

■ Special Outdoor Project Issue ■ Multi-Tool Review—13 Models ■



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A dozen tips and jigs
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N° 252

March/April 1999



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A Showcase Deck

Learning how we built this impressive multi-level deck will give you the confidence to design and construct your own.

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Routed Address Sign

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Using A Circular Saw

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When it comes to topping off your deck, there's an abundance of materials to choose from.

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Multi-tools are becoming all the rage. So which one should you buy? Here's what we found while handling the various models and options.

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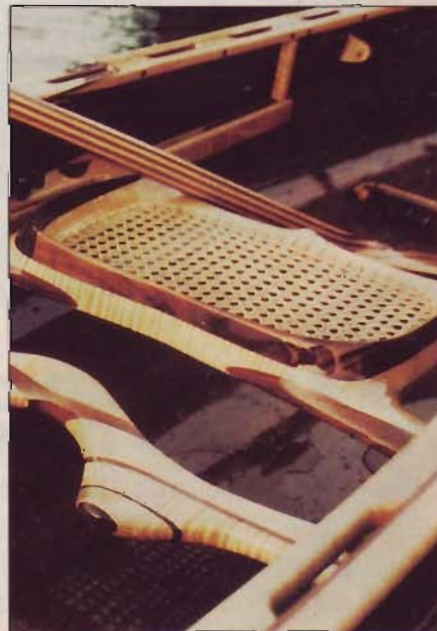
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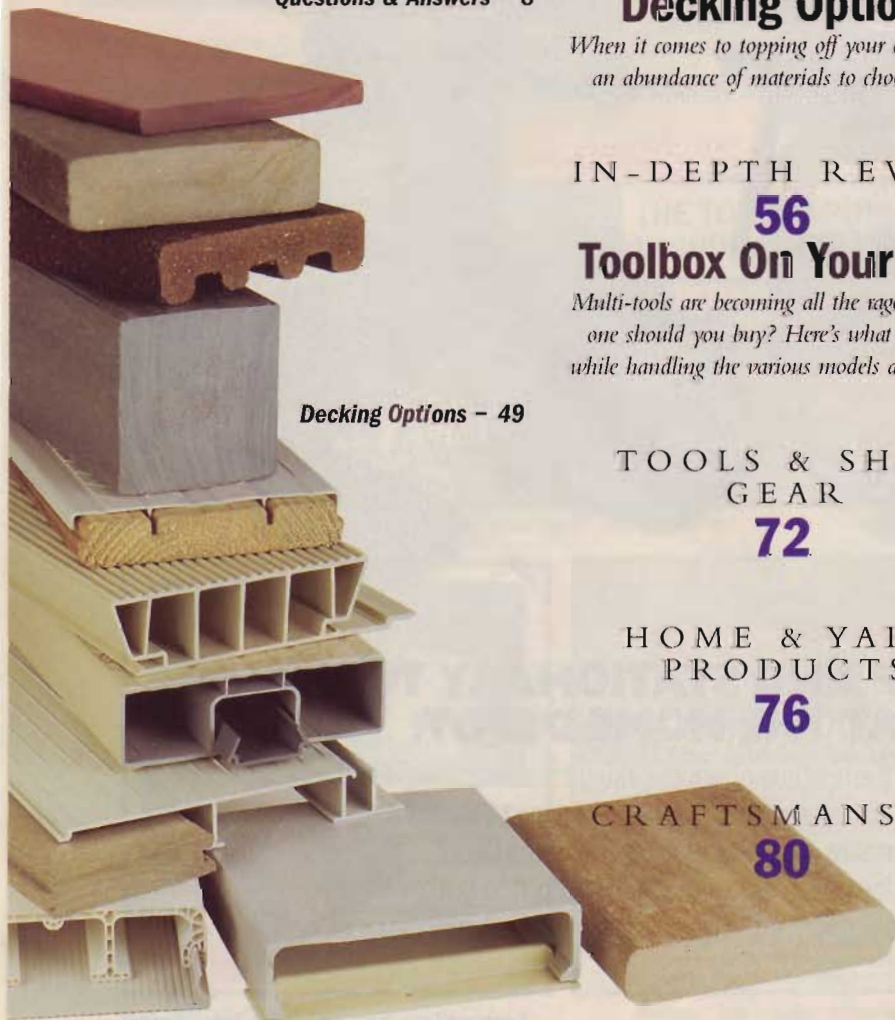
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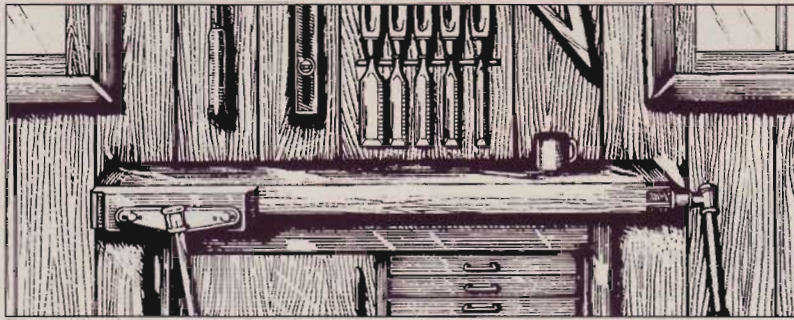
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LETTER FROM THE EDITOR

Magazine Improvements

Anyone who has ever dreamed up an idea and followed through on it knows how devilishly difficult perfection can be. No matter how much you love the outcome, in time flaws are revealed — an impatient moment comes back to haunt you, you find things you could have done better, and a few you wish you could do over.

Much like a woodworking or home improvement project, creating a magazine offers plenty of room for criticism. After every issue we take a hard look at *Workbench* to see where it needs a nudge or a tuck toward becoming the best magazine possible. Plus, we regularly hear constructive comments from some of you. It's a never-ending process, though I believe it's a healthy one. By staying a little bit dissatisfied, improvements have a better chance of finding their way into the light.

And that brings us to this issue of *Workbench*. If you open your magazine you'll see a new look that's classic, easy to follow, easy on the eyes, and more reader-friendly. One guy on the staff said "It's like looking at a clean, pressed white dress shirt." We're still the same old *Workbench* filled with woodworking and home improvement projects, material and tool information, and skill-building technique articles. And now I hope these latest improvements make the time we spend together even better.

Chris Inman, Editor

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Questions & Answers

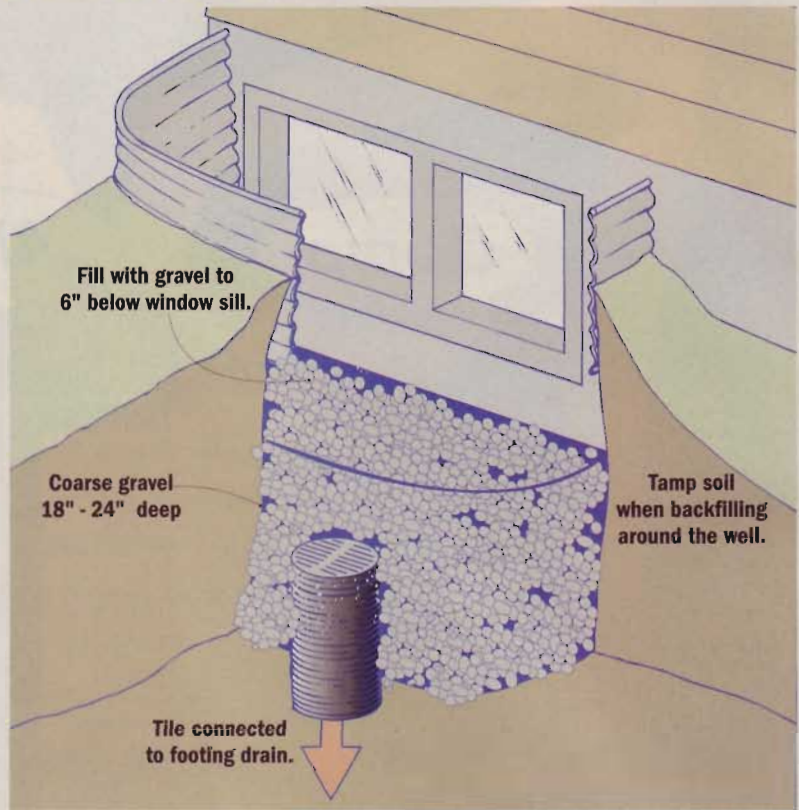
Adequate Drainage Helps Cure Flooding Window Wells

Q The window wells on my home partially fill with water during heavy rains, allowing water to leak into my basement. My home sits somewhat higher than the surrounding homes, so drainage shouldn't be a problem. I've even tried window well covers. Any suggestions?

Ron Kleckner
Itasca, IL

A Begin by making sure your gutters and downspouts are clear of debris and carrying water well away from your foundation. Also, make sure the ground slopes away from the house. If the problem persists, you'll need to do some digging — literally.

Window wells should be installed so that any water that collects can drain away long before it reaches the level of the window. For a typical installation, dig deep enough to allow 18" to 24" of coarse gravel to be placed in the bottom of the well. You want the top of the gravel roughly 6" below the level of the window sill. This in effect creates a dry well that holds a fair amount of water below window level until it can soak away into the soil.

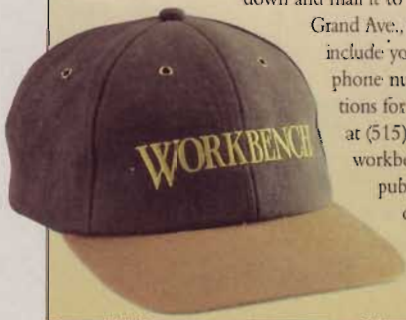


Whether you have metal, masonry, or pressure-treated wood forming the well opening, the soil around the outside of the well needs to be tamped to help prevent surface water from infiltrating into the well. If these measures don't

solve the problem, you may need to install a plastic drain tile in the bottom of the well that carries water downward to the foundation drain. The top of the vertical drain tile should have a grated cap and be covered with 6"-12" of gravel.

SHARE YOUR QUESTIONS!

If you have a question about woodworking or home improvement, write it down and mail it to WORKBENCH Q&A, 2200 Grand Ave., Des Moines, IA 50312. Please include your name, address and daytime phone number in case we have any questions for you. You can also reach us via Fax: at (515)283-2003 or by E-mail message at workbench@workbenchmag.com. If we publish your question, we'll send you one of our handsome and fashionable *Workbench* caps.



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Table Saw Should Anchor New Wood Shop Purchases

Q I want to get more involved in woodworking and have set aside about \$3,000 to outfit my shop. Any suggestions on which stationary tools I should get first and how much I should spend on each one?

Tony Riggs
Fremont, CA

A First, I have to tell you there are a bunch of us here who envy your position. What you buy depends somewhat on what you want to build, but given a \$3,000 cap, I'd invest first in a good contractor's saw with an accurate fence that's easy to adjust

(roughly \$600-\$800).

Next, I'd buy a heavy-duty 1/2" collet router (2-3 hp) and build or buy a table to mount it under (\$200-\$300 for the router, another \$100 for the table). Don't skimp when you purchase bits or saw blades — get good quality carbide-tipped cutters and keep them sharp (\$300 for starters).

From there, I'd probably buy a drill press (around \$200 for a benchtop model), and a 6" long-bed jointer (about \$400). A 14" bandsaw (\$500 and up), and a 12" benchtop thickness planer (\$350-\$400) would round out the tools. If I still had \$250 left, I'd get a good woodworking bench top (I'd add my own base) with a couple of vises, or a small portable dust collector.

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Paint Stops Checks

Q After gathering freshly cut logs for carving and sculpting, what can be used to prevent splitting?

Larry Moore
Raleigh, NC

A Logs and cut lumber check because they dry out too quickly. Most of the moisture leaves the way it came in — through the end grain. Painting the ends of a log with leftover latex paint slows the drying time.



Seal end grain with latex paint.

Woodturners sometimes turn a piece to rough shape, then soak it in polyethylene glycol (PEG), a waxy substance that also slows down moisture loss.

Settlement Compensates Homeowners for Siding

Q *The hardboard siding on our 30-year-old house is cracking and peeling. I understand there are lawsuits pending against some companies that produced this siding. Could you tell me more about this?*

*Darlene Zuccaro
Cheektowaga, NY*

A In 1994, a group of homeowners in Alabama brought a suit against Masonite Corporation. The plaintiffs claimed the Masonite Hardboard Siding installed on their homes failed to meet stated product warranties and led to other damage.

In November of 1995, the suit was certified as a class action to include all persons owning property on which Masonite Hardboard Siding was installed. After a jury found the product "defective" according to legal definitions in several states, the two sides reached a settlement agreement in which Masonite Corporation agreed to compensate property owners for damage associated with this

particular siding product. The settlement applies only to Masonite Hardboard Siding installed between January 1, 1980 and January 15, 1998 — so the hardboard siding on your home won't qualify.

To find out more about this particular settlement or receive a notice of

the settlement and a claim form request postcard, call 1-800-330-2722 or visit the official settlement web site at www.masoniteclaims.com.

Similar suits also have been filed against Weyerhaeuser and Louisiana-Pacific, but they too, involve siding installed in the mid-to-late 1980's.

9" Blade Needed

Q *I'm having trouble finding 9"-dia. blades for my benchtop table saw. Is it okay to use a 7 1/2" blade or can I use a 10" blade?*

*Thomas Oleksiak
Strongsville, OH*

A Never install a blade larger than the diameter for which the saw was designed. The saw simply doesn't have the necessary clearance for the larger blade. The 7 1/2" blade will work fine, but you'll lose cutting capacity.

If you can't find 9"-dia. blades locally, you may want to try mail order. A quick check of some commonly available catalogs showed that Sears (1-800-377-7414), Tool Crib of the North (1-800-358-3096), and Trendlines (1-800-767-9999) all carry a small assortment of 9" blades.

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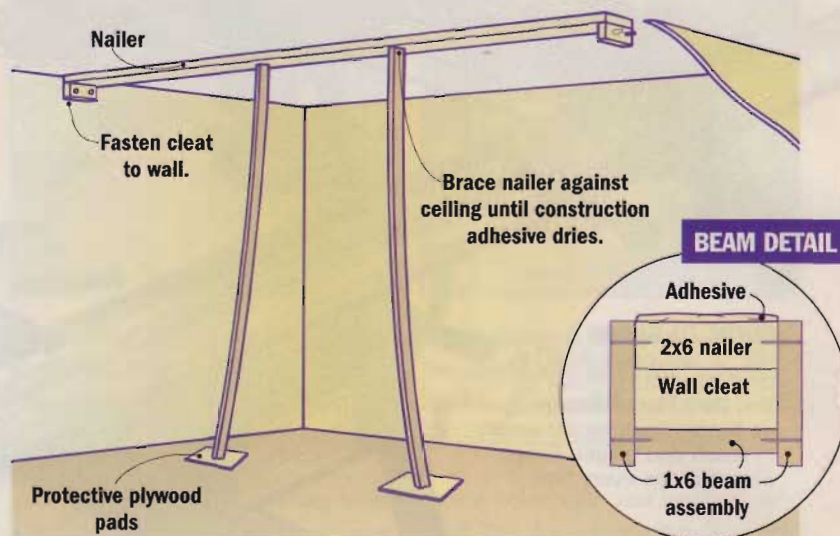
Real Wood Retrofit for Faux Ceiling Beams

Q Our family room has four foam beams — meant to look like wood — running across the ceiling. I'd like to replace them with hardwood box beams, but there's electric heat in the ceiling and I don't want to risk damaging the heat cables to attach the beams. Is there an adhesive I can use?

Ron Barnhart
Fort Wayne, IN

A The standard way to create decorative beams is to attach a wood nailer to the ceiling and then fasten a box beam to the nailer. In your case, construction adhesive will hold the nailer to the ceiling as long as you also support it at both ends with cleats fastened to studs in the walls.

For each beam, start by cutting a 2x6 ceiling nailer to length and fasten a short cleat to each end.



Apply construction adhesive to the nailer, raise it into position and wedge braces under it to hold it tight to the ceiling until the adhesive sets. Once it's braced in place,

fasten the cleats to the wall at each end. When the adhesive sets, remove the braces and fasten the box beam to the nailer and wall cleats with finish nails or trimhead screws.



Quick Solution for Hammering Water Pipes

Q Every time my washing machine goes through a rinse cycle, the water pipes bang and rattle as the washer's valves open and close. Is there anything I can do to stop this pounding?

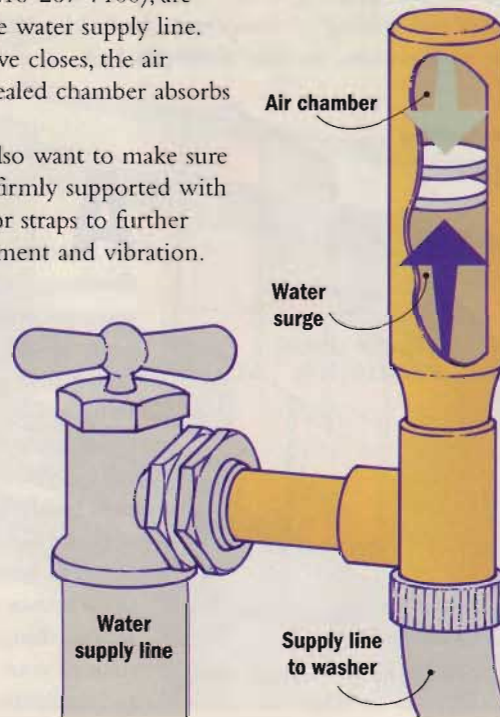
*Tom Smith
Minneapolis, MN*

A The situation you describe is commonly referred to as hammering. It occurs when a valve, such as the one in your washer or a dishwasher, closes quickly. The valve slams shut, and the shock of interrupting the flow of water through the pipe causes the pipes to vibrate.

