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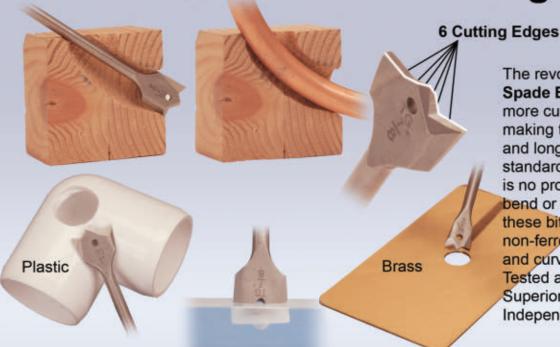


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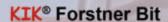
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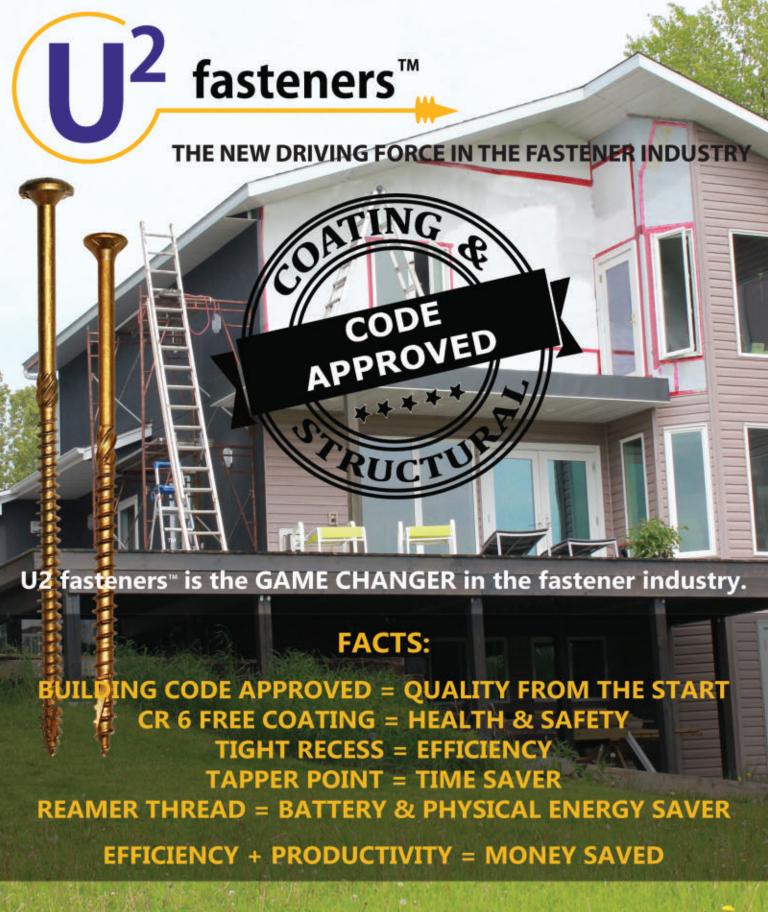
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Fasteners that contractors and engineers agree on. Find out why!



From The Editor-In-Chief



t a recent press event I attended at the Home Depot headquarters in Atlanta, Georgia, I took part in a volunteer team of blog-writing builders who assembled fifty-five new chest-of-drawers for a local charity. Sponsored by the Home Depot foundation, our crew built the furniture while another squad of writers constructed flower boxes to spruce up the landscape of a public park.

While there, we met some of the locals who lived near the work site, and they explained that Home Depot holds these types of charity events on a regular basis, assisting the community with everything from the renovation of public facilities to helping limited-income people repair and maintain their homes. Suffice it to say that the neighbors were big fans of the Depot.

I learned the Home Depot Foundation and Team Depot, the company's 385,000-strong army of associate volunteers, also work to improve the homes and lives of U.S. military veterans and their families and aid communities affected by natural disasters. Through Team Depot, thousands of volunteers dedicate their time and labor to these efforts in the communities where they live and work. In fact, since 2011 the Home Depot Foundation has improved more than 30,000 veteran homes and facilities across the United States.

I'm glad to have been able to take part in the project, and I'm happy to see and hear what the foundation has accomplished in Atlanta. Sometimes the "big box stores" get a bad rap from people who've sworn allegiance to their local mom-and-pop hardware store. While I love the small independent stores as much as anyone, the truth is that in some

cases if a "big box store" isn't built, then people in the area don't have adequate access to the tools and materials they need. It's good to see that when a Home Depot comes to town, they come with a genuine commitment to the surrounding community.





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How do I apply a German schmear to brick?

• A "German schmear" (or "smear") is a technique of whitewashing brick by smearing lightly colored mortar over the surface and mortar joints. After cleaning the brick surface of dirt, mold and loose mortar, mix

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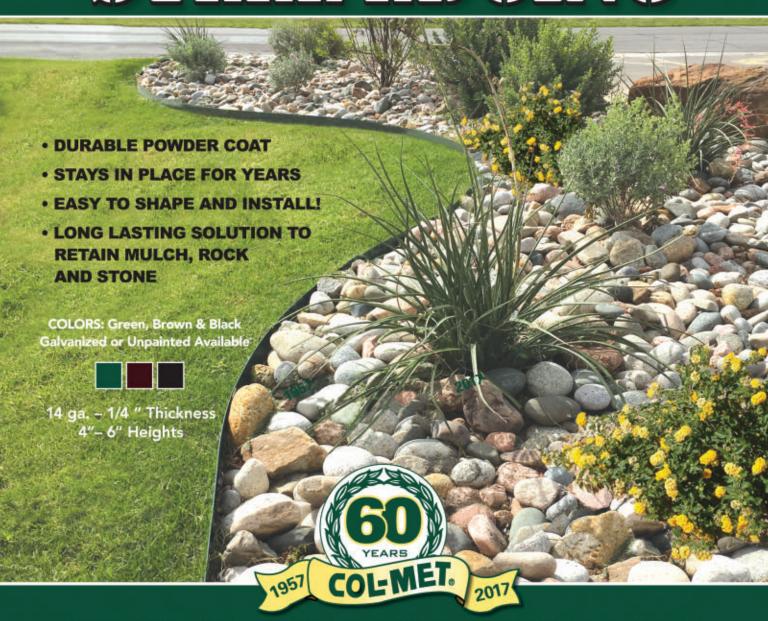


one part water to five parts mortar. Mix until it forms a smooth, stiff flurry. Wet the brick surface thoroughly with water. Apply the mortar to the wet brick surface with a steel trowel, working from the top up. As you progress, wipe the surface with a dry rag to expose the underlying brick, if you prefer to accent certain areas.

• I like the look of tray
• ceilings, but wouldn't
it be a bad idea to cut through
the ceiling joists of my home to
raise the middle of my bedroom
ceiling?

• That's not how a tray ceiling is built. Avoid cutting through the ceiling joists to raise part of the ceiling. To achieve the tiered appearance, you'll need to frame a second lower ceiling surrounding the area that you want to appear recessed. Once the secondary ceiling is framed in place, you can finish it to match the original construction and then use trim and paint to contrast from the recessed area, which will give it a look of more height and depth.

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What type of footing is required for a concrete block wall?

• To construct a block wall, you need to establish a solid footing that is a minimum of twice the width of the concrete block. For example, a typical 8x8x16-in, block would require a 16-in, wide footing and extend below

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the frost line. Always check local building codes for construction requirements in your area. For load-bearing walls, tie rods should be set a minimum of 6 inches into the concrete footing before it is set. Rebar should be placed in every other masonry core to provide structural support. Apply Core Fill Grout around the rebar inside the block cores.

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the forests of India and Thailand.
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of the trees to be processed and
sold as dry flakes which are then
dissolved in ethanol to make liquid
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Heavy-Duty Storage Solutions



By Matt Weber

recently spent a few days at the Home Depot headquarters in Atlanta, Georgia. I toured the facility, explored the company's Product Quality and Engineering Laboratory, and got a peek at the latest in tools and equipment from the premiere brands that will stock store shelves this year. When it comes to tool storage, the Depot has several nice product lines coming out from Husky, Milwaukee Tool. DeWalt and WeatherGuard.

I was particularly impressed to see The Home Depot Product Quality and Engineering Lab, where the company's engineers test private brand products to make sure they not only meet but exceed the customer's most demanding application expectations as well as the advertised claims. For example, a strength test that applies load on a Husky tool cabinet will have a heavy steel plate driven down onto it from the

testing machine, and if the frame or wheels fail before it reaches the claimed load—plus a target safety factor above and beyond the published load capacity—then the cabinet has failed the test.

Another interesting test showed a Husky tool bag supporting a weighted barbell to determine the durability of the bag's carrying handle. The testing lab subjects the tools and equipment to all sorts of stress factors, including







harsh environments such as salt air and extreme temperatures. Even the product packaging is put through the wringer of drop tests, crush tests, and all manner of roughing up to make sure a piece of equipment ships to the end-user in sound shape. I left the Home Depot headquarters with the impression that the tools—and toolboxes—that are sold at the company's outlets are built to last.

