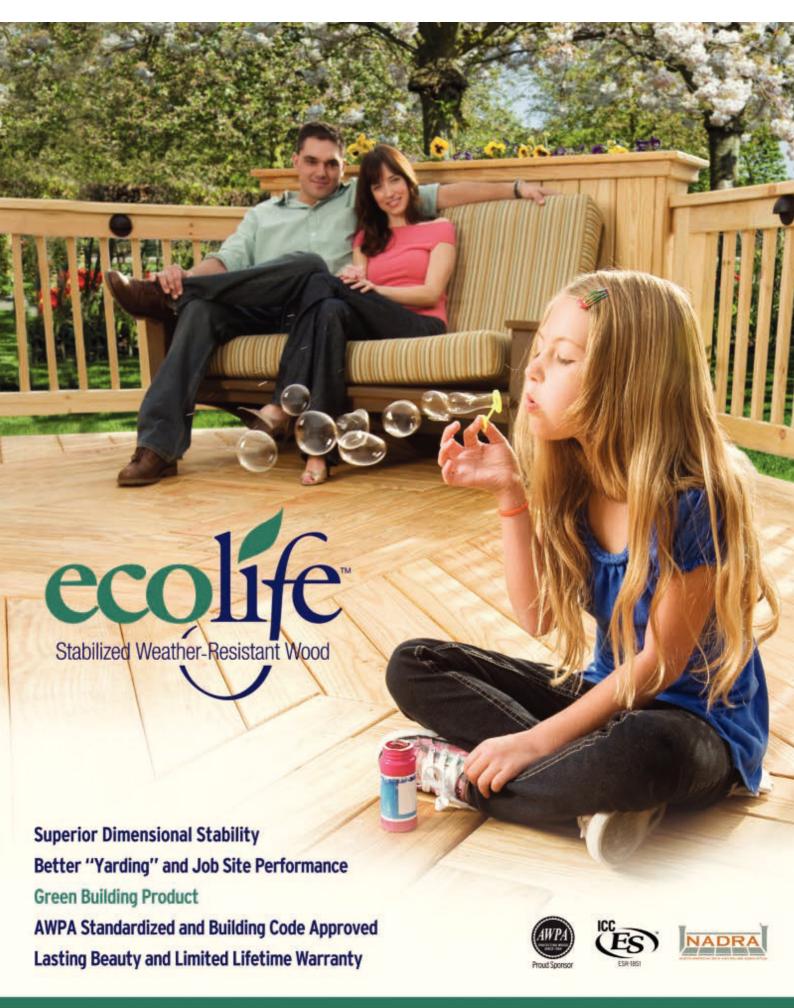
Editor's Note: Robert Robillard is a remodeling contractor based out of Concord, MA. Visit his site at www.AConcordCarpenter.com



Apply only as much paint as is needed to cover the plate completely and evenly. Finish off with long, smooth brush strokes in one direction.



Painting the screws is an easy extra step that adds a professional touch.



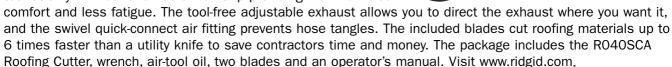




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TAPCO VIRTUAL REMODELER



The Tapco Group has launched its next-generation Virtual Remodeler visualizing solution that gives site visitors a glimpse at the readily-available home of their dreams. The visualizer allows website visitors to view actual building materials on photos of their own home, from composite slate and shake roofing to siding, shutters and more. With Virtual Remodeler's advanced photographic rendering, users can upload their own home photo or select a home from a visual library to see final outcomes before purchasing products. This enables an enhanced decision-making process and faster product selection. The Virtual Remodeler now also features

larger home photographs, unique mouse-over features, and a bolstered rendering engine providing quicker response times and enhanced interactivity. Visit www.TheTapcoGroup.com.

BUILD YOUR OWN HITACHI NAILER KIT

Hitachi Power Tools launched its new customizable Finish Nailer kit concept, available exclusively at Lowe's. The kit will save consumers between 20 and 40 percent off the popular tools needed to accomplish every project, from installing crown molding to assembling picture frames. Buy the 6-gallon Hitachi pancake compressor (model EC510), then choose from five different finish nailers in any assortment. If you choose one nailer, you get 20 percent off the nailer and compressor. If



you buy two nailers, you get 30 percent off the nailers and compressor. If you buy three nailers, you get 40 percent off the nailers and compressors. It's that simple. Choose from a 15-gauge angled finish nailer, 16-gauge finish nailer, crown stapler and pin nailer. Visit a Lowe's store or www.hitachipowertools.com.

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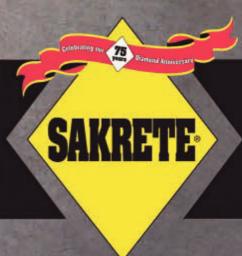


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