Fortunately, you can dampen the vibration similar to the way shock absorbers on your car reduce the jolts from bumps in the road. These devices, such as Quiet Pipes

by Oatey (1-216-267-7100), are installed in the water supply line. When the valve closes, the air space in the sealed chamber absorbs the shock.

You may also want to make sure the pipes are firmly supported with hangers and/or straps to further prevent movement and vibration.



*Paul St. Germain
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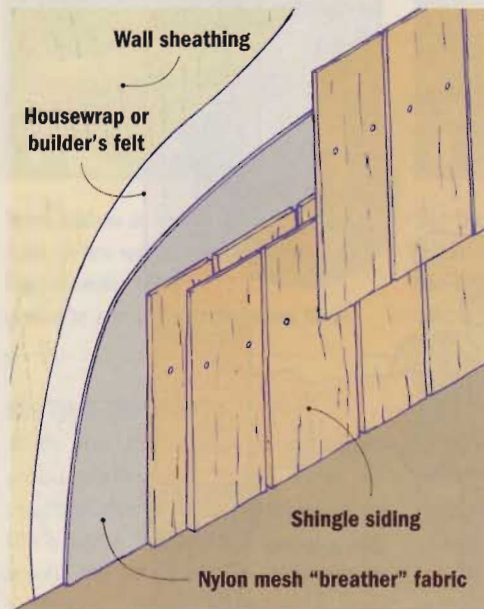
To locate the retailer nearest you, call 1-800-US-STAIN ext. 346.

Product Information Number 174

Ventilation is the Key to Cedar Shingle Longevity

Q My wife and I are planning to build a new house and side it with cedar shingles. What should I put between the shakes and the sheathing — housewrap or heavy felt? Also should the shingles be back-primed? I'm concerned that moisture could penetrate the shingles from the back side if they aren't back-primed.

Perry Werner
Fergus Falls, MN



A Shingles need to be able to dry out between rains. That's why traditional roof sheathing under shakes was laid down with gaps that allow for ventilation. However, plywood sheathing and housewrap don't allow any breathing room, and problems with cupping and vapor penetration of the housewrap can occur, resulting in damage to sheathing, insulation, and framing.

Because of this, shingle manufacturers we spoke with suggested using builder's felt over the sheathing. For added protection you might want to consider using Cedar Breather (Benjamin Obdyke, Inc., 1-800-346-7655), a thin nylon roll mesh that is tacked down over builder's felt and sheathing. When you nail the shingles down over the mesh, the small air spaces behind the shingles allow the wood to breathe — moisture vapor isn't trapped.

Whether you leave the wood natural or stain it, you can extend shingle life by dipping them in a clear oil finish or the stain of your choice (a roller works too), coating both sides prior to installation. Pressure-treated shingles are another option.



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Product Information Number 181

Use Faux Brick Veneer to Dress Up Concrete Foundation

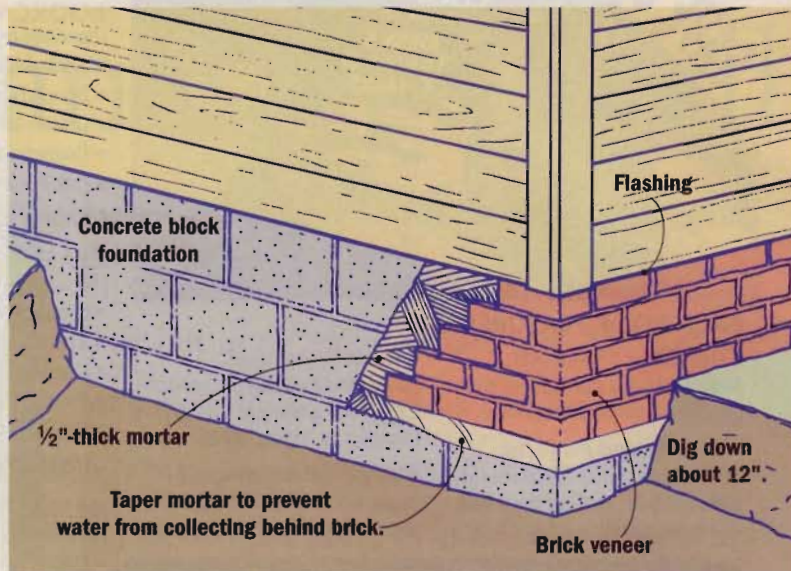
Q The outer foundation of our house, from ground level to siding, is concrete block. Is there a brick facing product I can apply that will stand up to the weather?

Dave Mozgala
Tall Timbers, MD

A I recommend you excavate a foot or so below ground level and apply a thin brick veneer or faux stone to the foundation. This involves using thinset mortar with a latex adhesive additive to attach the brick veneer to the foundation.

Make sure the siding extends beyond the outer face of the brick veneer and use the appropriate flashing to prevent water from pooling on top of the brick or finding its way behind the siding.

Companies such as Cultured



Stone Corp. (1-800-255-1727) and Eldorado Stone Corp. (1-800-925-1491) offer faux brick and stone products, including corner sections,

that are suitable for this type of application. For added protection, apply a coat of masonry sealer before you backfill.

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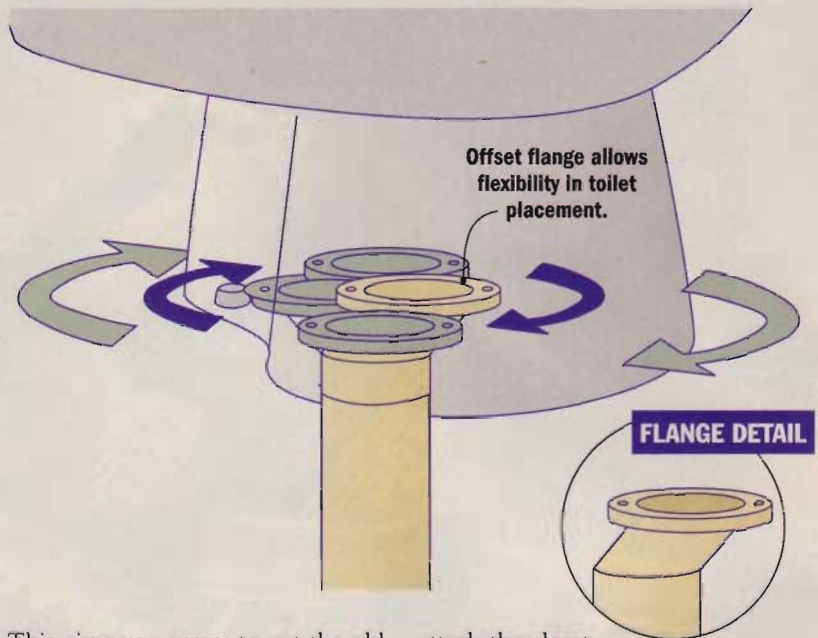
Offset Flange Saves Having to Relocate Soil Pipe

Q I'm planning to remodel my bathroom and want to put up wall tile. But I'm afraid there won't be enough room between the soil stack and the wall. Is there any solution that doesn't require either moving the pipe or buying a new toilet?

Dave Jones
Los Angeles, CA

A You can go ahead with your remodeling plans, thanks to offset closet flanges that allow up to 2" offsets without relocating the soil pipe. This type of flange will require you to shift the toilet slightly from its existing position to gain the necessary distance between the wall and toilet tank.

If you're replacing the flooring, you may want to cut out a section of the subfloor around the toilet.



This gives you access to cut the old flange off the soil pipe and position the new flange exactly where you need it. Then patch in the floor,

attach the closet flange, and reset the toilet using a new wax ring and caulk on the bottom edge.

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Tips & Techniques

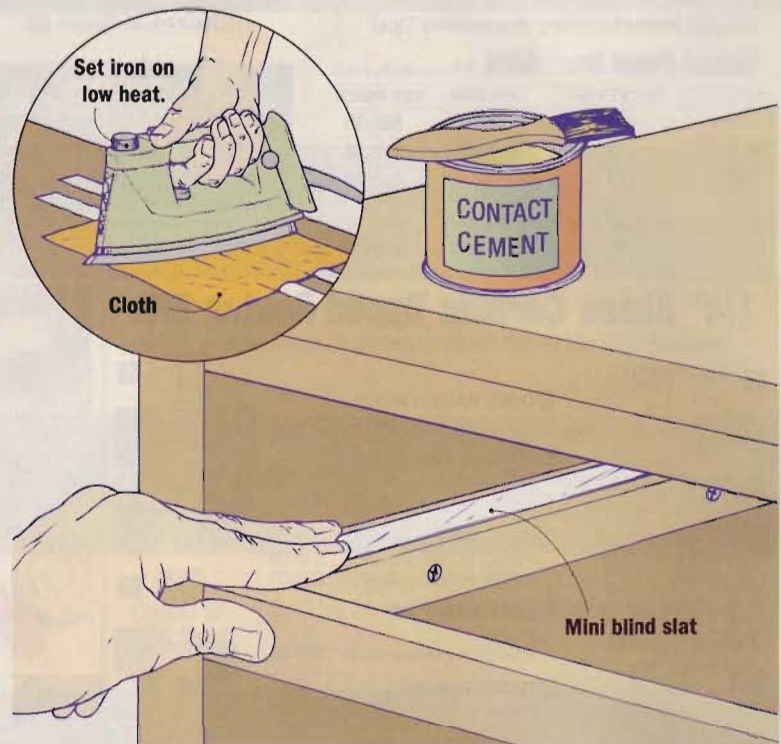
Mini Blind Slats Let Drawers Slide Smoothly

I recently completed a router workstation with four flush-fitting drawers. To protect the project from moisture, I painted it inside and out, but opening the drawers now meant dragging one painted surface over another. Looking around the garage, I spotted a discarded set of plastic mini blinds and realized I had a solution.

Taking a couple of slats, I cut them to length with a utility knife, but found that the arched surfaces of the slats wouldn't lie flat. I smoothed them out using a clothes iron set on low heat. Once the slats were flat, I glued them in place using contact cement.

The drawers now slide smoothly, and if the slats get worn, I've still got plenty of replacements.

*Keith Ross
Estey's Bridge, New Brunswick*



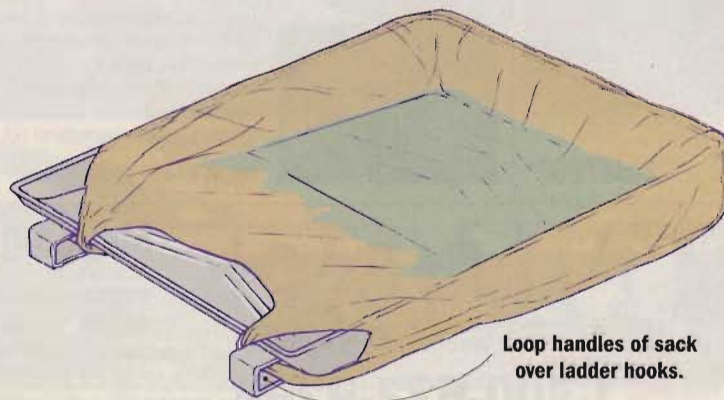
Grocery Sacks Save Paint Tray Cleanup

As far as I'm concerned, the worst part about painting is cleaning up, especially the multiple layers that build up on a roller tray. Always on the lookout for ways to save time, I found a cheap way to cut the cleanup from several minutes to just a few seconds.

Before starting, I slip the tray inside a plastic grocery sack, wrapping the handles around the ladder

hooks. I also turn the bag inside out so the printing ink won't affect the paint. Pouring paint into the tray makes the sack conform to the tray's shape. When I'm done painting, I let the remaining paint dry, turn the bag right-side out again to contain the dried paint, and throw it away in the trash.

*Bradley Tetlow
Ada, MI*



Loop handles of sack over ladder hooks.

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Do you have a unique way of doing something?

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Please include your name, address, and daytime phone number. If you prefer, e-mail us at workbench@workbenchmag.com.

We'll pay you \$50-\$150 and send you a **Workbench** cap if we publish your tip.

In addition, The Stanley Works is sponsoring Tips & Techniques, and will send an award for the tip in each issue that best describes the creative use, care or application of tools.

STANLEY

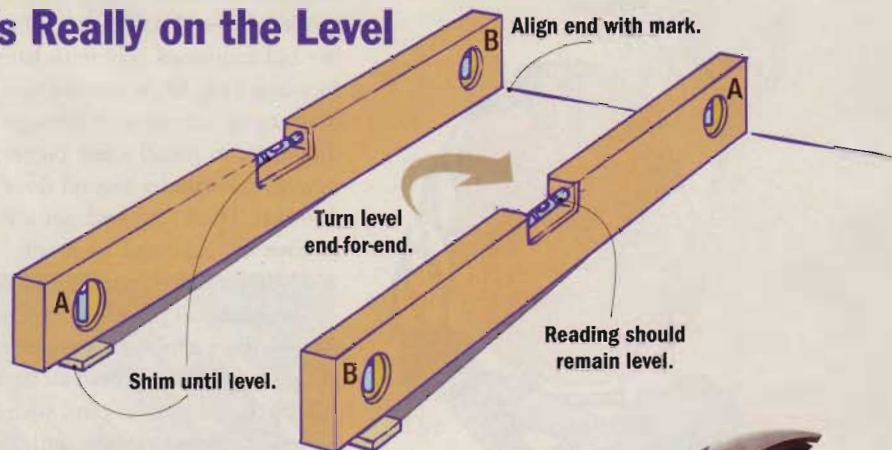
MAKE SOMETHING GREAT

Find Out If Your Level is Really on the Level

When you buy a level, you expect it to be set accurately, but what about one that's been dropped? I recently moved and was setting up my shop in the basement, where the floor slopes slightly toward a drain. I was trying to level my workbench and thought I had it evened out, but when a drill bit rolled off the top, I knew something was wrong. Then I remembered dropping the level on the concrete floor when I was packing up my tools for the move.

Since it has adjustable vials, I used this trick to readjust my level to its level best. (You can also use this technique to check a new one before you buy it.)

I aligned one end of the level against a line, then shimmed the



opposite end until the bubble gave a level reading. Then I turned the level end-for-end, fitting one end to the line and resting the other on the shims. If the level is adjusted correctly, the bubble should give the same reading.

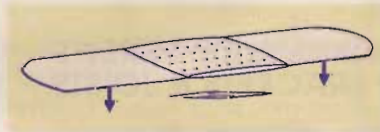
*Terry Coffey
New Castle, IN*

In recognition of his tip, **Workbench** reader Terry Coffey wins these tools from The Stanley Works. Send us your tip and you could be a winner too.

The Stanley Works
New Britain, CT
www.stanleyworks.com



Adhesive Bandage Helps Heal "Bruised" Furniture



Years of restoring antique furniture has required me to come up with some creative fixes. I always try to repair the original wood, especially when the area to be repaired is visible. I've used a clothes iron in the

past to steam out dents, but it was a hassle and my wife didn't appreciate me taking her iron to the shop.

I needed to find another way to raise the grain, and the solution was as nearby as my shop first-aid kit.

I add a few drops of water to the pad of an adhesive bandage, then place the bandage over the damaged area. The pad concentrates the moisture over the dent

and slows the evaporation so the water will raise the grain of the damaged wood.

On deep dents, I may have to reapply water a couple of times, but it beats filling and sanding. I've also used the technique on new projects that have accidentally gotten minor dings during construction.

*Bob Andes
Plymouth, MI*

Shoe Shine Pad Keeps Rust Away

I've tried waxing the cast iron top of my table saw to keep rust at bay and make it smooth so boards glide past the blade, but over time stock wears the wax off and the rust starts to reappear.

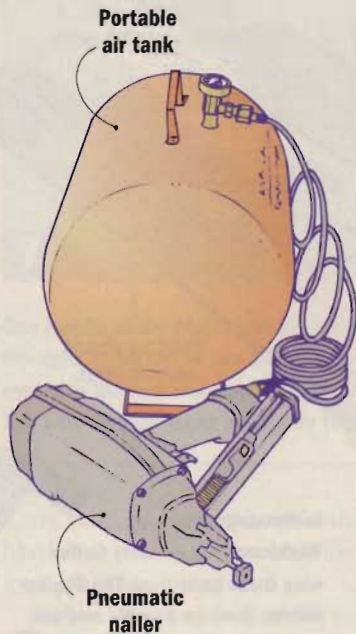
To keep my saw rust-free, I started wiping it down after each session in the shop with one of those foam shoe polishing pads.

The pads, which sell for about \$2 at discount stores, are treated with silicone and create a slick surface on the saw top. They don't leave enough silicone behind, however, to worry about contaminating workpieces and causing problems when it's time to finish the piece.