HUSKY TOOL STORAGE

Husky is the house brand of Home Depot, and the new Husky 36-in., 12 Drawer Tool Chest and Cabinet (shown on page 12) is great for storing and organizing all your tools and hardware. The chest is made from all welded steel construction and finished

with tough industrial red powdercoat paint. The twelve drawers and easily accessible top till provide a total of 21,704 cu. in. storage capacity. The drawers fully extend open and glide effortlessly on ball-bearing slides that can support up to 100 lbs. These slides also have a unique Secure Latch retention system that ensures your drawers are completely closed and secured. The top till has an integrated power strip with 4 outlets and 2 USB ports. Premium Drawer Liners are included to protect your tools. The reinforced top lid is supported by gas strut, and an ergonomic handle and 5x2-in. casters allow you to easily move the cabinet around your workspace. Total weight capacity of the cabinet is 1,200 lb.

The Husky Heavy Duty Workbench (shown below) is massive with 26,551 cu. in. of storage space and 2,200 lb. load capacity. This rolling tool cabinet is built with heavy 19-Gauge steel and has a



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24-in. deep workbench, which is 6 in. deeper than most standard rolling tool cabinets. The built-in, adjustable-height, 22 in. steel pegboard back wall can be raised or lowered into two different positions and holds up to 200 lbs. It also features a 48 in. shelf that attaches to the pegboard and can hold up to 40 lbs. The 1.2-in. thick, solid wood top is coated with polyurethane for added durability, and you can charge power tools with the built-in, 6-outlet, 2-USB power center. The 100 lb. rated, soft-close drawer slides keep the drawers from accidentally opening or from slamming shut. Included is a full-length drawer for longer items and two deep bottom drawers. The 1-door storage locker includes an adjustable-height

shelf that can handle a 100-lb. load, and there's a side shelf for bottle and can storage inside the door. Both the chest and cabinet are fitted with a barrel key and lock system, and the industrial-grade casters with easy-locking pedals help the unit roll smoothly.

Mechanics and Auto enthusiasts will love the Husky 56 in. x 23 Drawer Tool Chest and Cabinet Set. This heavy-duty, 19-Gauge steel, rolling tool storage unit is rated for a 2,500-lb. loading capacity. The 9.5-in. deep chest lid storage along with the 23 drawers provide 37,795 cu. in. of storage. It features soft-close drawers with 100-lb. rated ballbearing slides, and drawer liners are included to protect and keep your tools in place. The built in



full-length power strip includes 8 outlets and 2 USB ports. Also included is a rechargeable magnetic LED work light, which has three light modes, a recessed folding hook, and produces up to 360 lumens. For added security, both the chest and cabinet are fitted with a lock system.

Not everyone has room for a huge tool chest, but any DIY'er can find room for a portable toolbox. Backed by a three-year warranty, the Husky 18-in. Rolling Tool Tote carries up to 100 lbs. and has skid plates that protect its telescoping handle. A large main compartment grants easy tool access, and it comes with a dual-zipper top and two external tape measure loops.



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To throw together a grab-and-go project kit, the Husky Bucket Jockey is constructed of a heavy-duty, water-resistant material and features deep pockets to store a versatile array of tools and accessories with ease.





DEWALT TOUGHSYSTEM

Also at the Home Depot, the DeWalt ToughSystem mobile modular storage system allows you to quickly and easily change the combination of tools you take to the job. The system can be configured with a variety of options taking you from the workshop to the project site, including toolboxes, totes and even a jobsite radio. When carrying the toolboxes by hand, they can be fastened together utilizing side latches that allow them to be carried as a stack.

Also offered are two different mobility options. The ToughSystem



DS130 Suitcase—model
DWST08130—features four deep,
large-size cups for storage of smaller tools and parts; storage pockets
in the lid for screwdrivers and drills;
and a padlock eye for extra security.
The Suitcase also features an
IP65-rated dust and water seal,
rust-resistant metal latches and a
durable coated handle—all perfect
solutions for unpredictable weather
elements.

The ToughSystem DS450 Mobile Storage—model DWST08250— is a mobile toolbox, compatible with all existing modules of the ToughSystem family. The stackable base box is made with durable 7-in. wheels and a top handle for carrying. The patented design of the lid opens with a pull-back handle, and

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a non-detachable lid enables full accessibility and maximum storage volume. The metal-plastic telescopic handle has a strong grip, and like the DS130, the DS450



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Mobile Storage features an IP65-rated dust and water seal.

Finally, the ToughSystem Workshop Racking Solution model DWST08260—is a modular self-assembly solution compatible with all ToughSystem modules. It can be fully customizable for an array of arrangement options and



allow a self-made shelf on top of brackets for additional storing. Each racking system can carry up to 440 lbs. The Workshop Solution pack includes 6-ft. metal bars, two horizontal beams and five pairs of brackets.

MILWAUKEE 52" MOBILE WORK STATION

Unique to Milwaukee's new 52-in. Mobile Work Station is a raised work surface that allows users to easily clamp materials for extra convenience and productivity. The raised work surface includes two pullout trays underneath for fast access to frequently used tools. For additional versatility, the space underneath the work surface easily fits two Milwaukee Jobsite Organizers as an extra





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option for accessory and fastener storage. Constructed with a reinforced angle iron frame and 5-in. industrial casters, the new Mobile Work Station's nine drawers include 100-lb. soft-close slides, a center drawer with a moveable divider, and a total weight capacity of 1,800 lbs. Additional key features include a multi-position tool tray that can be mounted at different heights on the side of the work station for convenient storage of bulk items. A quickaccess tool holder provides easy access to longer tools like screwdrivers and ratchets, and a 1-inch thick reversible hardwood top provides a sturdy workbench. The new work station features a power tool organizer to keep tools upright, a built-in power center for instant access to power, and USB ports.





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WEATHER GUARD DEFENDER SERIES TRUCK BOXES

The Weather Guard Defender Series is the latest in affordable truck-box solutions designed specifically for professional level protection. The Defender Series is now available with more than 20 products across five categories, including Saddle and Cross Boxes, All-Purpose Chests, Lo-Side and Hi-Side boxes. With four-piece welded construction and a C-channel reinforced lid, the new products offer heavy-duty security including push-button locks, a reinforced front panel and two dual-stage rotary latches with looped strikers. Available in clear aluminum and powder-coated gloss black, the Defender Series truck boxes feature a D-shaped ribbed weather strip and foam along the hinge to offer four-sided weather resistance. The dual gas strut-supported lid makes for easier access, and the plastic strut sleeve prevents damage from moving materials. Most of the Defender Series products come with a plastic storage tray to organize smaller tools and accessories. The mounting kit requires no drilling for most models, and the truck boxes are backed by a 7-year warranty.

TOOL KADDIES

Like a portable closet, the rolling Kaddies toolboxes are manufactured in the USA with durable double-wall polyethylene construction that will never rust, flake, peel, chip or corrode like metal boxes. Tool Kaddies can be loaded with job-specific tools, parts or supplies, and rolled right to the job, eliminating unnecessary trips back to the garage, truck or tool crib. Available completely assembled in a variety of colors, each



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Kaddie is lockable for security and very water-resistant. Measuring, 40x20x20 in., they're also easy to modify for the user's needs with two shelves, three bins and

a tray. The water-resistant Kaddies weigh 38 pounds but have a 150-lb. load capacity. Find them online at www.kaddies.com.







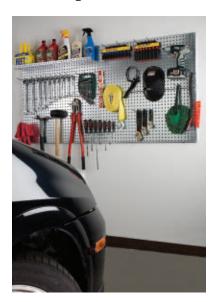
ALLIGATORBOARD

Syr-Tech manufactures AlligatorBoard metal pegboard from heavy-duty, 20-gauge steel so it's much stronger and more durable than ordinary pegboard. Backed by a 5-year limited warranty, AlligatorBoard comes in 16-, 32- and 48-in. long by 16-in. wide panels, and 3-in. wide strips and shelves. It's compatible with standard pegboard hardware for quick and efficient organization of garages, workshops and more. AlligatorBoard won't rust and is magnetic, featuring special, strength-reinforcing dimpled holes that will hold up to 90 lbs. when

mounted on studs. With built-in 5/8-in. flanges, AlligatorBoard is designed to install easily on any wall using the included mounting hardware. Choose from several finishes: galvanized steel, eight powdercoated steel colors, 300-series stainless steel, 400-series stainless steel (attractive shine), and



polished Diamond Plate aluminum tread plate. Specialty pegboard packages include the FinishLine black and white checkerboard and American Flag kits. Also, check out the new Wall on Wheels (W.O.W.) carts-mobile versions of AlligatorBoard designed to eliminate the need to carry parts and tools back and forth between storage area and workspace. Learn more at alligatorboard.com. EHT



JAW-DROPPING NEW WRENCH FROM CHANNELLOCK

With all these new tool storage items, it only seems fitting to christen them with a new tool. Channellock has added to its classic collection of hand tools with the new 810PW Reversible Jaw Adjustable Wrench. The 810PW features an additional pipe wrench jaw option, making these strong and reliable wrenches more versatile than ever. The reversible jaw makes simple work of bolts and fasteners and also works on round stock. The self-gripping angled teeth grip pipe and rounded fasteners tight the first time, every time. With a four-thread knurl and non-protruding jaws, the 810PW provides greater capacity while improving performance in confined spaces with its minimal head width. Learn more at channellock.com.







he two large garage doors at the front of the Hollingsworth house a accounted for a great deal of its exterior decor. To give the house a fresh boost of curb appeal, Jeremy Hollingsworth upgraded the two aluminum overhead doors with a couple of handsome new insulated units from the American Tradition Series by Haas Door Company. The new doors not only add to the look of the home, but they offer better weather protection, increased energy savings, smooth, quiet operation and a perfect fit. Here's how the professional installers at Precision Overhead Door Service got the job done.

SELECTION

Overhead door designs have come a long way, and an insulated door is the way to go for the sake of your energy bills. Even if you don't spend much time in your basement, a thin uninsulated door offers little cold-weather protection, and a cold garage will transfer those cool temperatures into the house if it's connected. Is your water heater in the garage? That's an often-overlooked appliance that doesn't have to work as hard if the heater is located in an insulated environment. The American Tradition Series of garage doors contains CFC-free polyurethane insulation with R-value of 13.45.

The available styles in garage doors have also evolved over the years. These days homeowners can choose from a wide range of panel and trim designs, a broad variety of window configurations, as well as various glass options. You can select from a rainbow of colors, choose your favorite door finish, and give it a personal touch with optional accessories such as faux door hinges and handles to give the illusion of vertical double doors.

How the Pros Handle a Double Garage Door Upgrade



The Haas American Tradition Series shown in this article translates the beauty of a wooden carriage-house door into a woodgrain-embossed surface made of powder-coated aluminum that provides a stronger barrier to the elements than actual wood.

Notably, Haas has a handy online tool at www.haascreate.com where homeowners can upload a photo of their home and then digitally "create" a door design from the site's array of design options. The app provides a visual representation of how your style of choice will look on your house.

SPRING OPTIONS

Any professional door installer is going to recommend torsion springs over extension springs. A torsion spring is usually mounted to the wall along the top of the closed door. Extensions springs are intended to work in tandem at the sides of the door and are mounted parallel to the ceiling tracks. Whereas extension springs fully expand and contract when operating an overhead door, the torsion springs turn. Torsion springs may cost more but they're a better investment because they

last much longer—15,000 to 20,000 cycles compared to 10,000 cycles with extension springs.

Plus, torsion springs perform much better. Torsion springs operate with a controlled, steady motion as the garage door opens and closes, which keeps your door in proper balance. Extension springs can result in that rambling, noisy, jerking motion that you've probably encountered at some point in life. And, although they might provide a lot of tension when you first open the door, once the tension releases, the door can travel up much faster, and all the jerky imbalance from the springs can cause your door to misalign, leading to wear and damage to other parts of the system.

Although torsion springs are the preferred choice for a new garage door, installing them can be very dangerous for anyone who isn't properly trained and experienced. Torsion springs are under extreme tension, and installing them requires solid steel winding bars (which most of us don't have in our toolbox). In fact, the Haas operation and maintenance

manual warns that people who attempt to work on a torsion spring assembly "without proper training or tools may result in an uncontrolled release of spring forces, which can cause serious or fatal injury." For this reason, the EHT staff suggests you leave this type of garage door installation to the professionals. A pro installer will also be familiar with how to assemble the various components of the complicated track-and-motor system, which ensures that your new door is a smooth operator.

TEAMWORK

A new garage door system has a lot going on, from the electric garage opener and the slotted angles (which support everything from the ceiling) to the tracks, springs, wire, trim and door panels. The team at Precision Overhead Door Service divided the work between themselves for a multi-pronged attack that knocked out the project in short order, whereas a would-be DIY'er would probably be left scratching their head for days.

The installers first inventoried all the various components and









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DOUBLE WISIONVISION

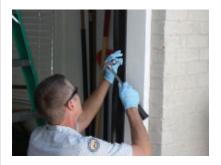
confirmed that the door measured appropriately for the opening. The next step involved one worker preassembling some of the track components while another worker installed trim along the door jamb. Working in tandem, the team had both doors successfully installed in just a few hours.

Here's an overview of the steps involved.

STEP BY STEP



First step is to unpack and inventory the components.



The installers divided the work, with one installing the trim that will seal the air gap surrounding the door.



Another worker preassembled the door tracks that will mount to the wall.



The garage doors are assembled one panel at a time, working from the ground up. A perfectly level installation is critical for proper door operation. (No shims were required here.)



Each panel is fitted with hinges and roller brackets.



The vinyl rollers slip into the roller brackets to give the door smooth travel along the tracks.



With the rollers in place on the lower door panels, the door tracks are then positioned around the rollers.



Make sure the tracks are perfectly plumb for proper door operation.



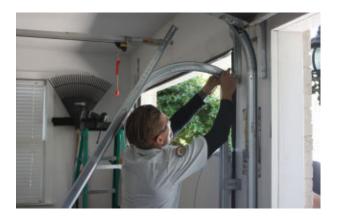
The tracks must be mounted securely to the wall. Note the wood shim behind the bracket, which keeps the mounting surface in a solid, even plane.



The door panels are attached to each other with a strong center hinge.



Panel by panel, the workers assemble the door.



The ceiling tracks are curved to fold the door panels as they rise.



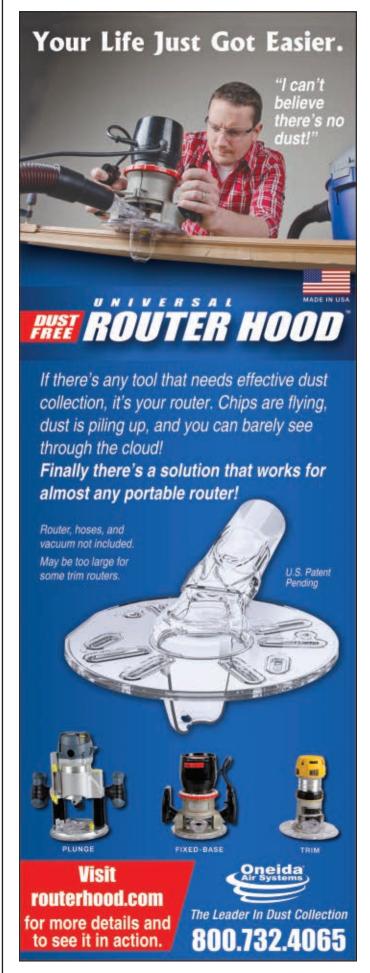
The ceiling tracks are suspended by slotted angle brackets mounted to the ceiling. The workers were able to reuse the existing angle supports left from the old garage door.



Torsion springs operate with a controlled, steady motion as the garage door opens and closes.

The torsion springs are mounted above the door on a center bracket.





DOUBLE DOUBLEWISTONVISION



Winding the torsion spring requires using 18-in. winding bars made from 1/2-in. diameter cold rolled steel (which is not a typical toolbox staple).



Drums at each end of the torsion-spring bar hold the cables that help lift the heavy door



The top panel of this door includes the window design.



PDS800 NEWTON DC-POWERED GARAGE DOOR OPERATOR

In pursuit of the quietest door operation available, homeowner Jeremy Hollingsworth upgraded his old door openers to the PDS800 models from Precision Overhead Door Service. These energy-efficient, DC-powered operators run at an AC-equivalent speed. The DC drive

motor features soft-start and soft-stop for smooth, quiet, long-term reliable performance. The efficient design results in ongoing energy savings, and if the obstacle-sensing beam is crossed when the door is closing, the door reverses to fully open. Linear remote controls operate over a long range and employ high-security technology. Plus, the built-in 100W MAX light illuminates the garage for five minutes every time the operator is used. Precision offers a lifetime warranty on the motor, the belt and the labor. Visit precisiondoor.net.





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The door-opener is installed along the center of the opening and is wired to sensors at the bottom of the door. The motor plugs into a receptacle at the ceiling.

The laser-triggered safety sensors raise the door if they detect an obstruction in the doorway.

An electronic keypad mounted on the outside of the garage can open the door using a security code.

The opener's lifting bracket is attached to the mounting plate,







and the new garage door is ready for testing.

Shown here are the new doors after installation. **EHT**





How Easy Is It To Install These Three Gutter Guards?*

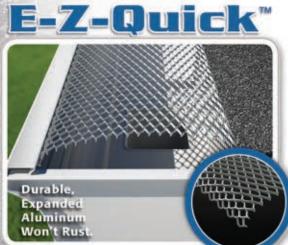
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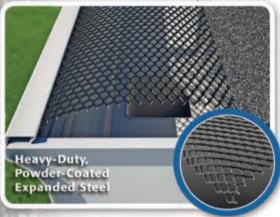


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By Matt Weber

he best way to protect the look and performance of outdoor wood is to coat it with preservative. No matter what type of wood you have, whether it's pressure-treated lumber, cedar, cypress, redwood or even a high-end exotic hardwood, staining and sealing outdoor wood is the best way to protect it from the elements

COATING TYPES

The most common outdoor wood coating is an exterior-grade penetrating stain. These water-repellent preservatives include a mildewcide, and some products contain ultraviolet light absorbers that protect from sun exposure. Available in both oil- and water-based formulations, the resins penetrate wood pores to provide pigment and block out the damaging effects of weather exposure while allowing the natural woodgrain and texture to shine through. The wood will look different after application but will feel the same to the touch.