*Michael Richetti
Northport, NY*



Have Nail Gun and Air Tank, Will Travel



Portable
air tank

Pneumatic
nailer

My new finish nailer has really spoiled me — I hate to install trim the old-fashioned way with hammer and nails. Yet it seemed silly to drag my air compressor through the house to install a few pieces of new trim around a second floor doorway. Then I figured out a way to have my cake and eat it too.

I bought a small portable air tank — the kind you use to inflate car tires — that came with a pressure gauge and will safely hold air up to 125 psi. I outfitted the tank with a 1/4" quick change coupler and self-coiling air hose. Fully charged, it gives me about 50 shots, more than enough for small jobs. And weighing in at just 20 lbs., it beats hauling around a heavy compressor.

*Michael Ricchetti
Northport, NY*

Grout Bag Eases Mudding Corners

Mudding drywall joints on a stretch of flat wall is fairly easy, but I always had a tough time when it came to doing inside corners. It usually looked like I had more mud fall off the knife onto the floor than there was on the intersecting walls.

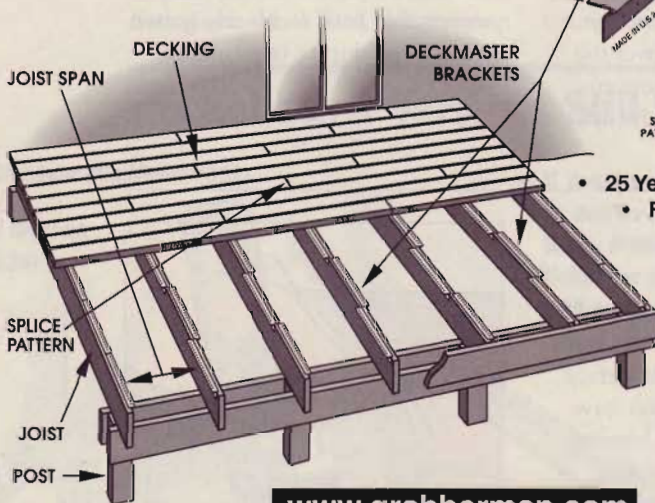
It wasn't until I saw a tiling demonstration at my home center that I realized my corner problems were over. I purchased a grout bag and used it to run a bead of joint compound down each side of the corner joint. Then I simply use my taping knife to smooth out the mud. It takes a fraction of the time and a bucket of mud goes further too.

*R. Johnson
Seattle, WA*

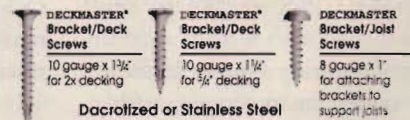
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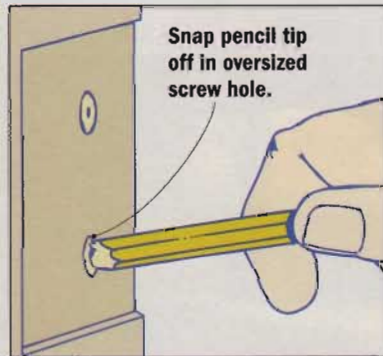
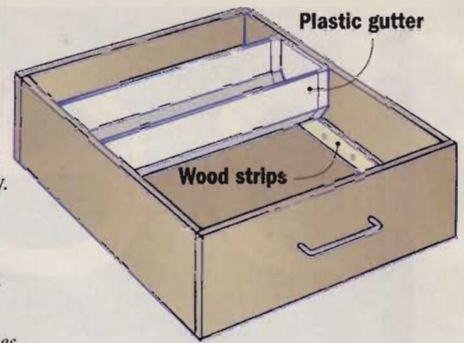
Small items have a way of getting lost in the clutter of my work-bench drawers. To keep my files, screwdrivers, and miscellaneous small parts organized, I used a hand saw to cut a few pieces of plastic rain gutter to create custom trays that fit inside the drawers.

Wood strips along the drawer sides hold the trays off the bottom

of the drawer. This lets me store notepads or power tool owner's manuals underneath and allows me to slide the trays out of the way.

Add endcaps to the trays if you want to be able to move them to your bench or take them to a work site without spilling the contents.

*R.B. Himes
Vienna, OH*



Pencil Tips Resize Screw Holes

Working as a carpenter for a large school district, I have to deal with a lot of loose screws — primarily those found on classroom doors and storage cabinets.

In many cases, the screw holes are "worn out" so the threads on the screws can no longer get a good grip. Since wooden pencils

and pencil sharpeners are readily available, that's what I use when I need to make repairs.

Starting with a sharpened pencil, I drive the point into the screw hole, then snap it off. The tapered point fits holes of any size.

*Larry Muston, Sr.
Tomball, TX*

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News & Events



Exhibition Sheds Light on Ellis Island's Abandoned Buildings

With great fanfare, the National Immigration Museum opened in 1990 in Ellis Island's restored Main Immigration Building. After serving as port of entry for over 12 million immigrants from 1892 to 1954, Ellis Island had been named a national monument, but fell into disrepair due to lack of funds, neglect, and controversy over the island's ownership and planned redevelopment. Now over 2 million visitors tour the building and its grounds annually.

What most visitors don't realize is that on the island's south side, some two dozen medical and administrative buildings lie in ruins, essentially untouched for close to 50 years. Conditions are so grave that the area was named one of "America's 11 Most Endangered Historic

Places" by the National Trust for Historic Preservation in 1997.

Built between 1900 and 1937 on landfills that expanded the island's size, many of the buildings became temporary homes for immigrants needing medical attention before entering the country.

Now you can see Ellis Island's decay through *Forgotten Gateway: The Abandoned Buildings of Ellis Island*. Running through May 2 at the National Building Museum in Washington, D.C., this exhibition features haunting images by photographer Larry Racioppo. They detail the dire condition of this piece of American history.

The photos show the variety of building styles on Ellis Island, from the French Renaissance-inspired

hospital buildings, to infectious disease wards built in the Arts and Crafts style. More visible still are the results of decades of neglect. Vines overgrow walls, trees poke through roofs, and missing paint and windows invite decay of exposed wood.

In 1998 Congress voted to appropriate \$2-3 million toward abating the decay. Restoring it all could take \$200 million. Organizers hope the exhibition will enlighten viewers on the island's plight, and further efforts to restore these forgotten buildings. Call the National Building Museum at (202) 272-2448 or peek at the exhibit on-line at www.nbm.org.



Overgrowth obscures Ellis Island's Measles Ward and hospital grounds (above). A pharmacist's cabinet (right) now holds only dirt and debris.



Urban Tree Harvesting Program Takes Root

I got discouraged recently when I saw a utility crew removing the stump of a freshly cut white oak tree. At nearly 5 ft. in diameter, I figured the tree would have yielded 18"-wide quartersawn stock. Instead, the tree was cut into short sections for burial in a local landfill. This, I thought, was a poor fate for a stately oak.



Harvested trees in Hammond, IN get milled into lumber, not sent to landfills.

Recently though, I heard encouraging news that might spell the end of this kind of senseless waste. It's an urban tree recycling program that began in central Indiana and could take root in other cities throughout the country.

The town of Hammond, IN (population 85,000) had a problem. Every year half a million dollars from the city's operating budget went to pay for the removal and disposal of trees. The drain on funds was bad enough, but the town also faced new legislation mandating that yard waste quantities be cut in half by the year 2001.

The answer came when city officials teamed with Lake County, launching a joint venture called the Trees-to-Furniture Program. The partnership soon grew to include a local couple who own and operate a Wood-Mizer portable sawmill.

Now trees removed from both public and private property get sawn into lumber, some of which goes to the city for picnic tables and other fixtures. The sawmill owners sell the rest to a local pallet manufacturer to recover their operating costs. Small branches are ground into mulch for city parks and for free distribution to residents.

So far the program has drastically cut the volume of tree waste the city generates, and has provided an alternative to purchased lumber. And there's another plus: Resident woodworkers who want the lumber from their own trees may pay a fee to have the mill brought to their home and the lumber custom-sawn.

Now municipalities in other states are exploring similar programs to handle their own tree disposal problems. For info, call Wood-Mizer at (800) 553-0182.

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Plumbing Manufacturers Get the Lead Out

Get ready for some changes in new plumbing fixtures. The National Sanitation Foundation (NSF) issued a standard last summer mandating the reduction of leachable lead in fixtures used for drinking water. (The new standard allows only 11 parts per billion of lead in drinking water.) Because brass contains lead and is the alloy most commonly used for faucets, it will be targeted specifically by this new regulation.

Already some manufacturers are experimenting with new alloys to comply with the law. Gerber Plumbing Fixtures Corp., which issued its own product bulletin regarding the new law, developed a proprietary casting process it claims meets even the stricter California state standard of 5 ppb. Expect to see labeling changes on new faucets as other manufacturers tackle the problem.



Battery Recycling

In the January/February 1999 issue of *Workbench*, we listed an incorrect phone number for Rechargeable Battery Recycling Corp. The correct phone number is (800) 822-8837.

Carver's Congress

Affiliated Wood Carvers, Ltd. holds its 1999 International Wood Carver's Congress June 24-27 in Bettendorf, IA. Events include seminars, exhibits, and competitions. Write A.W.C., PO Box 104, Bettendorf, IA, 52722.

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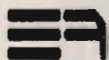
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Suburbs for a New Century: Clusters Are In, Cul-De-Sacs Out

Of all the trends that influenced 20th-Century American life, migration to the suburbs is sure to be one of the most remembered. This form of residential development has, in 50 years, altered the landscape of our cities and rural areas alike, and changed the way we live, work, and shop. Certainly, suburban development continues unabated in most parts of the United States. But today's suburbs differ from those built 20 or even 10 years ago. These changes have been subtle, but can be seen in the results of a residential development study by the National Association of Home Builders (NAHB).

Starting after World War II, Americans began heading for the suburbs. A strong economy, high levels of automobile ownership, and the desire for more open space led increasing numbers of people

out of the city to new housing developments on the outskirts of town. Suburbs were marked by curved streets, cul-de-sacs, and "green spaces." Houses often had garages placed prominently, often obscuring the front of the home, to better serve the cars that took suburbanites back into cities to work and shop.

In the '60s, '70s, and '80s, suburban communities began to change. Rather than just clusters of houses, suburbs were built with grocery stores, strip malls, office parks, and community centers. Often referred to as "New Towns" and "Villages," these communities could almost stand alone, without interaction with their adjacent city. Suburbanites could now shop and work close to home. Ironically, suburbs began to look increasingly like the cities suburban residents wished to escape.

Designs for the newest suburbs reflect the changing lifestyles of suburban residents. Business districts are centralized, much like a town square. Around this core, houses are built on a grid of much straighter streets.

The scale of these "Neo-Traditional Towns" is much smaller, with everything clustered in a few blocks or at most a few miles of all homes. Homes are set closer to the street and to each other. Cars are less necessary in these new suburbs, so garages are positioned inconspicuously, often oriented toward mid-block alleys with no front driveway at all.

With a new century drawing near, it's hard to deny how similar development in many new suburbs is to development of cities at the start of the 20th Century. Indeed, everything old is new again.

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New Sears Home Store Debuts in Denver

The Great Indoors, a new store from Sears, Roebuck and Co., aims to put all the home decorating and remodeling products you'd ever want under one roof. The prototype store in Denver, CO has 150,000 sq. ft. of products devoted to what Sears calls the "four main rooms" in a house — kitchen, bath, bedroom, and great room.

The store's inventory boasts some 50,000 items on display in 60

room scenes. Need an appliance? The store has 650. How about a faucet? You can choose from 500. If the selection seems overwhelming, you can use the store's in-house design facilities, or just kick back and ponder your choices in the full-service restaurant.

Sears developed the The Great Indoors concept and store layout based on research with female customers, who said women make the decorating decisions and want one-stop shopping in a comfortable environment. In Denver at least, the concept works. In fact, Sears plans to build several more stores in

major U.S. cities in 1999. For now, either head for Denver, or check out The Great Indoors on line at www.sears.com.



Furniture Industry Studies Wood Dust

The Association of Woodworking and Furniture Suppliers has announced its participation in a six-year study of the relationship between wood dust exposure and noncancerous respiratory illness. Many questions have been raised in the past few years regarding the health effects of wood dust. Recently, the International Agency for Research on Cancer even named wood dust as a human cancer-causing agent. The Occupational Safety and Health Administration (OSHA) has called for wood dust hazard labels as well. Though this study will look at wood dust's effects on workers in commercial shops, it reminds us that it's important to keep dust under control in our own shops as well.

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A Showcase Deck

Take a poll among avid do-it-yourselfers and I'll bet that building a deck ranks near the top of everyone's wish list, or for those who've built one already, among their favorite projects. It's easy to see why. For my money, no other home improvement brings together

all the practical benefits of being a DIY'er — cost savings, quality control, added space or livability — with the fun and satisfaction involved in building with wood.

A good deck design can be easy to build, though attention to detail is still a must. This combination can make it a very labor-intensive (and costly) project if you hire it out to a pro, but one simple enough so that most homeowners don't have to. Whatever your budget, you'll get at least twice the mileage out of it by providing the labor yourself. It's

simple math. To meet your dollar target, a contractor will likely want to crank out a "no-frills/one style fits all" deck package and move on to the next job. But roll up your own shirt sleeves, and the same money will get you a customized project that's bigger, better-built, and probably looks more like a natural extension of your home.

My deck project might look elaborate, but that's the beauty part. It's really just good basic carpentry, dressed up with some imagination and innovative hardware. Even the



multilevel design relies on just the repetition of a simple frame structure (Deck Construction View). From footings to railings, almost every feature it offers was managed with little more than basic tools and good old-fashioned muscle.

Speaking of muscle, the more the better. Any deck project goes faster and safer with at least one more pair of willing hands, so don't be afraid to recruit a friend or relative to help. I lucked out with Kirk, a friend with a fair amount of deck-building experience under his belt.

LET THE PLAN EVOLVE

Most of you wouldn't guess it from the current reading on your outdoor thermometer, but this is a perfect time of year to think about the kind of deck that's right for you and your home (see *Planning Basics*).

Planning Basics: The First Steps

- 1) Take measurements of the site, then make some quick sketches to explore possible design options.
- 2) Call local utilities to arrange a free inspection for underground lines. Plan ahead to avoid electrical cables, or gas and water lines, when you dig footing holes.
- 3) Pick your design and draw detailed plans. Draw up a materials list and a project budget.

- 4) Bring the deck plan to a building official in your town so he or she can amend it or approve a permit. The code check will involve footing depth, railing and stair designs, beam and joist spans, and other structural details.
- 5) Get your lumber on site at least six weeks ahead of time. Sticker it to allow air drying, and keep it stored out of the sun and rain.

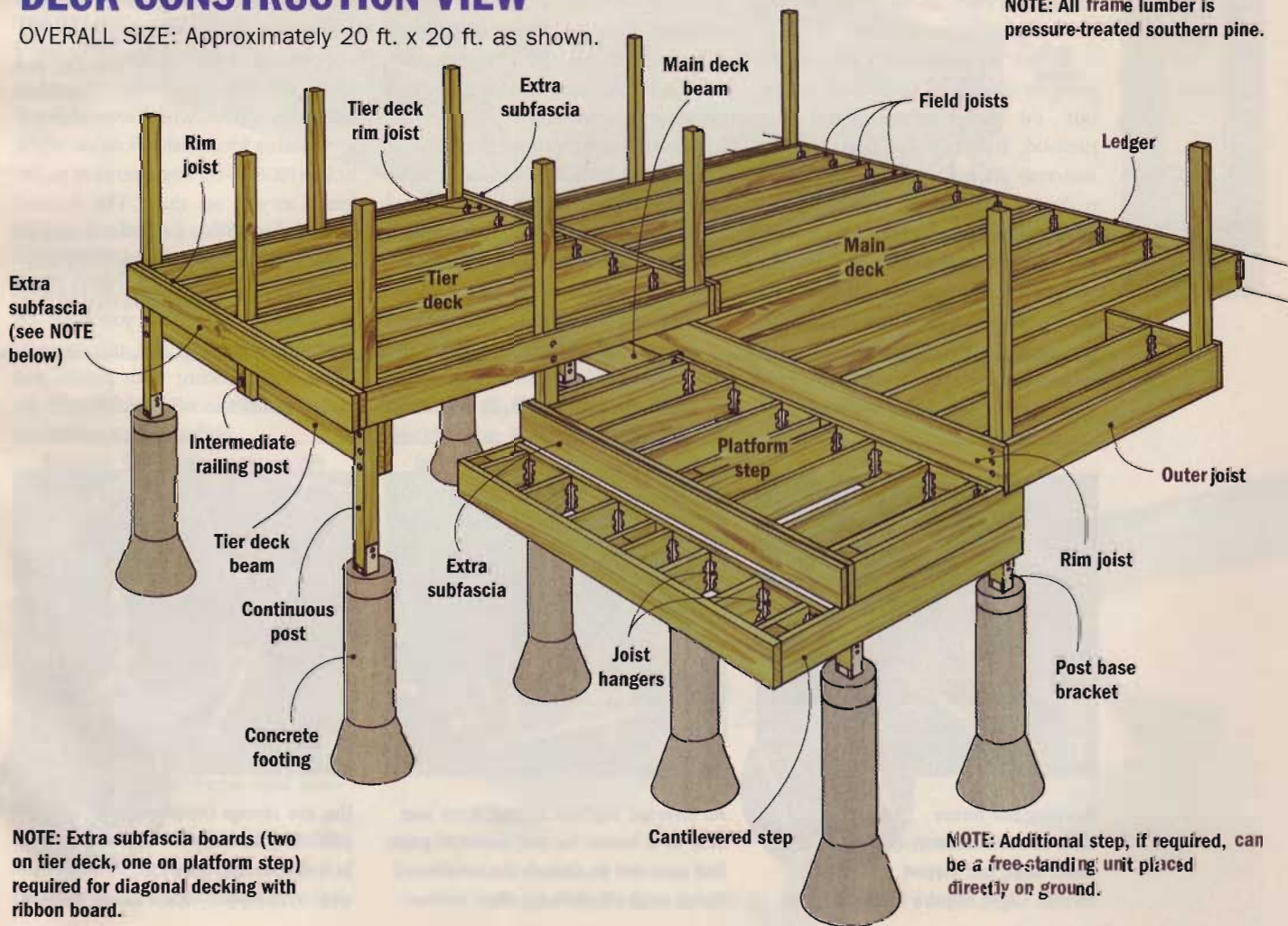
Good design ideas have to evolve. Do you want just a spot to cook and eat outside? To relax with family? Room to entertain guests? How about the need for privacy, or protection from harsh sun or wind? All these factors will influence the size, shape, and orientation of your deck.