The second category is a film-forming sealant that bonds to the surface of the wood like paint or shellac. Pigments are added to change the wood color and add UV protection. When applied to sanded surfaces, these products can provide a high-gloss furniture look, while still allowing the natural grain to show through. Available in oil- or water-based finishes, they form a durable beautiful, satin surface with a smooth-to-thetouch finish. However, they can only be maintained with another coat of the same film-forming sealant. If you want to switch to a penetrating stain, the old film-forming sealant will first have to be sanded off. Film-forming sealants should be avoided in areas exposed to foot traffic, because the abrasion can wear through the film coating.

Outdoor wood coatings are typically formulated with either water or oil. Most water-based stain/sealants have tiny particles of pigment and resin that adhere to each other very tightly









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PROTECT YOUR WOOD FOR OUTDOOR LIVING



Prior to staining these new deck boards, we filled all knots and imperfections in the horizontal surfaces that would otherwise collect water during rain.

as the finish dries, similar to a patchwork quilt. With oil-based finishes, the tiny particles actually fuse together chemically into one large sheet-like substance, which achieves a harder finish and is less likely to develop an amber color tone. Examine the product's label for clues to the coating's quality, looking for any reference to "non-yellowing" properties.

Water-based finishes are generally heralded for their ease of use. Compared to oil-based formulas, they're easier to clean up, have a lower odor and are often less expensive. However, most water-based coatings require more coats and still don't last as long as their oil-based or "alkyd" counterparts, which generally provide more long-term, wood-preserving durability.

NEW WOOD

Allow new wood to dry before staining or sealing. Drying the wood is particularly important for pressure-treated lumber because the waterborne preservative leaves moisture in the wood. This is why fresh PT lumber often arrives wet from the supplier, and the moisture can impede the penetration of stains and paints. For best performance of paint and stain coatings, allow the treated wood to dry for 2 to 4 weeks prior to application. Estimating exactly how long treated wood will take to

dry is difficult, and a lot depends on how much time has elapsed since the treatment, the lumber's exposure to the sun, ambient weather, etc.

Wood with natural preservatives, such as Western Red Cedar, cypress and redwood, do not require as much drying time because the wood was never pressure-treated with a preservative.

Contrary to popular belief, new wood still needs to be cleaned to remove any "mill scale", which is a compression of the grain during the milling process that can cause the stain to float or run off without absorption. Clean the surface with an oxygenated bleach.

Here's another tip for new wood used for horizontal surfaces like decking and handrails: Fill any knots and imperfections with exterior wood filler. A low spot such as a porous black knot in a pine deck board makes a prime place for water to accumulate with no drainage. These are the weak spots in the armor of your wood protectant where pools of moisture will have the most time



To blend with the redwood-tone stain we intended to use, we chose a tinted exterior-grade wood filler that would closely match the finish color.

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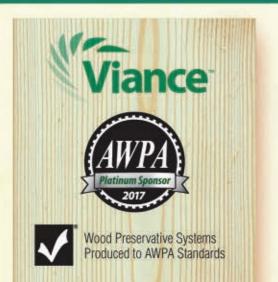
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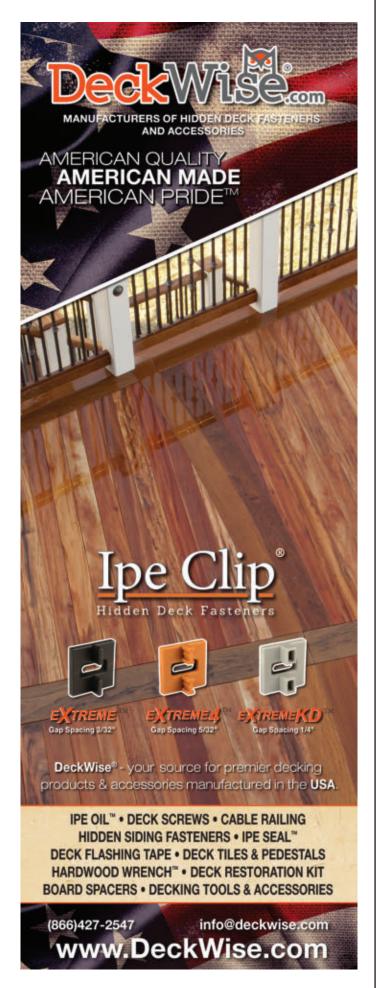
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PROTECT YOUR WOOD FOR OUTDOOR LIVING

to seep into the grain and work its damaging magic. So, patch these areas with a putty knife and non-shrinking exterior wood filler for a flush board surface with better drainage. Most home centers will have tinted wood filler to closely match your wood stain of choice.

WEATHERED WOOD

When wood is exposed to the sunlight, the ultraviolet rays can damage the wood fibers over time, causing the surface to turn gray, and this holds true for any wood species. The most direct way to renew the appearance is to sand or pressure-wash the surface. However, sanding can be very difficult and time-consuming, and pressure-washing can remove the gray but cause the surface to fuzz or splinter, posing a "touch" hazard for areas such as deck surfaces where people may walk barefoot. When using a power-washer, limit your pressure to no more than 1,000 or 1,200 PSI.

Some individual boards may be heavily weathered. Replace them completely, clean the existing boards, then stain them all to match.

WOOD WITH OLD STAIN

In general it's best to remove old stain before applying new stain, especially if changing products or colors. Old stain will usually show through the new stain, leaving blotchy spots in the finish. "Film-forming" stains must be completely removed before applying a penetrating stain. However, if you plan to stick with the same color and type of stain (and your deck is in decent condition) then you can probably get by with a thorough cleaning



Be sure to mask off any area you want to protect from the stain. Plastic drop cloths work well, but so do plywood sheets when protecting vertical surfaces such as a nearby wall.



After application, the new stain/sealer should bead water off the wood surface during rain, as shown here.



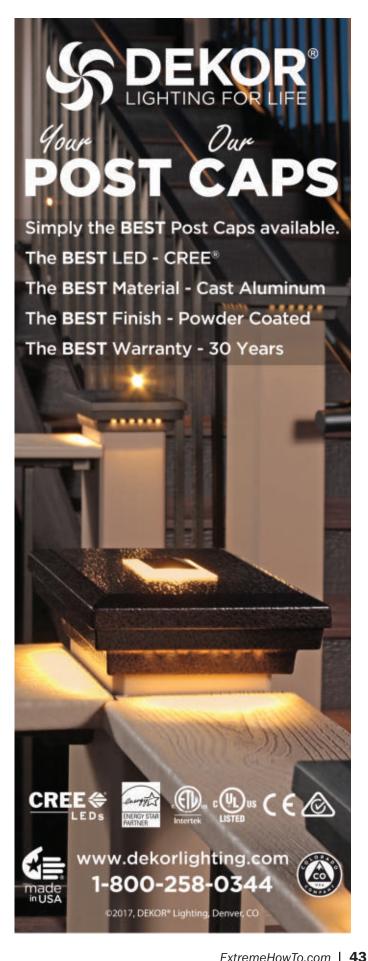
To organize your work on a complicated structure like a pergola, divide the various components and stain those components together in groups.

and a fresh maintenance coat. As always, refer to the manufacturer's recommendations for best practices.

If there is a buildup of old stains on the deck, then you may need to remove it with something stronger than an oxygen bleach cleaner. Stain strippers are more caustic, but they remove most weathered stains in a single application. Small, stubborn spots of stain can then be removed with a hand sander once the deck has dried.

CONDITIONING

An often-overlooked step for outdoor staining projects is the application of a wood brightener. These chemical agents open the woodgrain to improve penetration of the stain and help restore the appearance of weathered wood to a like-new condition. The product can simply be sprayed onto the wood



PROTECT YOUR WOOD FOR OUTDOOR LIVING



During application, try to work in the same direction as the wood grain.

surface, given a few minutes to work its "magic" and then rinsed off, requiring very little labor.

After using any chemical treatment to clean and prepare the wood, use plenty of water to completely remove all traces of the products—and then allow it to dry prior to stain or sealer application.

APPLICATION

Always thoroughly mix the stain to evenly blend the solids and ensure a consistent color tone throughout the project.



Armstrong-Clark is a stain I use often because it seals the wood well and can be applied in direct sunlight.

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BoWrench is available in two models, the Original BoWrench, and the Universal BoWrench (above), which adjusts to larger-sized joists and includes tongue & groove accessory.





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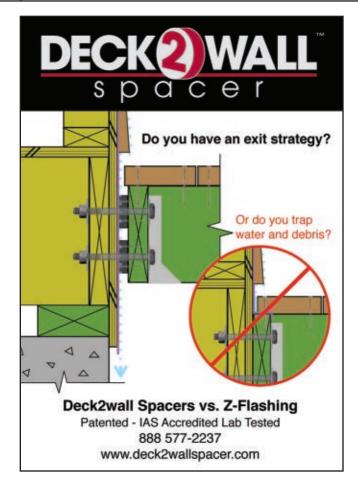
PROTECT YOUR WOOD FOR OUTDOOR LIVING

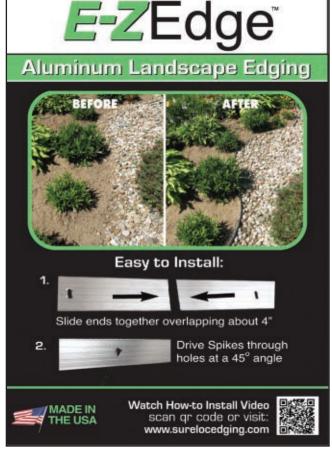
For both horizontal and vertical structures, brushing is the best method for stain/sealer application because the bristles push the product evenly into the woodgrain to increase absorption. Using a sprayer or roller can apply the stain more quickly, but both of these methods leave much of the stain on the surface without adequate penetration into the pores. If the product doesn't adhere well it can wear away unevenly, so you should still back-brush it into the woodgrain for the most consistent appearance and best protection.

Finally, here's a quick note on the use of staining pads. I love the idea in theory: apply the stain in an upright position using an extension pole while simultaneously working the stain into the woodgrain. The trouble is that



For the best stain/sealer penetration into the wood grain, we recommend always back-brushing the stain into the surface, even if it's initially been applied with a sprayer or roller.





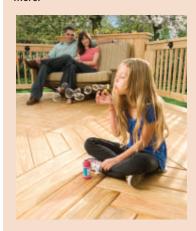


PROTECT YOUR WOOD FOR OUTDOOR LIVING

I've experienced a lot of trouble keeping the sponge pad on the applicator, almost as if the oils in the wood stain were dissolving the glue on the pad. After the pads have detached, I've even tried to reattach them to the applicators using zip-ties, but that just leads to a lot of cursing and aggravation and simply does not work. So, I don't personally use staining pads because I can't find one that lasts. But I'd like to be proven wrong. If there's a manufacturer out there who makes a better staining pad, then please send one to the *Extreme How-To* staff and set us straight. **EHT**

84 LUMBER INTRODUCES ECOLIFE TREATED WOOD

Now available at 84 Lumber Co., one of the nation's leading lumber dealers, Ecolife Stabilized Weather-Resistant Wood is ideal for aboveground outdoor applications in decks, fencing and similar projects. Ecolife integrates a wood preservative with a built-in stabilizer that keep boards straighter and resists twisting, warping, cracking and checking. Ecolife is fully compliant with American Wood Protection Association (AWPA) standards and International Building Code (IBC) and International Residential Code (IRC) codes for most deck projects. Viance, the producer of Ecolife, offers a Lifetime Limited Warranty on above-ground preservative treatment, which includes wood framing members that are critical to the safety and performance of the structure, including joists and beams. For common deck applications, Ecolife is a more cost-effective option when compared to products treated for ground contact use, and is still the best option for outdoor projects when used appropriately. Visit www.treatedwood.com to learn





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It's summer time and we know you're ready for that backyard BBQ with all of your friends. The last thing you want is an old, weather-worn deck ruining the fun. With Ready Seal's wood stain and sealant you can spruce up your wood and give it some new life and luster. Using a single product, you can beautify your backyard landscape and protect your deck from all outdoor elements, including the scorching sun rays of summer.

Whereas most wood treatments involve two applications of a stain and protector, Ready Seal offers a beautiful stain and durable seal in one easy step. Ready Seal has created the perfect blend of treatments to provide the best preservation for all outdoor wooden structures. It penetrates deep into the interior fibers of the wood and creates a protective boundary, unlike other stains and sealants that create rigid exterior films that lead to peeling, cracking, chipping and flaking.

The outdoor 2-in-1 product is available in 7 different shades: Natural Cedar, Golden Pine, Light Oak, Pecan, Dark Walnut, Redwood and Mahogany. It may be used to reclaim and protect your old and worn decks, fences, gazebos, outdoor furniture and any other exterior wood projects. Using a roller, paintbrush or pump sprayer, Ready Seal can be used to turn any backyard eyesore into a flawless masterpiece. Learn more at www.readyseal.com.



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CUSTOM COMBO

By Rob Robillard

storm door is very much part of a home's curb appeal. We were recently asked to replace an existing French-style combination screen and storm door on a client's house. The existing door was constructed of pine and had metal clips that held the screen or storm panels in place. Both screen/storm panels would overlap the opening and protrude from the door's edge. Needless to say, this was not an attractive solution. We knew there was a better way.

CHOOSING MATERIALS

An attractive and durable storm door needs the ability to withstand the toughest conditions: heat, cold, wind, rain, snow and sun, not to mention humidity. As a result, when considering which material to use, we were concerned with two factors:

- Durability
- Stability

To ensure you're building a strong door, make sure to use mortise-and-tenon joinery and weatherproof, water-resistant glue. Also make sure you're using a rot-resistant material. First, we looked to use rot-resistant wood, such as red or white cedar, teak, mahogany or white oak. With any species, look for rift- or quarter-sawn boards, indicated by straight grain running end-to-end. Rift-quartered boards are most stable.





CUSTOM COMBO



For this project, we ultimately chose Accoya® wood, based on a recommendation from a friend at our local mill shop. Accoya wood is the result of decades of research and development that has brought together a proven wood modification technique and leading-edge patented technology—acetylation—to create a high-performance wood, ideal for outdoor use and challenging applications.

SIZING THE BOARDS

The existing doors measured 1-1/8-in. thick. To make new doors that matched this thickness, we needed to purchase 6/4 Accoya boards, which measure 1-1/4-in. thick. To get the exact same 1-1/8-in. thickness, we milled these boards down in our thickness planer.

A thickness planer makes your boards uniform with two parallel faces, and will ensure the door boards will line up flat, with equal thickness from end-to-end. Having stock that is exactly the same thickness will avoid having one board un-evenly mating to the other, which looks terrible.

Select the straightest, best quality boards you can find for this project.

SOURCING THE SCREEN/STORM PANELS

Storm and screen panels can be purchased cheaply enough that it's not worth your time to make them yourself. Plan to pay about \$45 for the screen panel. The storm panel costs more, because building codes require that it be made from tempered or safety glass.

Once our doors are built they're routed to create a rabbet that accepts a recessed screen/storm panel. We used custom-built screens and dead-light panels with aluminum frames purchased from a company called Harvey Industries. These panels will insert into the rabbet and fit flush to the doors' faces.

For this project, we used a highperformance wood called Accoya which has been modified by a process called acetylation for exceptional dimensional stability, durability, and paint retention in outdoor environments.

The screens are available with fiberglass insect window screen, aluminum insect screen, solar insect screen, or 20x30 mesh nosee-um window screen for protection from tiny insects, as well as pet-resistant screen material.

The aluminum frame size options include 5/16-, 3/8- or 7/16-in. thick by 3/4-in. wide. Frame color choices are white, bronze, silver, tan and champagne. A variety of attachment hardware is available to meet most applications.

We prefer using the 7/16x1-in. HD window screen and a storm panel frame made of heavy .025 mill thick, roll-formed aluminum. It is cambered (slightly bowed) to retain screen tension when installed.

To secure the frames in the door rabbet, we use turn clips or Marvin Window turn buttons and stainless steel screws for attachment.



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CUSTOM COMBO

Materials Used

- 5 8-foot 6/4 x 5" Accoya boards
- 1 6-foot 6/5 x 8" Accoya boards

- 4 screen and storm panels
- 8-12 stainless steel clips
- · Festool Dominos
- Waterproof glue

Tools Required

- Table saw
- · Thickness planer
- Miter saw
- Festool Domino Cutter
- · Router and rabbet bit
- Corner chisel
- 4-ft.pipe clamps
- · Waterproof glue

JOINING THE STILES AND RAILS

The vertical members of the frame are called stiles while the horizontal members are known as rails. This is a common method of constructing doors, and we used Festool Dominos to make these connections.



We squared up the wood stock and adjusted the thickness on a jointer/planer.



We cut the rails and stiles to length with a miter saw. A wood stop-block screwed securely to the outfeed table made a handy jig for making the repetitive cuts.

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FACT:

KEEP YOUR OUTLETS CLEAN AND WATER WILL ALWAYS FLOW OUT OF YOUR GUTTERS, EVEN IF THERE IS DEBRIS IN THE REST OF THE GUTTER.

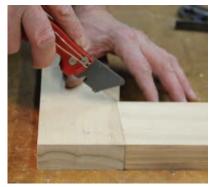


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Next step is to double-check all the sizes.



Line up the frames to mark the Dominos.

USING THE FESTOOL DOMINO JOINER

For the door joinery, I used the Festool Domino XL DF 700. The Domino XL offers an innovative solution to larger scale joinery like this door. The Domino performance is unmatched with its precision performance. The



The mortises were cut in the joints with a Festool Domino cutter.

Festool Domino XL cuts an oval mortise, allowing a solid hardwood tenon to be installed for joining parts together. Similar to a biscuit joiner, the Domino installs a floating tenon joint.

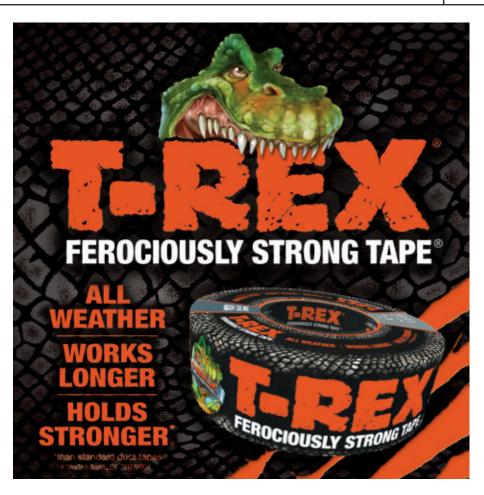
The end result is a solid and durable joint, fabricated in a fraction of the time it takes with traditional methods or stationary equipment. The Festool Domino Joiner is simple to use, as well as fast and accurate. It allows you to install an expanded range of thicker, longer tenons for wood slabs, doors and gates, or furniture.