My design provides a main deck for cooking and eating, but also a separate conversation area and a wide platform step. Even modified for your site, the construction basics still apply. (Incidentally, 20 ft. is the maximum length for pressure-treated lumber, so design accordingly.)

DECK CONSTRUCTION VIEW

OVERALL SIZE: Approximately 20 ft. x 20 ft. as shown.

NOTE: All frame lumber is pressure-treated southern pine.



NOTE: Extra subfascia boards (two on tier deck, one on platform step) required for diagonal decking with ribbon board.

NOTE: Additional step, if required, can be a free-standing unit placed directly on ground.



3 Tie strings close to their final location and check for square corners (see Skill-BUILDER). Drive screws to mark the centers and edges of the posts.



4 Use stakes and crossbars to suspend the footing forms about a foot off the bottom of the hole. Drive 1 1/4" screws to hold the form level in one direction.



5 Rest a second pair of crossbars on the first pair, check the form for level in the other direction, then drive screws to "lock" the form where it sits.

SETTING THE LEDGER BOARD

Unless your deck is a freestanding design, you'll also need to connect it to the house. That's done with a ledger board bolted (or lag-screwed) directly to the house frame. It establishes the height of the deck and also provides an anchor for the joist ends nearest the house. Obviously, the ledger needs to be at least slightly higher than the concrete footings.

Sometimes, installing the ledger requires removing a section of siding, especially if it's a weak material such as vinyl or aluminum. But on wood or solid composite materials, you can often bolt the ledger in place right over the siding. Even then, metal flashing is almost always necessary to divert water away from the ledger/house connection and help prevent rot (FIG. 9).

Mark your joist layout on the ledger before you drill for hardware, so the bolts don't interfere with the joist placement. Keep in mind that the footings determine some of the joist locations, since the posts they support connect directly to the frame.

Unlike the footings, the ledger works alone supporting its end of the deck, so secure fastening is essential. Wood props and a few 16d nails will hold it temporarily in place, but you need serious hardware for the long run. If you're fastening to the house's rim joist and you have access to its inside face, drill past the ledger and drive 1/2"-dia. bolts through the ledger, siding, and rim joist (FIG. 10).

If you don't have access to the inside face of the rim joist, use lag screws to fasten the ledger, but make absolutely sure they thread into struc-

tural lumber in the house frame, not just siding or sheathing.

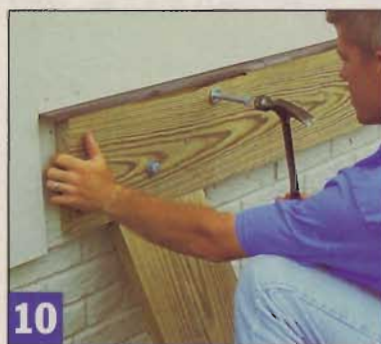
In my plan, the joists that straddle posts sit just a few inches apart. These allow for the decking splices and perimeter details that come later. The other joists get installed in-between, spaced at 16"-on-center or less.

After securing the ledger to the house, mount the joist hangers flush with the ledger's bottom edge (FIG. 11). I fastened the hangers with #8 x 1 1/4" washer-head screws (from Simpson Strong-Tie) designed for just this purpose.

If your concrete footings are still "green" (uncured) by the time your ledger's installed, take a break until the next weekend. Stressing the anchor bolt mounts too soon can crack the concrete, and you'll have to replace the entire footing.



9 Whether or not you remove the siding behind the ledger, tuck metal flashing under the siding course above it to divert water away from that area.



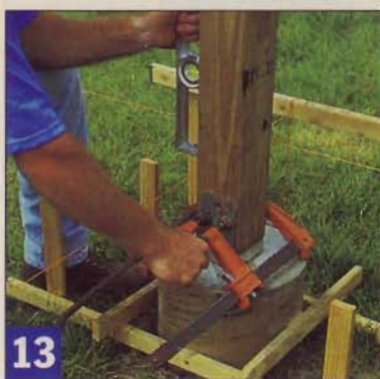
10 If possible, drill through the rim joist of the house frame, then bolt through the ledger and rim joist. Or drive lag screws, but be sure you hit that joist.



11 Metal hanger brackets will support the deck joists at the ledger. Nails don't hold as well and tend to squeak after a while, so use screws to fasten these.



12 Realign the guide strings (to the post edges) to install the post brackets. The standoff cap covers the nut/bolt.



13 Center the post in its bracket, check it for plumb, and use a pair of clamps to hold it in place until it's bolted.



14 Tie temporary braces to wood stakes and to the top end of each post, so the post alignment is kept intact.

BRING THE FRAME TOGETHER

With your footings and ledger prepared, you can assemble the structural frame of the deck. (For guidelines on beam and joist sizes and spans, see *Sizing Your Lumber*.)

Start by resetting the batter board strings from over the post centers (at the anchor bolts) to where the outside faces of each post will be. This means shifting the string lines half of the post thickness ($1\frac{3}{4}$ " for the nominal 4x4 posts I used). Then install the post base brackets (FIG. 12).

The batter board strings will help you position the posts, but you'll have to secure each post temporarily before you drill and bolt it in place. Starting with the outside posts for the main platform, use a level to get the post plumb, then

tighten clamps onto the metal base (FIG. 13). Make sure the posts are long enough for the railing height you need; they'll be trimmed later.

Next, drive two stakes in the ground and fasten a long brace to each, reaching toward the top of the post. Recheck for plumb, then fasten the braces to the post (FIG. 14). Once the post is secured, drill through the bracket holes and post and install two $\frac{1}{2}$ " x $4\frac{1}{2}$ " bolts (FIG. 15). Repeat the procedure for the other main deck posts, and attach wood braces between them (near the top ends). These braces help restrain twisting and other unwanted movement of the posts.

Now you're ready for the main beam. If you've got a water level, you can transfer the height of the ledger's bottom edge to mark the

beam location on the posts. Otherwise, just set one end of the outer joists in their hangers on the ledger and clamp the other ends to their posts, adjusting the joists until they're level. (Select straight boards for these joists, or the vial on your level will give you a false reading.) At the bottom edge of each joist, scribe a line on each continuous post, then remove the joists.

Some decks feature a large 4x timber for a beam, but two or more thinner (2x) boards are easier to handle and can provide the same load-carrying capacity. They're also more commonly available. I used a pair of 2x12's for the main beam, but to accommodate the platform step, I straddled the posts with them rather than mount them both on the same side, which is more typical.



18 Install the joists at each post first, with the ends flush with the post face. I used Simpson 'SDS' lag screws here.



19 Use screws to secure the joists in their hanger brackets, and fasten at each hole for maximum holding power.



20 With a string line to keep the ends of the field joists aligned, fasten them to the hurricane ties and joist hangers.



15 With the post base still clamped, drill through the bolt holes in the metal bracket and install the bolts and nuts.



16 When the beams go up, clamps hold them until you get height and level adjustments made. Then drill and bolt.



17 Transfer the joist layout marks from the ledger to the beam, then fasten a hurricane tie at each joist location.

I found it easier to clamp the 2x12's together on sawhorses and drill the bolt holes before positioning them on the posts. As you clamp them in place, check for level, then drill through the posts and install three 1/2"-dia. bolts at each connection (FIG. 16). Note that the beams extend about 1 1/2" past the posts so they'll support the outside joists.

With the beam secured, mark the joist layout and install hurricane ties along the inside edge (FIG. 17). These brackets help prevent uplift of the deck platform(s) due to strong winds, and building codes in most areas require them.

FITTING THE JOISTS

You're bound to have at least minor irregularities in the ledger wall, so the joists should be custom-fitted

one at a time to keep their outboard ends in a straight line. Start by setting the double joists at each post.

As you install the joists, sight along their edges to check for crook (curved edges). Install any crooked boards with the crown (arch) up, so the tension that makes them arch adds a little extra support.

Because I bolted the ledger directly over beveled siding, it canted toward the house about 5°. I cut the mating joist ends to that angle so they'd butt tight to the ledger and nest fully in the joist hangers.

Using a tape rule to measure for the joist lengths invites errors, so I started with the joists at each post and just set them in place (with the

5° end butted tight against the ledger) and marked the length directly at the post. I cut them so their ends were flush with the outside face of the post, then I drove self-drilling lag screws to secure them (FIG. 18). As you install each joist, fasten it at the ledger end as well (FIG. 19). When you get to the "field" joists (between posts), run a string to keep the ends aligned, and fasten them first to the hurricane tie brackets on the beam (FIG. 20). Close the frame up by installing the rim joist. Use bolts or lag screws to fasten this joist to the posts, then nail it to the ends of the field joists (FIG. 21). Make sure each joist stays aligned as you nail into its end.

SIZING YOUR LUMBER

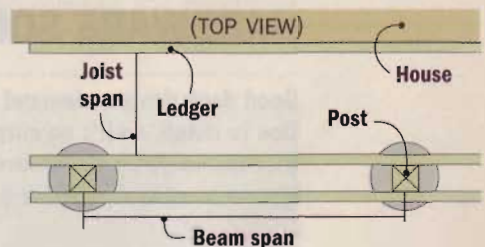
Below you'll find guidelines for beam and joist sizes for a typical deck frame rated at a "live" load (people and objects on the deck) of 60 lbs. per square foot. Check your local codes to confirm!

BEAM SIZE AND SPAN

(For Grade 2 or Better southern pine)
If the distance between posts:

- | | |
|-------------------------------|------------|
| | Use: |
| • is less than 4 ft. | (2) 2x6's |
| • is between 4 ft. and 6 ft. | (2) 2x8's |
| • is between 6 ft. and 8 ft. | (2) 2x10's |
| • is between 8 ft. and 10 ft. | (2) 2x12's |

(For other spans, ask a building official.)



JOIST SIZE AND SPAN

Joist size (nominal)	Maximum Joist Spacing	
	16"o/c	24"o/c
2x6	8 ft. 2 in.	6 ft. 8 in.
2x8	10 ft. 6 in.	8 ft. 7 in.
2x10	13 ft. 0 in.	10 ft. 7 in.
2x12	15 ft. 1 in.	12 ft. 4 in.



21 After bolting the rim joist to the posts, nail through it into the end of each joist. Check joist alignment as you go.



22 Like the main deck, the tier deck construction begins with bracing posts, then drilling and bolting them in.



23 The double 2x12 beam for the tier deck gets bolted together inside the posts, rather than straddling them.



24 The front rim joist for the tier deck is bolted in place, but gets its support from the main deck joists below it.

ADDING OTHER LEVELS

It isn't necessary to have more than one level on a deck, but when there's room for it I always try to add this feature. It makes the deck more interesting and functional, and breaks the building process into manageable sections.

Begin the tier deck frame just like you did the main platform, by bracing and then bolting the posts to their footings (FIG. 22). Again I used a pair of 2x12's for the beam, but this time I bolted them together on the inside faces of the posts, a slightly stronger and more typical arrangement (FIG. 23). This beam sits level with the top of the main deck's rim joist. Because the tier deck joists have a short (8 ft.) span,

I was able to reduce the lumber size to 2x8. The height change ends up at 7½". (The Uniform Building Code allows a range of 4" to 8".)

The rim joist at the front of the tier deck frame functions like a ledger board, so it has to be well-supported by the posts and joists of the main deck (FIG. 24). The paired outside joists get bolted or lag-screwed to the posts (FIG. 25), and the field joists install like before — screwed to joist hangers and hurricane ties, and nailed through the rim joists at the ends.

The platform step, one level lower than the main deck, is even smaller than the tier deck, making it possible just to assemble a box frame and install it as a unit (PLATFORM

STEP CONSTRUCTION VIEW). This deck section and the cantilevered step below it provide a nice transition from the main deck to the back yard. At its front end (near the step), an intermediate post and footing provide additional support for the platform and for the cantilevered stair joists. I bolted the platform step frame to the main deck after snapping a registration line on the main beam (FIG. 26).

Though there'll be a few minor modifications as the decking goes on, the frames are nearly complete at this stage. You just need to bolt a few intermediate railing posts in place on the main and tier decks (FIG. 27). Counterbore these holes if you're adding trim like I did.

HARDWARE SOLUTIONS: SOMETHING OLD, SOMETHING NEW

Good deck designs demand attention to detail, so it's no surprise that fasteners and hardware will figure prominently in your project's

success. Any good hardware store or home center can provide the basics, but we found some specialty products that can make a big difference in strength and appear-

ance. On top of those virtues, many of these specially designed items let you work more quickly.

First, some alternatives to lag screws: GRK offers its 'RSS' structural screws (A), a star-drive washer-head fastener in lengths from 1½" to 12"; the ¼" x 3" 'Strong-Drive' screw (B) from Simpson features an auger point and a built-in reamer for self-drilling installation. Both are stronger than ordinary lag screws and faster to install.

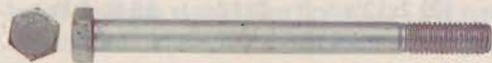
Hex-head (C) or carriage bolts should be galvanized, preferably hot-dipped rather than electroplat-



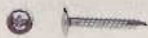
(A) RSS screw from GRK



(B) SDS (¼" x 3") from Simpson Strong-Drive



(C) Hot-dipped galvanized hex-head bolts



(D) SD8x1.25, Simpson



(E) Stalgard screws



(F) Decking screws



28

DeckMaster brackets get fastened to the joists from the side. Use the holes on top to secure the decking.



29

The first piece of ribbon decking, like others around the edge of the deck, gets notched to fit around a post.



30

After routing all the cut edges of the decking with a small roundover bit, apply sealer to the end grain.

LAYING THE DECKING

To me, the open frame of a well-designed deck is a beautiful sight, but when the decking goes down the project really starts to take shape as a design. I chose a Brazilian wood called ipe (*ee'-pay*) from THL Ironwoods (see source list, page 48). Used for years on oceanside boardwalks and other commercial projects, this dense hardwood shares a look similar to mahogany or teak, and has insect- and weather-resistant properties that make it ideal for outdoor structures. Left unfinished, it weathers to a silvery gray, but the deep reddish-brown hue an oil finish gives it can be maintained if you want. Forget nailing this stuff, though. Screws are a must, and you have to drill for most ordinary fasteners or they'll break.

The 1x4 ipe decking I used sells for about \$1.25 a lineal foot, rough-

ly the same cost per square foot as clear select redwood or cedar decking. Because it's such a premium material, I used a "blind" fastening system called DeckMaster brackets (see **HARDWARE SOLUTIONS**, page 42). These brackets fasten alongside the top edge of each joist (FIG. 28), so you can drive screws into the decking from underneath. I was reluctant to try them at first, thinking it would slow down the decking installation too much, but that really wasn't the case, and the clean look they yield is an awesome reward for a little extra work. Plus, the hardened screws furnished with them went into the ipe with no predrilling, a real timesaver.

Rather than leave the ends of the deck boards exposed, I used some of the 1x4 ipe as a ribbon around the perimeter of each platform (**DECKING CONSTRUCTION VIEW**).

These boards got notched and mitered to fit around the posts, with about an 1/8" gap (FIG. 29). I also routed a 1/8" radius on all the cut ends (to match the edges), and used an exterior spar varnish to seal the ends against checking (FIG. 30). I fastened the first ribbon board at the front of the deck frame, parallel to the house (FIG. 31). The ribbons at the ends can wait until later.

When you start installing the field decking, use spacers to ensure a uniform gap between the boards, then secure the decking at each joist by driving screws through the DeckMaster brackets (FIG. 32). If the deck's overall length exceeds that of your lumber, let the end splices fall between the paired joists in the frame (FIG. 33). This keeps screws away from the very ends of the boards (reducing splitting), and it allows better drainage.



34

Clamps can coax crooked boards into a straight line before you fasten them. Always use spacers for a uniform gap.



35

Once the decking section outgrows the clamp reach, skip one course and snap a line to start another section.



36

Work your way toward the house one section at a time. Later, you can go back and fill in the open courses.