The Domino XL also lets you bring the tool to the work, greatly reducing setup time while simply and effectively producing full-sized mortise and tenon joints.



Hardwood Domino tenons are inserted into the mortises to bridge the joint.

I simply lined up the two parts designated to receive a tenon, made two corresponding, matching pencil marks, and cut the Domino holes.



CUSTOM COMBO



Apply exterior-grade wood glue to the end grain as well as the mortise and tenons of each joint.

Check for square during assembly.

ADDING AN ASTRAGAL

Most French doors have a vertical strip, called an astragal, that attaches to the leading edge of the active door. This molding is on the exterior and attaches to one of the doors and overlaps the other, covering the vertical seam. Often, the non-astragal door will have threshold and/or top slide bolts to lock and secure it in place. Locking these slide bolts allows you to go in and out of the other door while the first stays in place.







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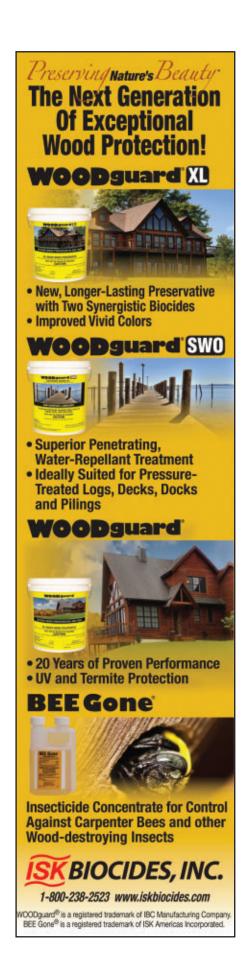












CUSTOM COMBO



Clamp the frames securely and let the glue dry.



We used a router to cut a rabbet into the door frame.



The router bit left a rounded inside corner.



To square the corner, we used a hammer with the Porter Cable Corner Cutter.

I sourced a Mahogany Astragal from a local mill shop and glued it to the leading edge of my working door. Although French doors typically open inward, requiring



Sand the joints flush.



We added a strip of astragal molding to one of the doors.

the astragal to be installed on the outer edge of the inactive door, on this project the French doors opened out onto a patio. We thus installed the astragal onto the active door.

GLUING AND CLAMPING

You'll need three 4-ft. clamps for gluing: for the top, middle and lower joints.

It's always smart to dry-fit your parts first and correct any mistakes before spreading glue on everything—trust me, I've learned this lesson the hard way! Once you're satisfied with the fit, remove the Dominos, apply glue to all parts, and assemble. Prior to tightening the clamps and walking away, take some time to check for square.

I use two methods:

- · A framing square
- Diagonal measurements:
 Measuring for equal diagonals

is an old, time-honored method for squaring up frames and other projects.

When satisfied that the assembly is square, and the adjoining parts are reasonably flat to each other, tighten the clamps. Remove the squeezed-out glue with a damp rag before it hardens. I use a throw-away brush to apply glue to the Dominos as well as inside the Domino holes.

ROUTING THE PANEL RABBET

We decided it would be easier to rout our panel rabbet after the door was assembled. Because the router cannot achieve sharp corners, we used a Porter-Cable 42234 Corner Chisel to achieve sharp inside corners.

The corner chisel is a springloaded chisel that is more efficient than a hand chisel, and ensures perfectly square corners.



Dry-fit the door, using shims as necessary.



Mark the reveals of the door and make any final adjustments so the doors fit.



Use a circular saw with a rip guide to ensure straight cuts on the door frame.



Carefully mark hinge locations.

It has a 3/8-inch cutter edge, and creates a 90-degree square corner when simply placed on any corner and tapped with a hammer. The Corner Chisel self-aligns, and is typically used to square the corners of hinge and door-lock recesses. It was perfect in this situation. This innovative tool saves a ton of time on a project like this.

HARDWARE

The client did not want closers on these doors, for aesthetic reasons, and also wanted us to use brass hardware. After a little research, I came across a website called Van Dykes Restorers where we spied solid brass self-closing, storm-door hinges that operated with a 3/4-in. spring.

I was excited at the option of being able to have these doors self-close, but as often happens in retrofitting projects we quickly figured out that these hinges wouldn't



CUSTOM COMBO



A trim router makes short work of the mortise.



The trim router and a wood chisel leave shallow but accurate cuts for the recessed hinges.

fit: he door thickness projected past the door trim. In order for the hinges to work, the door and trim must be flush.

So, Plan B meant using the solid brass butt hinges and re-using the old jamb mortises.

For the door knobset we went "old-school," purchasing and installing a solid brass knob-to-lever screen door mortise latch set. This required us to use a Forstner drill bit and chisels to create an old-school mortise for the mortise lock and latch mechanism to fit into.

We also acquired solid brass slide bolts to install on the top and bottom of the stationary door to keep it locked in place.

HANGING THE DOOR

When fitting the door, I usually llow 3/16 inch clearance on the vertical widths and 1/4 inch at in the top and bottom. Consider cutting the door bottom at a 12-degree angle to match the

threshold. We accomplished this with the Festool track saw and rail guide. The saw and guide ensure a straight, cleanly cut line. (If you don't have access to a track saw, a circular saw with a rip-guide clamped to the door will also work.)

I built the doors to fit the opening, so once we were ready to install them, I knew we would need to trim them to fit. With the doors held in the door opening with shims we marked the reveals and existing hinge mortises and transferred those measurements onto the door slabs.

When fitting the hinges, with the bottom shims in place and holding proper reveals, slide the doors to the jamb that will receive the hinges. Mark three hinge locations on both pieces on the door and jamb.

Using a hinge as a guide, we held and marked the hinge profile on the door edge and scored this outline with a utility knife. Scoring



Avoid using a power drill on brass screws and instead tighten them by hand with a manual screwdriver.



The homeowner chose a solid brass knob-to-lever latch set.

the door prevents tear-out from the router bit. A trim router is then set to the exact depth of the hinge and is used to cut out the hinge mortises. I like the router as it provides me with a consistent hinge depth setting and is fast and efficient.

Note: Sometimes after hanging a door on the new hinges, the doors need adjusting to fit. When this is the case, I use a power planer or block plane.

We again used the hinges as a template and predrilled all the hinge holes, and then installed the screws. I do not recommend using a drill or impact driver to install brass screws; they'll snap at the screw head. Use a screwdriver and install them by hand.

The last step is to install the latch, striker plate and door-slide bolts. Unfortunately, the old slide-bolt latch place left a large hole (scar) in the oak threshold, which had to be patched prior to installing the new latch strike plate.

Watch out when you are purchasing and installing handles for your French doors so they don't interfere with the closing of the interior door. Some doorknobs stick out too far and will prevent the screen from closing properly.

Once we had a good fit, we removed the doors and brought them into the shop to re-prime the cut ends and install the final coats of paint.

FINISHING THE DOOR

Ninety percent of a great paint job is prep. The more time spent preparing this door for paint, the better. I sand the door to 80 grit in the shop, but a painter should bring that to 120 or 220 grit.

I recommend a coat of quality primer, followed by two coats paint. Be sure to paint all sides and edges of the door to protect against moisture and movement. I also recommend sanding in between coats for a better paint finish.

COST

Plan on spending \$300-400 in materials, plus \$40-50 per screen (4) and \$100 per storm panel (4).

In the end, building this combination French screen door will cost approximately \$900.



Building your own custom door is not only rewarding, it allows you to create the style door you want, using the best materials and saving you money on a carpenter's labor. If you plan on tackling this project yourself, plan on at least four days for labor to do the entire project.





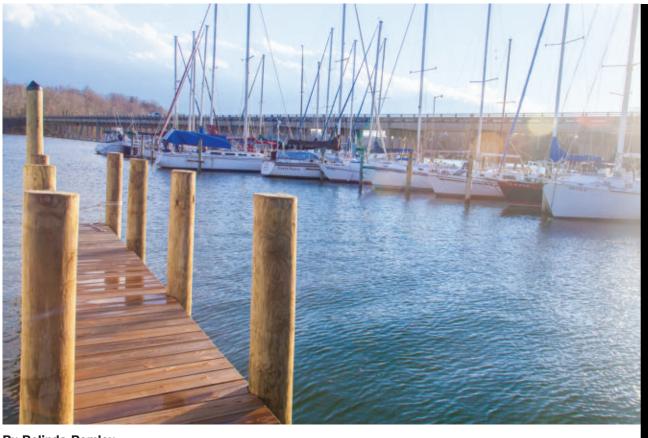
Set the storm and screen panels into the rabbet so they mount flush with the door face.





Wood — Nature's Sustainable Building Block

Today's treated wood is harvested more responsibly than ever.



By Belinda Remley

where. And it's no wonder. Wood is, after all, nature's sustainable building block—a renewable resource that has excellent workability, whether a project is as simple as a backyard creation or as complicated as a mid-rise building.

But where do wood products come from and does the manufacture of wood products deplete this precious natural resource?

According to data from the USDA Forest Service, United States forestland is roughly as abundant today as it was 100 years ago.

According to the USDA Facts and Trends from 2012, a third of the United States is covered in forests

and of those forests nearly 60 percent are privately owned, managed forest lands. The wood from these forests is used for everything from building materials to paper and mulch.

The wood preserving industry, one of the many that uses this abundant natural resource, takes very seriously its responsibility to ensure the future of our forests by sourcing from sawmills that use trees from managed forest lands. Some treaters even take this stewardship role a step further, using every part of the tree that comes into their facility.

"We are creating a sustainable product from a renewable

resource," says Sam Snead, plant manager for Wood Preservers Inc., a wood preserving company located in Warsaw, Virginia. "Not only are we providing a valuable commodity for both residential and industrial consumers, we are doing it responsibly."

Wood Preservers is nestled in historic Virginia and has been providing wood products regionally for more than half a century. Owner Morgan Wright says his employees understand the need to care for forests in their community by using an approach of accountability in every step of the process. "We play our part in creating a harmonized chain of production



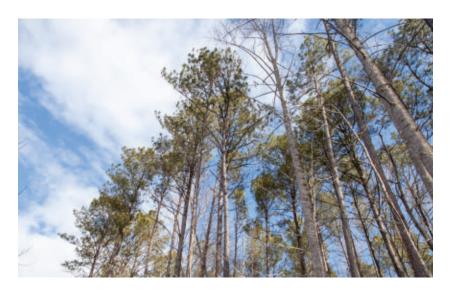
MATERIAL MARKET

from tree to utility pole or marine piling or lumber."

For Wood Preservers, the production process begins long before the lumber gets placed onto trams and pushed into a wood-treating cylinder. It starts in the forest with a partnership with local landowners to help manage their forests. The process moves from forest to treating plant as trees are harvested and prepared for treatment. Finally, the prepared piling, lumber, poles, etc. are preserved during the treatment process for long-lasting protection from termites, marine organisms and fungal decay.

HARVEST & GROW

As a part of their forestry management, Wood Preservers helps nurture trees from seedling to



harvestable 30-year-old mature pine. There is a reason the forests are referred to as managed. Brad Croxton, professional forester who has worked with Wood Preservers for more than 25 years, explains that maintaining that partnership with private landowners is very important to Wood Preservers and the community, since the treatment company actually maintains the private property with the





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intention to harvest the trees planted on it. "Because of our vested interest in the land," says Brad, "we consider ourselves custodians of the forests." Much like with crops such as corn or wheat, trees are planted and cared for until they are ready to be harvested. The process of growing a forest begins for Wood Preservers during the months of January through March when they plant seedlings on privately owned forest land that has previously been harvested. Seedlings are planted at the rate of 400 per acre. The southern yellow pine trees (specifically loblolly in the Virginia area) grow alongside underbrush and hardwoods for

about 18 to 20 years.

"Unlike other species, pine trees need sun to grow," says Brad. "So as a tract of forest celebrates its 18th through 20th anniversary, we make plans to do a thinning. This means that we go in and clean out the forest, leaving about 150 trees per acre. We take what we have thinned and either use it to make building products or we send it as wood chips to be manufactured into paper products."

The remaining trees continue to grow until they are 30 years or older when they are finally harvested. During the growth process, trees improve air quality by removing carbon dioxide from the atmosphere. "As we harvest our pine trees," says Brad, "we also harvest the hardwoods, which are sold to other manufacturers for appropriate uses. Our goal is to use absolutely everything we take out of the ground." All of the material is put into piles as it is harvested by a giant machine called a skidder. Piece by piece the trees are merchandized by sorting into piles based upon sizes appropriate for various end uses.

After weeks of harvesting, what is left is an empty tract of land that will sit void of any plantings for less than a year. As with land used for other crops, the soil will rest and then be replanted with another crop of trees. The "unmerchantable" clippings and underbrush that have been cut along with the trees serves as a composting blanket on the tract of





MATERIAL MARKET

land to enrich the soil, and thus avoid the use of fertilizers.

"Some people call it clear cutting," says Brad. "However, what we do is harvest the land and replace what we have taken. We will nurture our crop of trees the way a cotton or soy farmer nurtures his crop." He adds, if the forest was not used for growing and harvesting trees, it might be used for a different crop or cut down completely to make way for building growth.

Brad explains that as responsible forest managers, Wood Preservers follows strict guidelines set up by the Commonwealth of Virginia as well as the private landowners. "For example, if a tract of land has a stream or other body of water, trees around the water are flagged and will remain uncut. This protects and maintains the quality of surface water that ultimately feeds the Chesapeake Bay."

He further says that during the growing process, the privately owned land is home to wildlife and used by birdwatchers, hikers, hunters and fishermen. "There are always tracts of land in different stages of development. It is important to maintain the beauty of the natural landscape during the growth cycle and always have forests to be enjoyed."

READY FOR TREATMENT

Once the trees have left the forest they arrive at the manufacturing plant to be debarked, planed, cut, dried and treated for use as building materials. Each tree is carefully reviewed to determine its most efficient use – should it be a pole, piling, timber or lumber? Once the end use has been chosen for the trees, they are cut and readied for treatment. Wood Preservers operates five treating cylinders nearly 24 hours a day,

treating with a variety of Lonza Wood Protection's preservatives. Just as with every other segment of the process, Wood Preservers recycles and reuses during treatment. Wood is placed on dedicated rail systems and is moved into the cylinders where it is treated using a vacuum/pressure system that forces preservative into the wood. The preservative that does not penetrate the wood is drained back into work tanks to be used in another treating cycle. After the treating process, the preserved wood is removed from the treatment cylinders to sit on drip pads where any excess preservative is collected to be recycled back into the treatment process.

Although Sam says that things are different in the treating business than when he first started his career with Wood Preservers almost 30 years ago, the overall process remains the same. He explains that even though the preservatives have changed, Wood Preservers' commitment to excellence has not wavered. "As an example," Sam says, "our fixation chamber, a unique manufacturing process, helps to ensure the preservative does not leach from our Wolmanized® CCA-treated

wood. This gives peace of mind, especially to dock builders and contractors, because much of our Wolmanized Heavy Duty™ CCA-treated piling is used in contact with marine life when used in the water."

During each stage of the process from cutting the trees to creating a marketable product, the byproducts are saved to be used for alternative purposes.

"Nothing goes to waste," says Morgan. "For example, the tree bark is removed and uniquely processed to pine bark mulch. There is a specific time of year that the market for mulch is in high demand. During that time we provide it to area landscaping companies and nurseries, as well as home improvement centers." Other parts of the tree that will not be used in the treatment process are ground up and sent to paper mills, or used as animal bedding for farmers.

Wood Preservers carries the cradle-to-cradle mantra through to their treating facility. "We use sawdust to fuel our kiln, which creates the steam used to dry our wood, to mix with our Dricon® fire retardant, and in our fixation chamber," says Morgan. "We are



the only company that I know of in the United States who uses a fixation chamber to lock the Wolmanac® CCA preservative into the wood, making it very leach resistant."

The process continues every day in managed forest lands, sawmills and treating plants around the country and throughout the world. Forests are harvested with a purpose for every part of the trees removed. Poles, piling, dimensional lumber and more are cut and/or preserved to be reliable, strong, beautiful products. "You know," Brad says, "there is a huge demand for wood in the United States. There always has been. We need this natural resource for so many things because it is flexible and easy to work with. And, with preservative treatment, wood has



a long lifespan protected from termites and fungal decay.

"We use wood every day, everywhere, whether we realize it or not. Because of its sustainability, wood will continue to be desired worldwide for many different applications. And, now we have more properly managed forests than ever in our country's history. That way, my children and my children's children can build with wood and will also enjoy the beauty of this harvest as we have done." **EHT**

Editor's note: Belinda Remley has been promoting the wood industry for more than 23 years. She is a Marketing Communications
Specialist with Lonza Wood Protection, a leader in wood preservation.



Concrete Step Rehab

Repairing Faux Stone



The front steps of our project house had two problems: They were ugly and dangerous. We needed to make them pretty and safe.

The front wall and staircase of the split-level home had genuine flagstone veneer, but the stair treads were made of concrete faux stone. Since natural flagstone usually has an uneven face, the tread stones were likely molded from concrete to ensure they had a flat, even surface for people to walk on. However, over the decades the driving rain had pounded down onto the face of the treads and worn away the cement. The rain damage allowed water to seep

inside the treads, freeze (and expand) during winter, and essentially demolish the steps from within. The steps deteriorated to the point where a visitor stepped on a lower tread, and it crumbled beneath them. Luckily nobody tripped and injured themselves, but this repair could be delayed no longer. Here's how we tackled the problem.

PHASE 1: STONE REPLACEMENT

Our first problem was the lowest stair tread where some of the concrete had entirely disintegrated, fallen out and was beyond repair. Our only course of action was to chip out the remaining material and replace it completely.

Using a hammer and chisel we chipped away at the problem concrete until we hit solid material—about halfway through the width of the tread. We then used a small handheld wet saw to define the edges through the solid concrete. After hosing out and brushing away the debris, we had a halfmoon shaped hole about 6 inches wide to fill.