31 Unlike the “field” decking, the ribbon boards must be fastened from above with screws. Painted screws blend in.



32 With a DeckMate to space the boards, the decking gets fastened from below. Note cleat used to keep ends aligned.



33 Splices add an interesting pattern to the deck surface. Place them over the double joists so water drains through.

WORK IN SECTIONS

With any wood decking material, you’ll get crooked boards that need to be coaxed into lying straight. I used a pair of bar clamps for this task (FIG. 34). This works only until the decking section outgrows the clamp’s reach, but there’s a fix. Stop that section and leave a gap equal to the width of one deck board (plus spacing) and snap a chalk line across the joists (FIG. 35). Leave the gap open (for the clamp heads) and start a new section of decking, then repeat the process when that area grows too large (FIG. 36). Set aside a few straight deck boards as you work, then after you reach the ledger, use them to fill in the gaps.

DOING THE DIAGONALS

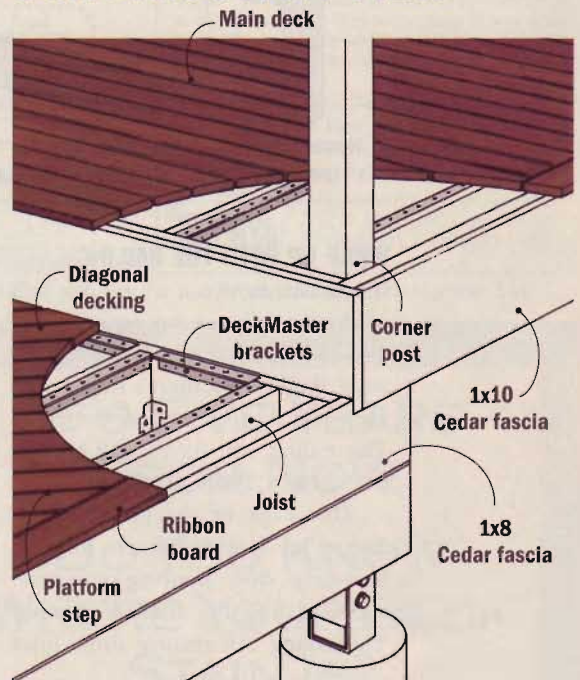
I mentioned earlier that I think a multilevel deck is a better-looking and more versatile design than one

large platform. Installing the decking gives you another chance to add visual interest — by orienting the boards diagonally on the other levels. It also adds safety by providing a visual cue for the change in height.

The procedure for fastening the decking diagonally remains pretty much the same, but for some materials the joist spacing must be reduced (see the graphics key in *Decking Options* on page 51). Also, I had to clamp the boards down to keep them from shifting when I drove the screws through the DeckMaster brackets (FIG. 37).

Combining the diagonal decking with the ribbons did require extra subfascia boards for support along some edges (FIG. 38). I stained cedar fascia boards to match the house color, fastened them with screws, then installed the ribbon boards (FIG. 39).

DECKING CONSTRUCTION VIEW



37 Orienting decking diagonally defines height changes between levels. Use clamps to keep boards from shifting.

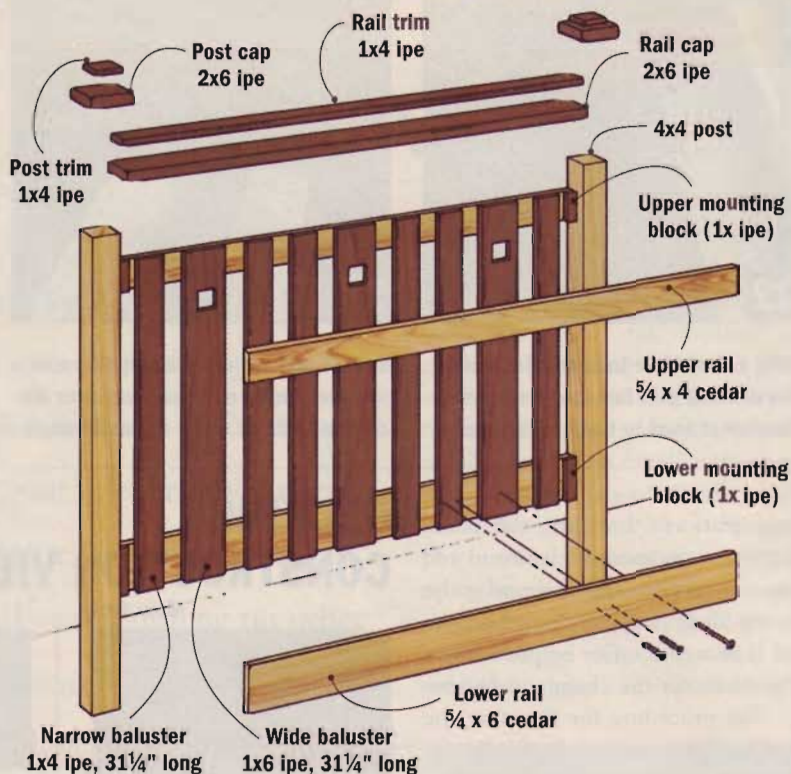


38 The diagonal decking orientation will require an extra 2x8 subfascia (with 1/2" spacers) to support the ribbons.

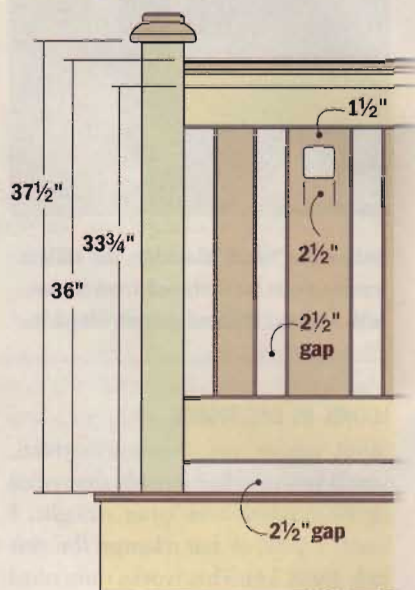


39 A 1x8 fascia, stained to match the house siding, covers the subfascia before the ribbon boards go on.

RAILING CONSTRUCTION VIEW



RAILING ELEVATION



WRAP UP WITH THE RAILING

If you take time out to indulge in a celebratory dance on your newly installed decking, don't get carried away. Right now there's nothing to keep you from sailing off the edge. The railing will fix that (RAILING CONSTRUCTION VIEW).

This stage of the project ranks among my favorites. You're through shoveling dirt, pouring concrete, and muscling big timbers around. The railing can involve some finer

craftsmanship and also tie the deck visually to the house. Start with the railing elements that are already installed—the posts. I used a plywood jig (shaped like a 'U' so it supports the saw on opposite sides of each post) to cut them to the correct height (FIG. 40). Then I mounted small ipe blocks for hanging the rail and baluster assemblies (FIG. 41). These blocks support a lot of weight, so I used #10 × 3 1/2" hardened steel screws to secure them.

To add interest to my railing design, I mixed a wider (1x6) baluster into the pattern, and routed a 2 1/2"-square opening near the top of these pieces. The going is slow in the ipe, so I don't recommend details much more elaborate than this. I drilled an access hole and rough cut the opening close to finished size with a jig saw. Then I used a jig and a flush-trimming bit (1/2" shank for this tough wood) to rout the clean-up passes (FIG. 42).



43 Uniform spacing between balusters is achieved with a simple jig. Check the assembly for square before fastening.



44 With the upper and lower cedar rails installed on the inside, fasten the railing assembly to the mounting blocks.



45 Add the cedar rails on the outside to close up each railing section. Painted GRK screws add to the design.



40 When it came time to cut the posts to final height, I clamped a plywood jig in place to guide and support the saw.



41 Mounting blocks made from ipe were fastened to the posts with heavy 3½" screws. These support the railing.



42 To add the detail to the wide balusters, I used a router jig and a flush-trim bit. Rough out with a jig saw first.

The spacing for the balusters was part aesthetic choice and part legal compliance. (The building code specifies 4" as the maximum width for openings in a deck rail.) Not every railing bay on my deck was the same length, so I figured out a

baluster spacing pattern that got me close for all but the one odd run. I made a spacer block jig to help with the assembly (FIG. 43).

With temporary support blocks positioned at the bottom of each post, I set each railing section (with

only the inside rails mounted) in place and fastened it to the ipe mounting blocks (FIG. 44). The outside rails can be added next. When I installed mine, I used painted screws (to match the ipe) as a design accent with the wide balusters (FIG. 45).

More Deck Details: Post, Beam, and Hardware Options

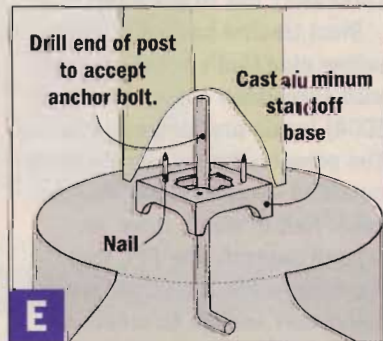
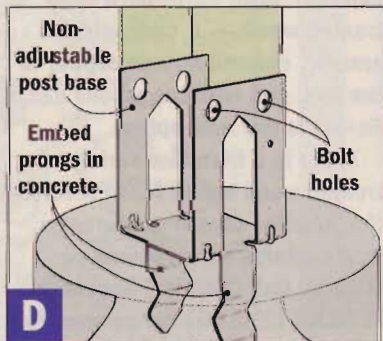
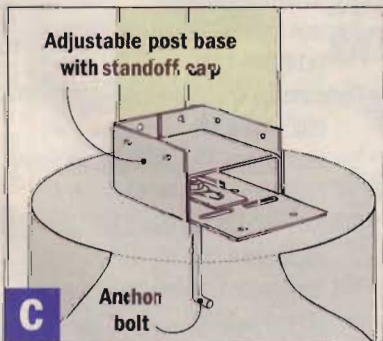
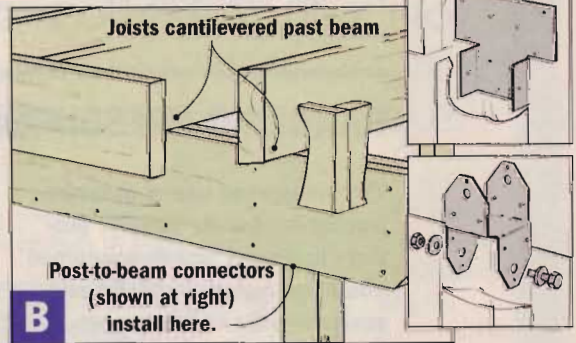
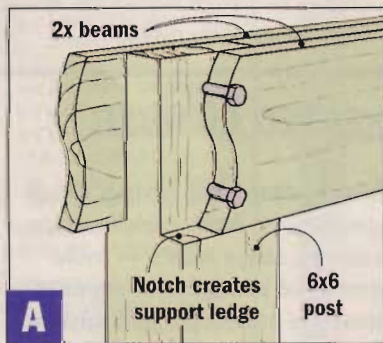
The options you have for your deck aren't limited to its overall design. You can also vary the construction details — the hardware, materials, and techniques you use to put everything together.

For example, heavy structures or second-story decks need 6x6 posts, notched to create support ledges for the beams (FIG. A). These support ledges can safely support much more weight than bolts can, with less stress to the beam they're carrying.

Another option is setting a deck beam directly atop 4x4 posts, with joists cantilevered past the beam

(FIG. B). As long as you get the post heights consistent so the beam is level and thoroughly supported, this is a reliable design, and it doesn't require as much pre-

cision in placing the footings. The drawback? The railing posts won't be as sturdy as those tied to footings, shown below with some hardware options (FIGS. C, D and E).





46 After fastening the 2x6 rail cap to the cedar rails, add the 1x4 rail trim. Routed edges offer a friendlier touch.



47 Use the same sequence to cap off the posts. First, a 2x6 block, then a smaller trim piece cut from 1x4 stock.



48 For a final touch I applied Penofin oil finish. It brings out the ipe's rich color and will help protect the wood.

CAPPING IT OFF


It's not quite time to fire up the grill and start saucing the ribs, but at this point you're almost close enough to catch a whiff of that first cookout. So how do you wind things up?

First, cut the 2x6 ipe stock for the rail cap and rout the edges with a roundover or table edge bit. These surfaces will get handled a lot, so they should have comfortable contours rather than sharp edges that are likely to splinter. A double row of screws secures the rail caps to the upper cedar rails, and that step is followed by fastening the rail trim (FIG. 46). Installation of the post caps and trim pieces follows the same sequence (FIG. 47).

ICING THE CAKE

Most woods suitable for deck construction hold up well to weather. This is especially true of ipe, but I wanted to finish it with something that would bring out the beautiful color and retard fading from sunlight. The lumber distributor recommended Penofin, an oil sealer highly resistant to ultraviolet light. I brushed on two coats, per the manufacturer's instructions (FIG. 48). What a difference! A nice reward for all the work that went before, and extra protection for the wood.

We took a break the next week, but I soon added the planters and benches (see page 52) so we could enjoy the deck even more.

When you look at a finished deck like this, it may seem like territory for only the most seasoned DIY'er, not the typical handyman most of us are. Certainly you have to have the tools and the time, but don't let the project's scale intimidate you. No single task is that difficult — you've probably already tackled most of them successfully — so just take them one at a time. Also, keep in mind that "do-it-yourself" doesn't literally have to mean working alone. Like I said, family, friends, and neighbors are all fair game for "volunteer duty." And why not? You know those people will want to show up for steak and suds when all the work's done. 

HANDLING PRESSURE-TREATED LUMBER

The widespread use of pressure-treated lumber for outdoor projects has many people concerned about the material's health and environmental consequences. Here is what the U.S. Forest Products Laboratory has to say about it.

Most treated lumber is southern yellow pine that's been saturated with chromated copper arsenate (CCA) inside pressurized cylinders. The preservative retention rate is specified — most is .40 lbs. per cubic foot of wood, rated for ground contact. The FPL says leaching of the chemicals is not significant enough to create a

health hazard, but advises simple precautions. Most guidelines are common sense habits — avoid prolonged inhalation of sawdust, wear eye protection, and wash up thoroughly after handling the material. Also, never burn CCA-treated wood — it concentrates arsenic, chromium, and copper in the ash, and releases arsene gas. Re-use is the best option.

There is a friendlier variety of treated wood called ACQ Preserve (for alkaline copper quaternary), that contains no chromium or arsenic. Call Chemical Specialties at (800) 421-8661 for information.

WHERE TO GET IT

SOURCES

- F&S Mfg. (Bigfoot System footing forms) (800) 934-0393
- GRK Canada Ltd. (fasteners) (800) 263-0463
- Grabber Construction Prod. (DeckMaster) (800) 869-1375
- Johnson Level & Tool (DeckMate tool) (414) 242-1161
- Performance Coatings (Penofin oil finish) (800) 736-6346
- Simpson Strong-Tie (fasteners, hardware) (800) 999-5099
- Sonoco Products Co. (SonoTube forms) (888) 875-8754
- THL Ironwoods (ipe decking) (414) 445-8989

Decking Options

Half the fun of building this issue's "showcase" deck was being able to try some new materials and hardware, seeing how they could provide a different look. But for all of the decisions made

about fasteners and lumber species and the techniques we used to put them all together, there were dozens of options that didn't get explored. Nowhere is this truer than in the choice of the decking itself. Compared to standbys like cedar and pressure-treated pine, ipe is a relative newcomer, but as wood it's still a familiar material to most.

The last two decades, however, have ushered in new breeds — wood/plastic composites, vinyl, metal, and others — all designed for little or no maintenance.

As far as sheer numbers, wood still accounts for the largest share of the decking material market — many industry estimates place it at more than 90 percent. That landscape is changing, but wood decking is popular for good reason — it's plentiful, easy to work, and it has a familiar look and feel people still like.

No material is perfect, though, and wood decking does have drawbacks. It can splinter or crack, and it's susceptible to moisture and/or insect damage that quietly strips away its strength. And as with all resources, the use of wood has consequences for the environment — especially the loss of habitat and soil from overharvesting the old-growth forests that produce the best wood.

COMPOSITES: MIXING THE GOODS

Composite decking materials, often a mixture of shredded wood fiber and plastic resins, solve many of the problems found with solid wood. These materials are more stable, rot-resistant, and more uniform from piece to piece. Also, they're typically produced from waste wood fiber and recycled plastics, diverting those materials from bulging landfills.

Most can be cut, drilled, fastened, and finished just like wood, but they don't have the same structural muscle, and may require shorter spans.

THE VINYL SOLUTION

It may have its detractors, but the use of vinyl as a decorative building material is well established by now. Exterior trim and siding represent the biggest markets, but vinyl deck systems are a growing segment and offer some of the same advantages.


Made from polyvinyl chloride (PVC), these materials share the same lineage as plastic pipe and conduit, but are engineered with ultraviolet (UV) inhibitors for colorfastness and "shock modifiers" (usually titanium) to help the deck resist impact damage. Integral color

means no painting or staining, and vinyl decking isn't subject to rot or to insect damage. Most systems are two-part, with clips or tracks that secure the decking with no fasteners visible. Trim caps cover the ends.

No-maintenance is the big selling feature of vinyl decking, but there are others. Vinyl is splinter-free, stays cooler to the touch in full sun, and doesn't absorb dirt or stains. Traffic surfaces are textured for slip-resistance, and many manufacturers also offer matching deck railing systems. Warranties vary, so ask specific questions about terms and coverage.

A LEAGUE OF THEIR OWN

Some alternative decking materials fall outside the common categories. Plastic lumber, for example, features high-density polyethylene (HDPE) resins only, with no wood fiber. Dimensional stability and rigidity suffer some, but the material still machines easily like wood.

Aluminum and fiberglass both see regular use for docks and other marine applications, and also work for residential decks. Like vinyl, they solve virtually all of the maintenance and degradation problems associated with wood decking. 

DECKING MATERIAL OPTIONS

PRESSURE-TREATED SOUTHERN PINE

Commonly CCA (chromated copper arsenate). Available locally nationwide.



16"
span

Std. Size/Lengths: 5/4 x 6 nom., 8'-16'
Avg. Cost Per Linear Ft.: \$.50-.90

Comments: Inexpensive, strong, and fairly stable, treated pine gets the nod for deck frames, and works great as decking. Latex stains improve the look.

WESTERN RED CEDAR

Origin: Canada, northwest U.S. Available locally nationwide.



16"
span

Std. Size/Lengths: 5/4 x 6 nom., 8'-16'
Avg. Cost Per Linear Ft.: \$1.00-\$1.50

Comments: Lightweight and rot-resistant softwood; takes stains/paints well. A less expensive alternative to redwood, with fewer environmental consequences.

PACIFIC CYPRESS (YELLOW CEDAR)

Northwest Forest Products, Tacoma, WA
Phone: (800) 992-9100



16"
span

Std. Size/Lengths: 5/4 x 6 nom., 8'-20'
Avg. Cost Per Linear Ft.: \$1.25-\$1.60

Comments: Just shy of southern pine in terms of strength and density, this wood has high rot and insect resistance, and machines beautifully. Sizes up to 4x4.

IPE (sold as IRONWOOD or PAU LOPE)

THL Ironwoods, (414) 445-8989
Greenheart Durawoods, (800) 783-7220



24"
span

Std. Size/Length: 1x4, 1x6, 5/4 x 6; to 16'
Avg. Cost Per Linear Ft.: \$1.00-\$2.75

Comments: This dense and very strong Brazilian hardwood is tough on tools but resists insects, fungi, water, even fire. Suppliers tout sustainable harvesting.

TREX (wood/plastic composite)

Trex Company
Phone: (800) 289-8739



16"
span

Std. Size/Lengths: 5/4 x 6 nom., 12'-20'
Avg. Cost Per Linear Ft.: \$1.45

Comments: Made of recycled materials, Trex mimics the texture, look, and workability of wood. Also comes in 2x6, but neither is for structural use. Two colors.

CHOICE-DEK (wood/plastic composite)

Advanced Environmental Recycling Tech.
Phone: (800) 951-5117



16"
span

Std. Size/Lengths: 5/4 x 6 nom., 12'-16'
Avg. Cost Per Linear Ft.: \$1.50

Comments: Made from 50% cedar fiber and 50% recycled plastics, ChoiceDeK machines like dense wood. Like Trex, it's not for structural use. Also in 2x6.

GRAPHICS KEY



Material can be painted or stained to desired color.



Prefab or matching railing components available.

16"
span

Recommended maximum span (unsupported distance between joists) when laid at 90° to joists. Reduce by 25% for diagonal decking.

24"
span

NOTE: Prices shown reflect approximate cost to the end-user, but do not include shipping charges or adjustments for nonstandard items.

DECK-CAP (2-piece wood/vinyl)
Walker-Williams Lumber Company
Phone: (800) 727-9007



Std. Size/Lengths: 5/4 x 6 nom., 8'-20'
Avg. Cost Per Linear Ft.: \$2.00

Comments: A hybrid system that pairs a kerfed, pressure-treated deck board with a vinyl cap. The cap is glued in place in the two center kerfs. White, tan, gray.

BROCK DECK SYSTEM (2-piece vinyl)
Royal Crown Ltd.
Phone: (800) 365-3625



Std. Size/Lengths: 1 1/2" x 6", 12'-20'
Avg. Cost Per Linear Ft.: \$2.50+

Comments: Self-spacing vinyl decking snaps onto aluminum track on joists. Warranty covers impact damage, a loop-hole for some vinyls. White, tan, gray.

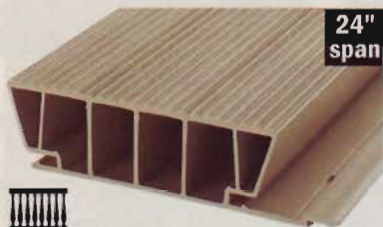
DREAM DECK (2-piece vinyl)
Thermal Industries
Phone: (800) 245-1540



Std. Size/Lengths: 2x6 nom., 12'-20'
Avg. Cost Per Linear Ft.: \$4.00

Comments: Unique three-layer extrusion uses virgin vinyl for the top layer, recycled materials for the core, and non-squeak "foot" strips. White, tan, gray.

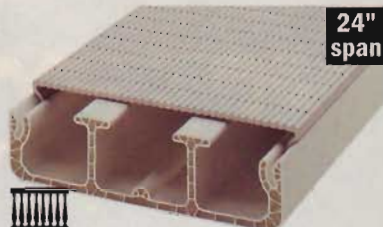
SHEERLINE UNI-DECK (1-piece vinyl)
L.B. Plastics Inc.
Phone: (704) 663-1543



Std. Size, Lengths: 1 5/8" x 6", 12'-20'
Avg. Cost Per Linear Ft.: \$3.20

Comments: Self-spacing, one-piece vinyl decking system. Grooved and textured planks can be ripped to accommodate irregular deck widths. White, tan, gray.

ROYAL DECK (2-piece vinyl)
Premier Materials Technology Inc.
Phone: (800) 262-2275



Std. Size/Lengths: 2x6 nom., 12'-20'
Avg. Cost Per Linear Ft.: \$1.80-\$2.00

Comments: Slip-resistant textured cap snaps into extruded vinyl base with honeycomb grid. Base also comes in tongue-and-groove style. White, tan, gray, sand.

PERMA-POLY (HDPE plastic lumber)
ReNew Plastics
Phone: (800) 666-5207



Std. Size/Lengths: 1x6 nom., to 16'
Avg. Cost Per Linear Ft.: \$1.60-\$2.50

Comments: Made from recycled plastics, this material comes in a wide variety of sizes, shapes, and colors. Not for structural use. (2x6 sells for \$3.60-\$5.25 ft.)

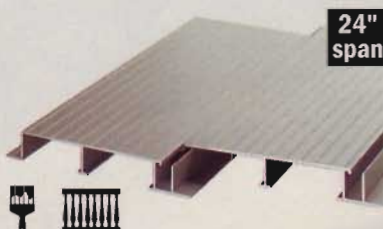
E-Z DECK (fiberglass-reinforced comp.)
Pultronex Corp.
Phone: (800) 990-3099



Std. Size/Length: 2x4, 2x6 nom., to 40'
Avg. Cost Per Linear Ft.: \$2.95, \$4.20

Comments: This self-spacing, two-part system features joist-mounted clips and snap-lock decking. Stable, very strong. White, sandalwood, gray. Long lengths!

LOCKDRY (1-piece aluminum)
Flotation Systems Inc.
Phone: (800) 711-1785



Std. Size/Lengths: 1" x 5 1/2", 12'-30'
Avg. Cost Per Linear Ft.: \$3.50

Comments: Self-aligning aluminum decking creates a no-gap surface the maker guarantees watertight. Factory-finishes (white, almond, gray) can be painted.

A Versatile Planter

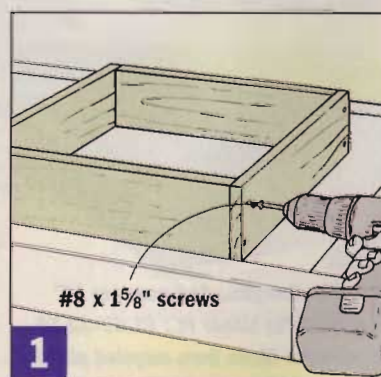
As great as the finished deck looked, I felt there was still more opportunity to add color and personality. Landscape plantings would help soften the yard-to-deck transition once they took hold, but the broad expanse of decking needed a focal point to draw people in, guide them up the steps,



and make them feel welcome. A planter stationed near the steps proved to be a great solution. Built from the same materials as the deck, the planter will stand up to years of weather, and the design was the perfect way to use up short cutoffs left-over from the deck construction. The first planter turned out so well I ended up buying additional ipe (the tropical hardwood used on the deck) to build a few more, three of which support sitting benches on the raised tier deck.

SLAT-WRAPPED FRAMES

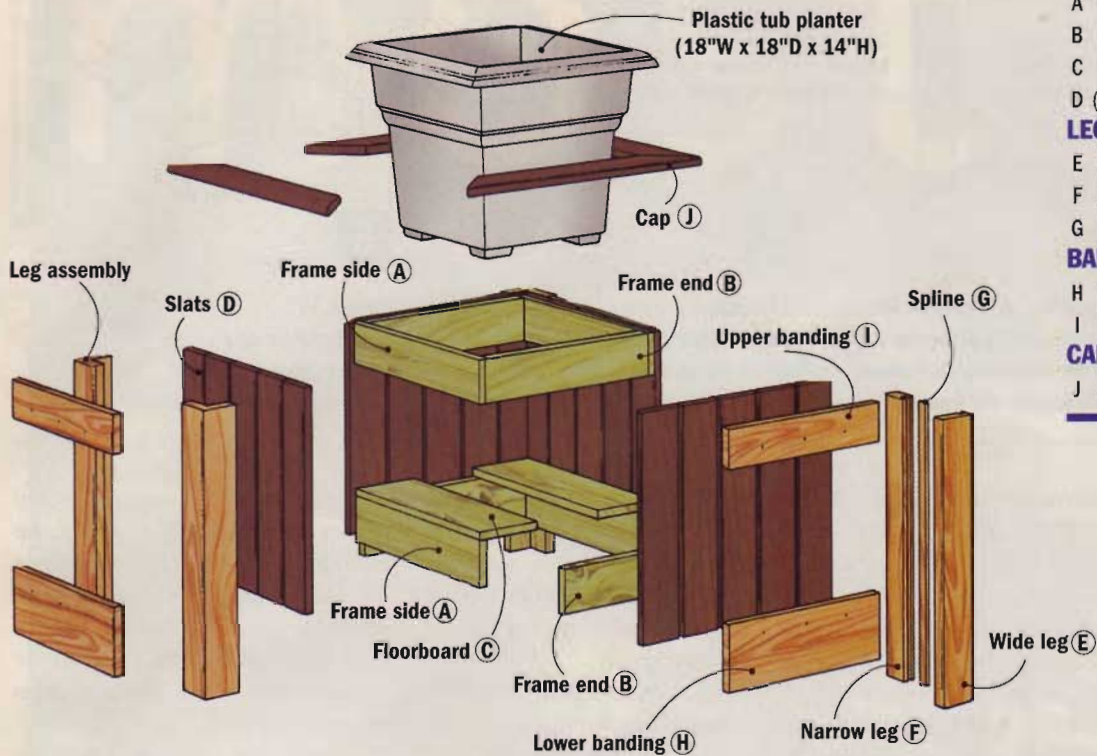
Even though the planter is built from weather-resistant lumber — cedar, ipe, and pressure-treated pine — I wanted to keep the soil contained and away from direct exposure with the wood. By designing



1 Exterior glue and screws hold each frame together. Be sure to check each assembly for square.

PLANTER CONSTRUCTION VIEW

OVERALL SIZE: 21³/₄"H x 22¹/₄"W x 22¹/₄"L



MATERIALS LIST

PLANTER BOX:

- A (4) Frame Sides $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $16\frac{3}{4}$ "
- B (4) Frame Ends $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $15\frac{1}{4}$ "
- C (2) Floorboards $\frac{3}{4}$ " x $5\frac{1}{2}$ " x $16\frac{3}{4}$ "
- D (20) Slats $\frac{3}{4}$ " x $3\frac{1}{2}$ " x 17"

LEGS:

- E (4) Wide Legs $\frac{3}{4}$ " x 3" x 21"
- F (4) Narrow Legs $\frac{3}{4}$ " x $2\frac{1}{4}$ " x 21"
- G (4) Splines $\frac{3}{4}$ " x $\frac{1}{4}$ " x 21"

BANDING:

- H (4) Lower $\frac{3}{4}$ " x 5" x $14\frac{1}{4}$ "
- I (4) Upper $\frac{3}{4}$ " x 3" x $14\frac{1}{4}$ "

CAP:

- J (4) Sides/Ends $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $22\frac{1}{4}$ "

the planter around an 18" square plastic tub I found at a local home-center (Countryside Patio Planter by Novelty Mfg., 1-800-442-7336), the wood stays clean and dry. This also makes it easy to replace the old plantings and potting soil at the start of each growing season.

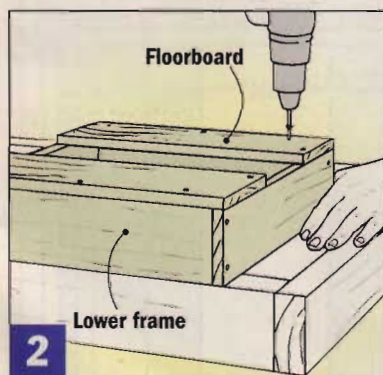
Construction is simple — you build the planter from the inside out (PLANTER CONSTRUCTION

VIEW). Starting with two pressure-treated frames (that give the planter its shape), you add a layer of ipe slats, and wrap that layer with cedar legs and banding. Screws hold the various layers together.

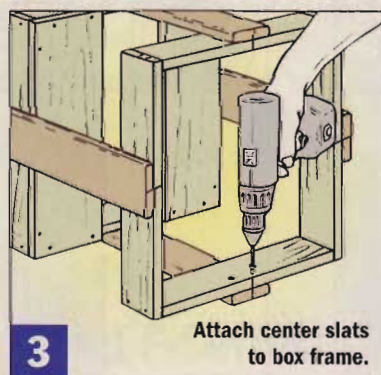
Building the pressure-treated frames is the place to start on this project. Cut the frame pieces to size and screw them together, making sure to check for square (FIG. 1).

Next, add two floorboards to the top edge of the lower frame (FIG. 2).

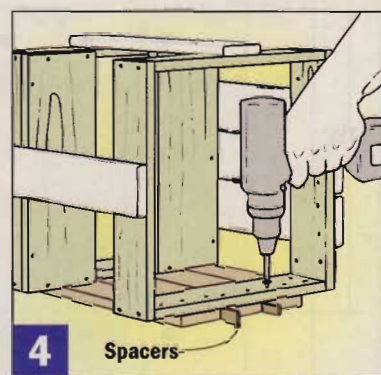
After cutting the slats to length, I realized it would be easier to apply the oil finish to them before they were installed. Once the oil dried, I secured four slats to the two frames, centering these slats on the frame sides (FIG. 3). Then I used $\frac{1}{8}$ "-thick spacers to position a slat on either side of each centered slat (FIG. 4).



2 Screw the floorboards to the lower frame to provide support for the plastic tub and stiffen the lower frame.



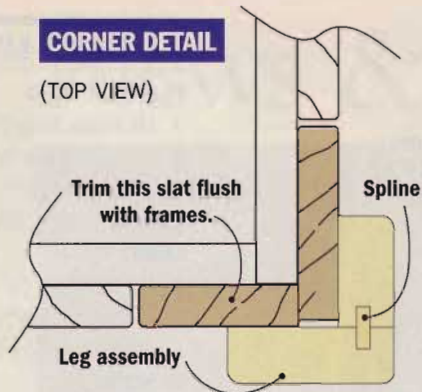
3 Mark centers on four slats and on the frames. Align each slat on the frames, drill pilot holes and drive the screws.



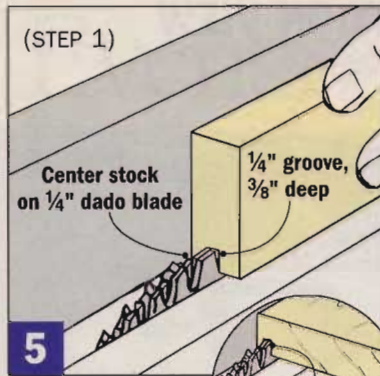
4 Use $\frac{1}{8}$ "-thick spacers to position slats to either side of each center slat. Drill pilot holes and install #8x $1\frac{1}{4}$ " screws.

CORNER DETAIL

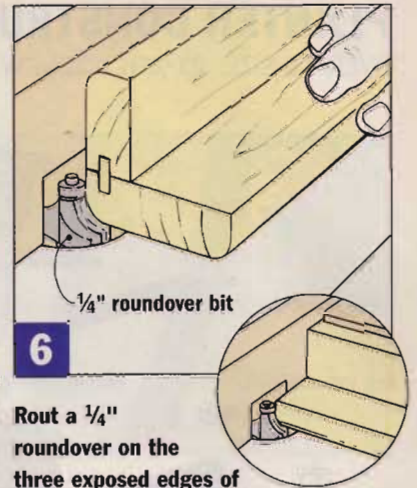
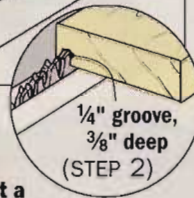
(TOP VIEW)



NOTE: Two opposing sides of the planter get five full-width (3½") slats, the outside slats on the other two sides must be trimmed flush with the frames.