One option was to build a form, whip up some colored concrete and pour a replacement stone to mortar in place. If that were to be our approach, then we should probably cut out the rest of the faux stone and mold the whole replacement using a single concrete color. That would be risky, though, because further demolition threatened to dismantle the

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PROJECT NEXT

surrounding steps and riser stones, and we did NOT want to rebuild the entire staircase; we wanted to repair it.

So, we tried our luck in a nearby creek and extracted an actual chunk of limestone from the mud bed. The rock had a fairly flat face and roughly measured the right size and shape (and even color) we needed. This is the type of out-of-the-box solution you won't find in a home-repair manual, so we had to get creative with how to fasten the stone into to the steps.

A quick trip the local home center produced the strongest adhesive we could find at the time: anchoring epoxy. This is a commercial-grade, fast-setting, two-part structural epoxy that's used for setting anchor bolts, threaded rods, railings and rebar dowels into concrete and masonry. Seemed like tough stuff, so we applied it liberally to the back and sides of the stone, but did not completely fill the edges joints to leave room for joint mortar.





After the epoxy dried, we caulked the joints around the stone with repair mortar to match the surrounding installation. The limestone patch ended up blending well with the flagstone, so the repair was a success. But that was only the first phase of our project.

PHASE 2: RECOATING THE FAUX STONE

Unless we fortified and resealed the other treads, we would soon be repeating the replacement procedure on the rest of the steps. To avoid this, the steps need to be repaired with a hard, durable cement coating that would bind with the existing concrete. The product also needed to be tintable, and we'd need to color the product in small batches to vary the tones and blend with the surrounding mixed-color flagstone.

After a little research we came up with an experimental recipe. The base was quick-setting cement, which comes in a bag that you mix with water. The cement was dyed with Quikrete Liquid Cement Color, which was added to the cement mix—and "a little dab will do ya" because



this stuff goes a long way. We chose two colors, Buff and Terra Cotta, which we combined in varying amounts to closely match the surrounding color scheme. When working with pigmented concrete, keep in mind that the

color will lighten once the concrete dries.

Our "secret ingredient" was an acrylic fortifier. The Concrete Bonding Adhesive & Acrylic Fortifier from Sika Pro Select is ideal for bonding new concrete to old. It's an important additive to enhance the bond on applications less than an inch thick, like this project. We mixed it into the cement as a supplement to the water (following the directions on the package).

Use only enough water to get the cement to the proper consistency, which should be something close to smooth peanut butter. To mix the product you'll need a bucket and powered drill equipped with a mortar paddle. Mix up only enough cement to use in about ten minutes, otherwise it will start to dry out and set up.



Prior to applying the repair cement, the old concrete surface should be cleaned of all foreign matter and loose materials. The bond will always be strongest if all smooth surfaces are roughened or etched, so we scrubbed the steps clean with a wire brush attachment in a power dill. Any dust must also be washed from the surface.







We then applied a new layer of colored cement over each individual tread stone, varying the color from stone to stone for a more natural look. The repair cement applies easily with a putty knife, and the thicker the coat, the more



We used two colors of concrete pigment called "Buff" and "Terra Cotta." The tread coating shown above has a little more Terra Cotta than some of the other stones, which gives it a more reddish hue.



durable it will be. However, tread elevation prevented us from raising the surface very high, so the coating stayed approximately 1/4-inch thick, and we feathered the edges thin near the mortar joints.

You can also alter the surface texture of the cement. As the product begins to set, use a small broom to roughen the surface if



you prefer a rough texture with better grip for walking. If, however, you'd rather have a smoother surface like that of weathered stone, then glide a wet putty knife over the moist surface to flatten the cement as it cures.

Although this is fast-setting cement, we still recommend covering it in plastic sheeting to retain moisture for the strongest cure.

Once all the repaired stones had cured for 48 hours, we coated the installation with a concrete sealer. We used Quikrete's Acrylic Concrete Cure & Seal, a clear acrylic coating that seals concrete and masonry surfaces from water, acids, grease, oils, food stains, salt and more. This is a thin liquid product that can be applied with a paint brush or roller.

After the sealer dried, the question remained: Would this repair last? Essentially, we had painted on a thin cement overlay,



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Mor-Flexx is elastic mortar that bends, stretches, and stays stuck right where you need it. It sticks to most surfaces, spanning a gap up to 3 inches wide. It won't slump, meaning you can apply it on vertical surfaces and not worry about it sliding down. Common surfaces for repair include stucco, stone, mortar in-between bricks, retaining walls, grout replacement along door thresholds, and the exterior of fireplaces. Mor-Flexx is heavily textured to blendin with these common surfaces. It's easy to apply, and can be blended with water on a foam brush or in a spray bottle. Mor-Flexx comes in gray or beige, but it's also paintable. It has a unique stop-flow plunger that prevents the caulking from flowing when you stop pressing the trigger on the caulking gun. Plus, it cleans up easily with water. Learn more at www.sashco.com.



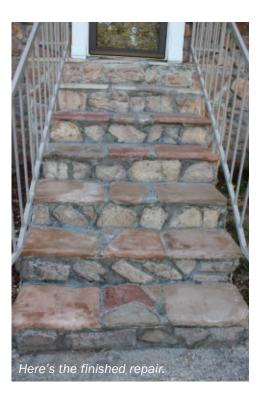
PROJECT NEXT

and I was afraid the new layer might delaminate from the old concrete and flake off.

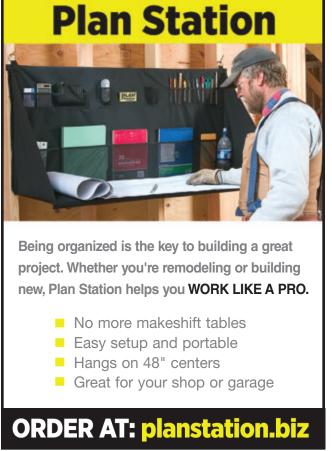
But so far (knock on wood), that hasn't happened. At the time of publication this repair is six months old and has survived rain and freezing temperatures. The look of the treads is much improved, and the structure underfoot is much stronger and safer, which makes for an overall better first impression of the home. **EHT**

After the cement fully cured, a concrete sealer was applied to the steps to protect them from water, grease, stains and more.











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The Rapidrill is a safety attachment compatible with most corded and cordless drills that converts a standard drill into a powerful drill press. Rapidrills' well-crafted design gives you powerful leverage when drilling through the toughest of materials. The unique gear ratio and versatile clamp enables you to apply even pressure at a perfect right angle, giving your drill bit a longer life and giving your hand drill an amazingly fast drill time. The



lightweight design makes it easy to use overhead, upside own, sideways, and in hard-to-reach locations. Rapidrill is as safe as it is tough, and with its specifically designed hand distribution, it will not only increase your leverage, but greatly reduce the amount of rebound that occurs when a drill bit binds. Use on stainless steel, thick and thin steel, plastics, masonry, wood and more. Rapidrill is used by fabricators, steel erectors, trailer manufacturers, custom mechanics and many others. Visit www.rapidrill.com.

SMARTWEDGE PRODUCTS FROM CALCULATED INDUSTRIES

Calculated Industries is now the exclusive North American Master Distributor for SmartWedge plastic shims, the innovative, practically indestructible, 100-percent plastic shims that can be used for installing doors and windows, framing, deck building and more. Reliable and easy to use, these shims have been popular in European housing construction for over 40 years. SmartWedge shims are made from durable polyethylene plastic, so they are immune to moisture and, unlike wood shims, they won't swell, compress or decay. Plus,

they will not split, even when they are fastened by nails or screws. SmartWedge Shims come in several styles, shapes and sizes for different applications, including the original 8-in. SmartWedge (that can be snapped apart and used as two 1/4-in. shims), plus Flat Shims, Balance Shims, SmartBlocks, as well as the CombiMax system of different shapes and sizes that can be used for blocking up floors and decking. Visit www.calculated.com/smartwedge.





SAFELIGHT FROM SNAPPOWER

The easy-to-install SnapPower SafeLight safely transforms your outlet into a child-friendly nightlight. Equipped with sliding outlet covers, it helps prevent children from electrical shocks and hazards. The sleek and energy-efficient design replaces the outlet's cover plate, requiring no wires or batteries, and leaves all outlets free for use. Visit www.snappower.com.

PRODUCTS

RYOBI 1600 PSI PRESSURE WASHER

The Ryobi 1600 PSI Pressure Washer is compact and lightweight, making it easy to move to various locations around the house and job site. Equipped with a powerful 13-amp electric motor, this unit delivers 1,600 PSI of force for quick cleaning of driveways, decks, windows and patio furniture. This pressure washer features a durable and compact rugged roll-cage frame design making it easy to transport and



also protects the motor housing and keeps the unit upright. The on-board detergent tank allows for easy soap application and offers hassle-free cleaning by eliminating the need to drag a bucket and hose behind you. This pressure washer also has on-board accessory storage for added convenience, a professional metal spray wand with Quick Connect coupler for easy nozzle changes, and a bonus Turbo Nozzle for up to 50 percent more cleaning power. It's backed by the Ryobi 3-year limited warranty and is guaranteed to deliver results for years to come. Visit ryobitools.com.

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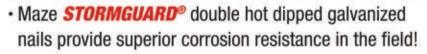




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