5 Cut a spline groove into the edge of the narrow leg piece. Cut a groove in the face of the other piece.



6 Rout a ¼" roundover on the three exposed edges of each leg as well the bottom ends.

The outermost slats overlap at the corners (CORNER DETAIL). I used full-width outside slats on two opposing faces of the planter. With the spacing I used they extend about 5/8" beyond the frame corners. The outside slats on the adjacent faces have to be ripped to fit inside these. Don't worry about any small gaps at the corners. They'll get covered by the leg assemblies.

ADD THE LEGS

Adding legs to the planter accomplishes a couple of things. First, it raises the planter off the deck so water doesn't get trapped underneath. Second, the legs add muscle, echoing the look of the deck posts.

Cut your leg material to size, bearing in mind that like the outside ipe slats, one leg of each pair is narrower (CORNER DETAIL). This is done so the assembled pairs of legs appear symmetrical.

To ease alignment and avoid shifting during the glue-up, I added a spline to each leg assembly. Cut grooves for the splines using a ¼" dado blade, and set the fence to center the blade on the thickness of your stock (FIG. 5, STEP 1). First rip grooves in one edge of the narrower legs, then, without changing your saw setup, cut a groove in the inside face of the wider legs (FIG. 5, STEP 2).

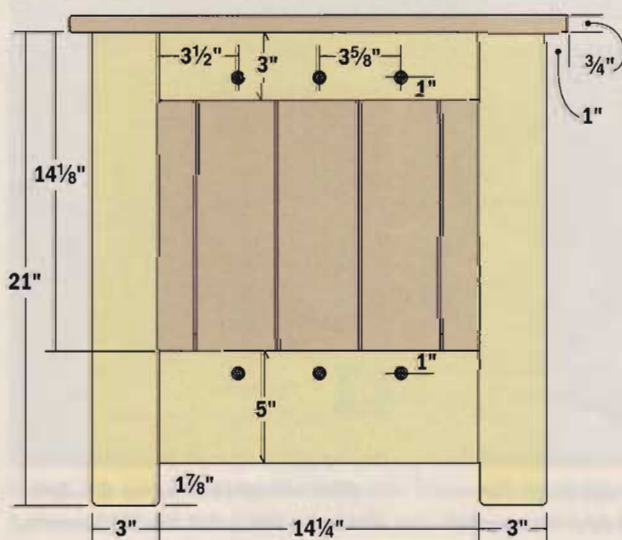
For most furniture projects, I use hardboard splines, but since this is

an outside project I used cedar. Rip splines to size, then glue and clamp each leg assembly together. Once the glue dries, roundover the outside edges and the bottom end of each leg assembly before fastening them to the planter.

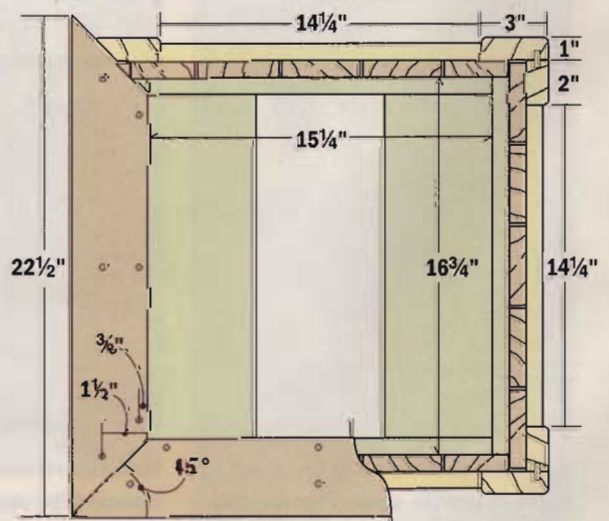
Installing the legs is easier with the planter upside down (FIG. 7). This keeps the top end of the legs flush with the top edge of the slats while you drive the screws.

Now you can measure the distance between the legs on each side and cut the cedar for the upper and lower banding pieces. Here again, I recommend staining the pieces before the installation.

PLANTER ELEVATION (SIDE VIEW)

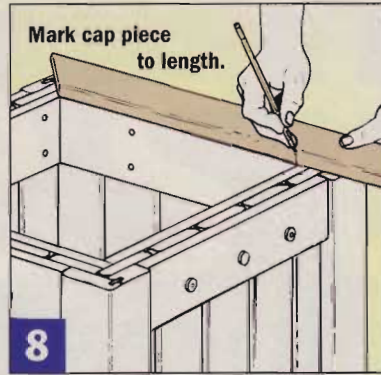


(TOP VIEW)





7 Turn the planter upside down to position the legs, then drive in the screws. You'll also want to drive screws through the upper frame into each leg.



8 Miter one end of a cap piece, position it on the planter to mark its length, then miter the other end. Clamp it to the planter to fit the next cap piece.

WHAT YOU'LL NEED

LUMBER (FOR ONE PLANTER)

- (2) 8-ft. pressure-treated 1x4's
- (1) 4-ft. pressure-treated 1x6
- (5) 8-ft. ipe 1x4's
- (1) 8-ft. cedar 1x6
- (2) 10-ft. cedar 1x4's

HARDWARE (FOR ONE PLANTER)

- (24) #6 x 1⁵/₈" deck screws
- (26) #8 x 1⁵/₈" deck screws
- (24) #10 x 2" washerhead deck screws
- (80) #8 x 1¹/₄" deck screws
- (1) 18" x 18" x 14" plastic tub planter
- (1) Quart of clear oil finish
- (1) Quart of colored stain

Like I did with the deck railing, I chose to make the banding fasteners a design element on the planter. I sprayed the same dark red paint on the RSS screws from GRK (see the **PLANTER ELEVATION**). At 2" long, these screws secure the cedar banding to both the ipe slats and the pressure-treated pine frames. Pilot holes are required in the ipe and pine.

FRAME THE TOP

Capping the project is a mitered frame of ipe. For most projects I take pains to get the miters to fit perfectly, but months in the sun and rain will undo that kind of effort here. So shooting for reasonably tight joints is good enough.

Start by mitering one end of any cap piece, then position it on the planter to mark the miter for the other end (FIG. 8). With both ends mitered, clamp this piece in position, cut and fit the next mitered piece to the first one, and so on, working your way around the top.

Before attaching the cap pieces, apply the oil finish and let it dry. When you drill the countersunk pilot holes for the screws, position the holes so the screws go into the upper frame and upper banding.

ADD AN OPTIONAL BENCH

As I mentioned earlier, I built a few more planters and used them to support a pair of benches on the tier

deck (**BENCH CONSTRUCTION VIEW**). A simple box frame made of 2x4 cedar rests on cleats fastened to the planters and its length can vary to fit your situation. (The corner planter supports an end of each bench — see inset photo on front cover.)

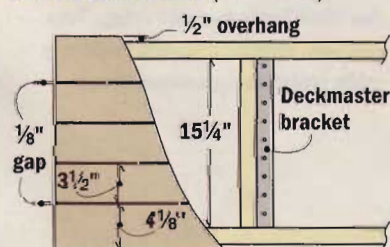
A pair of retainers made from 1x4 ipe keeps the bench ends tied to the planters. The ipe seat planks are secured with another deck project leftover — extra DeckMaster brackets. Screw the brackets to the frame, then drive screws from below to hold the planking (**BENCH ELEVATION**).

Filled with flowers, the planters add color to the already handsome deck and invite you to take a seat, relax, and enjoy the view. ■

BENCH MATERIALS LIST

- A (2) Rails* 1¹/₂" x 3¹/₂"
- B (3) Stretchers 1¹/₂" x 3¹/₂" x 15¹/₄"
- C (2) Outer Planks* 3³/₄" x 4¹/₈"
- D (3) Inner Planks* 3³/₄" x 3¹/₂"
- E (2) Cleats 1¹/₂" x 3¹/₂" x 18¹/₄"
- F (4) Retainers 3³/₄" x 3¹/₂" x 3¹/₂"

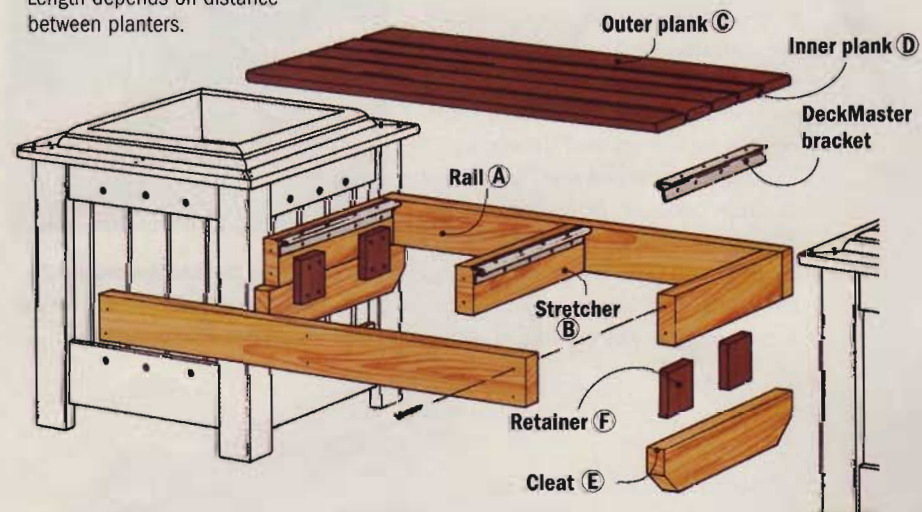
BENCH ELEVATION (TOP VIEW)



BENCH CONSTRUCTION VIEW

OVERALL SIZE: 4¹/₄" H x 19¹/₄" W

*Length depends on distance between planters.



Toolbox On Your Belt

Over the years, emergency repair situations have caught me empty-handed more than once. Oh sure, I've pressed a pocketknife into service as a screwdriver, but many times I'd have paid plenty for some "real" tools. Despite swearing oaths that I'd never again be in such a pinch, I just couldn't bring myself to start hauling a fanny pack

containing even the most basic tools. That desire for functional tools without toolbox bulk helps explain the exploding popularity of multi-tools — those folding pliers with all sorts of accessories that will fit in a compact case made to hang on your belt. Advertisements tout their ability to perform amazing feats from in-flight aircraft repair to taming wild animals.

Walk into any store that sells outdoor equipment and you're likely to find a dozen or more multi-tools on display with a dizzying array of accessories. To get a better grip on this growing tool category, we rounded up 13 models from 10 manufacturers and tried them out — cutting wire, loosening nuts, tightening screws, and slicing rope.

Our tests revealed that "feel" is just as important as how they work. When you commit to carrying a tool around with you, it's got to fit your hand and your needs. It's not always something you can explain.

UNFOLD, TWIST, OR FLIP

These tools are built around a pair of pliers, and the way they fold determines how compact they are, the comfort of the handles, and the array of accessory tools they can carry.

Tim Leatherman, acknowledged as the originator of this tool category, designed his first model to fold so the wire-cutting plier head and all the auxiliary tools fit inside the hollow

U-shaped channels that form the handles (FIG. 1). This sturdy design, borrowed by other companies as well, has two drawbacks. You have to unfold the tool to access the tools, and the handles' thin edges press uncomfortably into your hand when you squeeze down hard on the pliers.

Two recent introductions — the Leatherman Wave and the Victorinox SwissTool — took this



3 Schrade folded the handles around the pliers head. Though not as compact as some, its handles are comfortable.



4 The BuckTool's handles rotate into position, leaving a comfortable grip while maintaining compactness.



1 Leatherman designed the handles to enclose the pliers head. Detents help hold the handles in the open position.



2 The Wave (left) has rolled handle edges which are more comfortable than traditional designs (right).

original design and turned it inside out. All tools on the SwissTool are accessible with the pliers folded, and you can access two blades, a file, and the saw on the Wave without unfolding the pliers. By rolling the edges of the handle channels, the manufacturers of these two multi-tools created a very comfortable grip (FIG. 2). The improved accessibility of the accessory tools, combined

with the compactness and comfortable grip, put these two models well above the rest of the field in our test.

Schrade and relative newcomer to the category, Coleman, use curved handles that fit around the plier head (FIG. 3). This bulky design sacrifices compactness in order to provide a comfortable grip and quick access to the tools. Coleman adds utility by packaging

the accessory tools in removable cartridges. This unique approach lets you use the pliers and a screwdriver simultaneously.

The SOG Specialty Knives' Paratool and the BuckTool require a twisting action to access the pliers (FIG. 4). This maneuver requires some practice, but provides comfortable grips in a compact package. The down side is that the handles flex more than other tools we tested.

Gerber took yet another approach with its Multi-Lock tool, having the plier head retract straight back into the handles (FIG. 5). This didn't solve the accessibility problem, but the grip is comfortable.

Two companies didn't even worry about having the pliers fold. Kershaw's unique approach is to adapt a locking plier by adding a knife and tools to it (FIG. 6). This means you can clamp the Multi-Tool in place and still have both hands free, a real plus in some situations.



5 Gerber kept the edges of the grips smooth by having the plier head retract into the handles.



6 Instead of worrying about having pliers that fold, Kershaw simply added a knife blade and a few key accessories

to a compact locking plier. The jaws open over a wide range so you can clamp onto a variety of items.



7 One handle of the MultiMaster — on the right as shown — has a hollow recess in the end to accept hex bits. The other handle holds accessory tools.



8 Spring locks (left) or sliding buttons (right) operate easily. To release the Leatherman SuperTool's lock (center) you must rotate another blade to 90°.



9 Leatherman (shown here) and Gerber offer add-on tool kits that allow use of a variety of hex-shaped bits. But these kits mean additional bulk to carry.

Long and narrow, the Kershaw Multi-Tool fits on your belt like a fixed-blade sheath knife.

Kutmaster riveted a channel handle with accessories to one side of a traditional blunt nose pliers to create the MultiMaster (FIG. 7). A hole in the end of the solid handle accepts hex-shaped driver bits and the sheath has pockets to hold them.

BLADE LOCKS PREFERRED

When you're bearing down on an accessory blade, the last thing you should have to worry about is having the blade slip and fold back into the handle (or your finger). Many of the multi-tools have spring-loaded catches that lock some of the blades in place (FIG. 8). Only a few — the SwissTool, BuckTool, Leatherman

SuperTool, and the Gerber Multi-Lock — have locks on all the tools. And though the SOG Power Plier — with no blade lock — ranked high with our testers, it would have done even better with locks on the accessories.

MORE PHILLIPS, LESS SLOTTED

In a world where square-drive and Torx screws are beginning to replace Phillips-head screws, do you really need four slotted screwdriver blades? Our testers complained about this overabundance of slotted screwdrivers, particularly when the manufacturers skimped on the Phillips bits.

Buck, for example, uses a three-sided Phillips bit, while Victorinox and Schrade grind two sides slightly thinner to maintain a flatter blade.

Leatherman, Gerber, Kershaw, and SOG install full-size Phillips bits that work great. SOG includes a square drive bit standard on its Power Plier.

You can buy auxiliary adapters for the Leatherman (FIG. 9) and Gerber tools that accept a full range of hex bits. But these come in separate cases that defeat the all-in-one compactness of these tools.

SERRATED HIGHLY RATED

Knife blades on all the tools are extremely sharp — as a couple of our testers found out firsthand. The blades come in a variety of styles, some of them partially or fully serrated (see the blade styles at right). These toothy blades are particularly aggressive when it comes to cutting — it didn't take our panel long to reduce 50 feet

Pocket-sized Versions Still Versatile

Kutmaster MiniMaster (\$19)

SOG Crosscut (\$25)



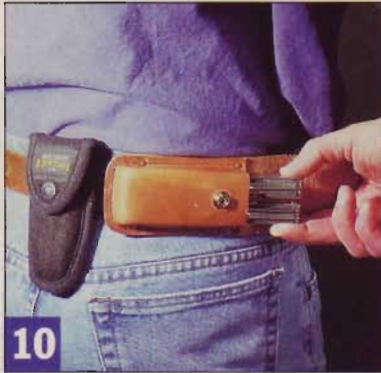
Leatherman Micra (\$22)

If you aren't the belt-sheath type or don't need a full complement of tools, a mini-tool may be just the ticket for you. Leatherman and SOG swap scissors for the pliers and offer a small knife blade, tweezers, a nail file, bottle opener, and a couple of screwdrivers. The scissors make the Micra and Crosscut favorites with fly-fishermen. (As

this article went to press, SOG introduced a pliers version of the Crosscut called the CrossGrip.)

Kutmaster breaks with convention in this class too, offering hex-head wrenches ($\frac{3}{16}$ ", $\frac{11}{32}$ ", and $\frac{3}{8}$ ") stamped into the folding cover of the MiniMaster. This tool also comes with the complement of knife, scissors, tweezers, and tools found in the others.

Buck recently introduced the MiniBuck Tool, which offers pliers for small repairs around home or



10

Even though the Schrade's leather case is bulky compared to the nylon case for the BuckTool, you can strap it on horizontally so it's more streamlined.



11

All the tools are made of stainless steel, but a number of companies give you a choice of a polished steel or black oxide finish. Typically the black versions are

\$5 to \$10 more. SOG even has a gold-tone Titanium Nitride coating that adds yet another \$10 to \$15 over the cost of the black versions.

of nylon rope into tiny pieces. Without honing the factory edges, all but the lowest-priced models cut as well at the end of the test as they did at the start, testament to the quality of steel used in the blades.

IT COMES DOWN TO PREFERENCE

There are many other options beyond the models shown here. Usually, you can choose between nylon or leather sheaths (FIG. 10). Some companies offer several models, each equipped with different tools, including bluntnose pliers, or give you a choice of finishes — bright stainless steel or a military matte black (FIG. 11).

You just have to pick the tool that has the accessories you need, feels good in your hand and on your belt,


and fits your budget. (The chart on page 60 can help you sort things out).

As proof of this personal preference, our eight test panelists consistently named several tools among their top five based on their test performance. Yet four different tools wound up as a number one choice. Asked why they chose that one tool over the others, most of our testers had a specific reason or two to support their decision, before adding "it just felt right."

Based on overall quality, accessory selection, and performance, the Wave and SwissTool ranked as top choices. Although they cost the most of any tool tested, they consistently ranked first or second with our panel. In the words of one tester, "if I was really going to depend on one, another \$20

is a small price to pay."

We also recommend the Leatherman SuperTool, SOG Power Plier, and the BuckTool. If weight and compactness aren't issues, the Schrade ToughTool may be the one for you. The Kershaw Multi-Tool gets high marks for engineering, but our testers seemed to shy away after it pinched two different panelists' hands as they squeezed the handles into the locking position.

No matter which tool you choose, be warned. Once you start carrying it around on your belt, you'll wonder how you ever got along without it. 



in the office, along with a small scissors, a bottle opener, knife, nail file, tweezers, and two screwdrivers. The MiniBuck, Micra, and Crosscut all fold similarly to their bigger brothers.

Based on the quality of construction and features in a small package, our testers overwhelmingly chose the Leatherman Micra and SOG Crosscut as the tools they'd most like to carry.

If you want something in between, Gerber has the Multi-Lite,

sort of a high-tech pocketknife. It has the same blades and many of the same tools found in the full-size Gerber tools, plus a pair of folding scissors.

Its removable plastic lid has an amber diode "emergency" light and storage compartment, although it appeared to our testers that the lid was a nuisance that would end up lost. Also, the tool's squared off edges and size make it uncomfortable to carry in your pocket.

MiniBuck Tool (\$30)

Gerber Multi-Lite (\$30)



Multi-Tool Features

KEY *N-Nylon, L-Leather; *DP-Drop point, CP-Clip point, SF-Sheeps foot, ST-Straight, SP-Spear point, FS-Fully serrated, 1/2S-Half serrated, 2/3S-2/3 serrated
 *A-Awl, SD-Square drive, SC-Scissors, R-Ruler, C-Chisel, LR-Lanyard Ring, WS-Wire stripper

	Length (folded)	Weight (oz.)	Sheath†	Blade lock	Blade 1*	Blade 2*	Slotted Screwdrivers	Phillips Screwdrivers	Can/Bottle Opener	Saw	File	Other Tools ★	Warranty/Phone No.
 Buck Tool (\$55)	4 1/8"	8.75	N	Yes	DP (1/3S)	SF (FS)	3	2	Yes	Opt.	Opt.	-	Lifetime (800) 326-2825
 Coast Pro Pocket Pliers (\$30)	4"	5.8	N	No	CP	ST (3/4S)	3	2	Yes	-	Yes	SC, WS	Lifetime (800) 426-5858
 Coleman Pro-Lock (\$35)	4 5/8"	8.5	N	No	CP (FS)	CP	2	2	Yes	Yes	Yes	WS	1 yr (800) 835-3278
 Gerber Multi-Lock Woodsman (\$50)	5 1/8"	8	N	Yes	DP	-	3	1	Yes	R	Yes	R	Lifetime (800) 950-6161
 Kershaw Multi-Tool (\$70)	6 3/4"	8.75	N	Yes	DP (1/2S)	-	1	1	Yes	H	Yes	R	Lifetime (800) 325-2891
 Kutmaster Multimaster (\$40)	5 5/8"	9	N	Yes	CP (1/3S)	SF (FS)	2	2	Yes	Yes	Yes	-	Lifetime (800) 888-4223
 Leatherman Pocket Survival Tool (\$40)	4"	6	L or N	No	CP	-	3	1	Yes	-	Yes	A, R, LR	25 yrs (503) 253-7826
 Leatherman Super Tool (\$58)	4"	9	L or N	Yes	CP	DP (FS)	3	1	Yes	Yes	Yes	A, R, LR	25 yrs (503) 253-7826
 Leatherman Wave (\$75)	4"	8	L	Yes	CP	SF (FS)	4	1	Yes	Yes	Yes	SC, WS, LR	25 yrs (503) 253-7826
 Shrade Tough Tool (\$50)	4 3/4"	9	N or L	Yes	CP (1/2S)	SF (FS)	2	1	Yes	Yes	Yes	A, R, C, WS, LR	Lifetime (800) 272-7233
 SOG Paratool (\$48)	4"	7	N	No	CP	SF (FS)	3	1	Yes	Opt.	Yes	A, R, LR	Lifetime (206) 771-6230
 SOG Power Plier (\$60)	4 1/4"	8.3	N or L	No	DP (1/2S)	DP (1" Long)	3	1	Yes	Yes	Yes	A, SD, C	Lifetime (206) 771-6230
 Victorinox SwissTool (\$70)	4 1/2"	9.6	N	Yes	SP	DP (FS)	4	1	Yes	Yes	Yes	A, R, C, WS	Lifetime (800) 243-4045

(Prices shown are average retail)

Routed Address Sign



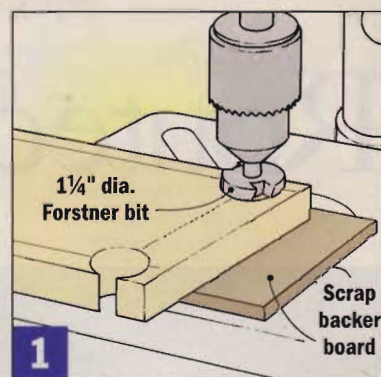
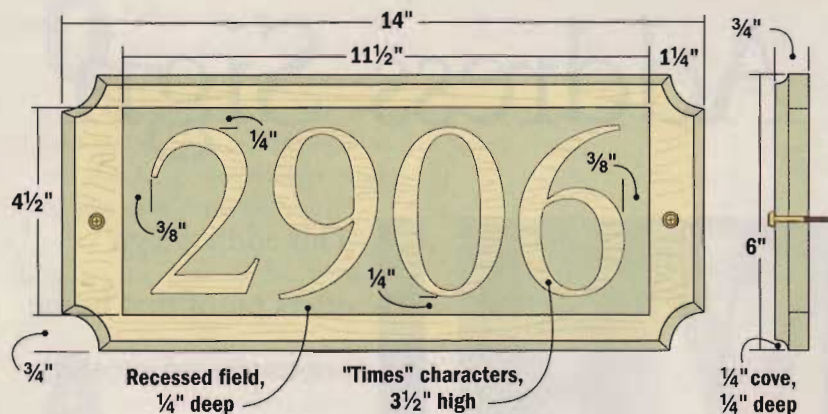
This address sign offers proof that home improvement projects don't have to be large or complex to have a big impact. The sign really dresses up my home's entryway, and it's much more visible than the stamped

metal numbers it replaced. And making the sign is easy and fun. It's just a board with a recessed field created by freehand routing around number patterns. The painted background contrasts against the raised numbers and border, and matches the house's color scheme.

Tool and material requirements for this sign are simple as well. You'll need a 2-ft. length of select-grade white pine 1x8, plus a can of spray paint. For tools, round up your router and a few basic bits — 1/8"- and 1/4"-dia. straight bits, and a 1/4" cove bit. I also used a shop-made acrylic router baseplate (see the *Skill-Builder* on the next page).

To finish and preserve the sign, I tried a technique learned from *Workbench* reader Clifford Hicks. He makes signs from white pine because he likes how the wood, if left unfinished, weathers to a bleached-white color over time. But bare wood invites mildew and rot. Finishing the wood improves its longevity, but most exterior top

ADDRESS SIGN ELEVATIONS



Drill a 1/4"-dia. hole at each intersection of the layout lines. A Forstner bit cuts cleaner holes than a spade bit.

coats inhibit sun-bleaching. When Mr. Hicks accidentally spilled bleach on a piece of pine stock, he had his solution — bleach the wood to speed the weathering process, then protect the sign with finish. But all this about finishing is premature. The first order of business is making the sign.

BY THE NUMBERS

Determining the sign's dimensions starts with sizing the numbers. I used characters 3 1/2" high. They're large enough to see from the street

without making the sign too large (ADDRESS SIGN ELEVATIONS).

After determining the number size, you need to pick a character style, or font. You'll find a variety of fonts at art supply stores, or you can buy address numbers at a hardware store and trace around them. You can even draw numbers freehand if you prefer. I used my computer's word processing program, which gave me many font choices.

First, I weeded out fonts with intricate details, knowing they'd be tough to rout. I picked several candidates from the remaining choices and printed my address in each style. In the end, I chose a font called "Times." Then I printed numbers at the 3 1/2" height.

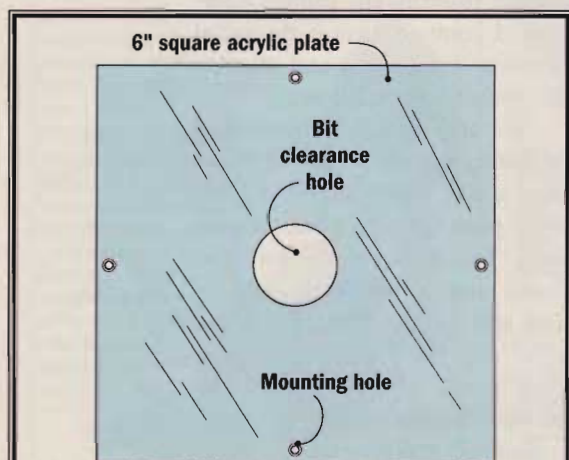
If you're creating your patterns using store-bought numbers, make

photocopies to enlarge or reduce them to the proper size.

Once you've sized your number patterns, you can lay them out to determine the sign's overall size. I marked boundaries for the recessed field 1/4" above and below the numbers and 3/8" to each side, and added 1 1/2" of width and 2 1/2" of length to make my sign 6"-wide by 14"-long.

Before cutting your sign to final size, mark its outside dimensions on the 1x8. Where the lines intersect, drill 1/4"-dia. holes to form the sign's decorative corners (FIG. 1). Then cut the sign to size along the layout lines (FIG. 2).

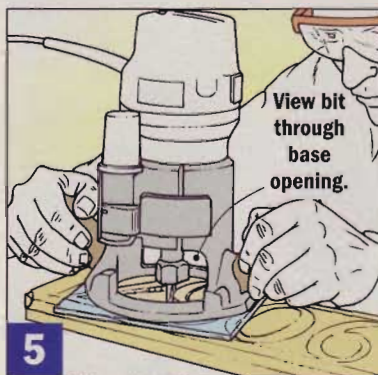
Now you can mark the inside boundaries of the border. Make these layout lines dark so you'll be able to see them when you start routing the recessed field.



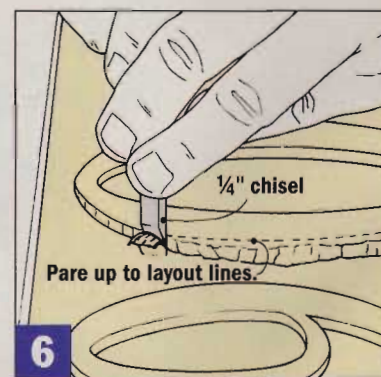
SKILL-BUILDER

A Clear View

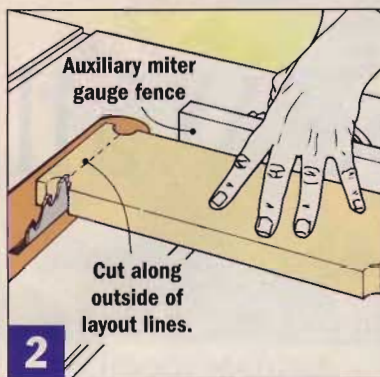
Make viewing layout lines easier by replacing your router's standard baseplate with a plate made from 1/4"-thick clear acrylic. Use your existing plate as a pattern for the bit hole and mounting screw holes.



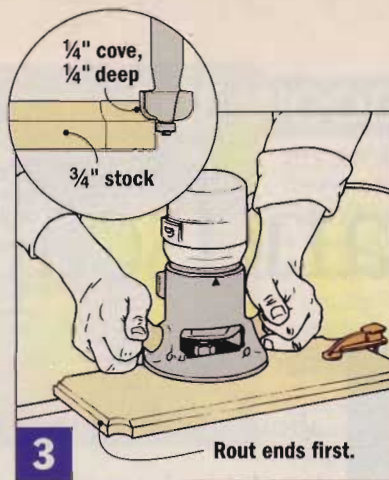
Keep a firm grip on the router and look through the baseplate as you guide the bit. Wear eye and ear protection.



For absolutely clean edges along the numbers and border, use a 1/4" chisel to pare up to your layout lines.



2 Rip the sign to final width first, then crosscut it to length using an auxiliary fence attached to your miter gauge.



3 Routing a 1/4" cove around the sign adds visual interest, plus provides a paintable surface that frames the sign.



4 Draw a baseline to simplify aligning the number patterns, then stick them in place with spray adhesive.

Routing a 1/4" cove around the sign's outside edges dresses up the sign and frames it with color, better defining the edges (FIG. 3).

ROUT TO SUCCESS

Now you need to lay out the numbers on the sign. You could place each pattern on your wood and trace around it, but I found it easier to glue the patterns in place using artist's spray adhesive (FIG. 4).

If you haven't tried freehand-routing before, the process may sound intimidating, but I bet you'll be surprised by the control you have. Just make sure your bits are sharp and take your time. If you're working with hardwoods, make several 1/8"-deep passes to reach full depth. To get the feel of controlling the router, practice on scrap stock first.

By the way, if you're not in the habit of wearing eye and ear protection, now's the time to start. Peering through the router's baseplate puts you in close proximity to flying chips and the motor's wail.

Start with the 1/4"-dia. straight bit. If you're working with pine, as I was, you can set the bit for the full 1/4" depth-of-cut. Then ease the bit into the wood anywhere in the area of the field you'll be removing (FIG. 5). Rout as close as you comfortably can to the numbers and the edges of the border. For the final pass, switch to the 1/8"-dia. straight bit. If you don't feel steady routing right up to the layout lines, stay 1/8" outside, then finish up with a chisel (FIG. 6).

When you're done, peel off the number patterns, and sand away any whiskers left by the router.

WEATHER AND PROTECT

The first step in finishing the sign is to spray it with paint (FIG. 7). Lay on a couple of light coats first to seal the wood, followed by one or two heavier coats.

After the paint dries, sand the paint off the raised surfaces to expose the bare wood (FIG. 8). Wipe a liberal coat of household bleach on the bare wood, let it dry, then lightly hand sand to remove any raised grain. Finally, coat the sign with exterior polyurethane. This process protects the sign from the elements, but gives the exposed wood an aged, sun-bleached look that adds contrast and character.

Making address signs allows your imagination to roam. Choose any size, shape, and character style you want. You can even add your name, or the name of your street. For a different look, try recessing the numbers instead of the field, as shown below. However you do it, this sign lets you experiment, have fun, and see that even simple projects can be big home improvements. ■



7 After removing the number templates and sanding the sign, spray on several coats of paint. Dark colors work best.



8 An electric sander and 120-grit paper quickly removes paint from the sign's raised surfaces, exposing the wood.



Stylish Landscape Wall

Every beginning woodworker learns lessons about matching the right tool with the task at hand, but in an age of power tools it's easy to think that brute strength is always the answer.

This bias even showed up in some of my early project designs. More than a few of them were

overbuilt, mostly to avoid the cheap construction I found in so much store-bought furniture.

The reactions I've gotten to this light-duty landscape wall, though, prove that sometimes less is more. With a mild slope and a grade only 12 to 18 inches above the sidewalk, my front yard didn't require a massive structure to hold it back, so there was no point in using railroad ties or the large landscape timbers that often see duty in retaining walls. Heavily constructed walls like that have a muscle-bound look I didn't want. They're more Olympic weightlifter, and I wanted the sculpted strength of a gymnast.

REINVENTING THE WALL

I refined this wall a little by using lighter components, routing details for a more customized design, and by using solid-color latex stains to give some color to the pressure-treated lumber. The 2x8 fascia boards make a lot of these features possible (RETAINING WALL CONSTRUCTION VIEW, POST DETAIL). They also provide a 1"-wide shoulder on each side of the 4x6 posts, so the rail ends can nest securely there but not be fastened, which would restrict their movement. This allows the rail sections to "float" between the posts, so frost heaving of the ground won't break the wall apart.

Though this design worked fine for my situation, the practical height limit for a wall like this is probably about two feet. Before you commit to duplicating it, make sure your site requirements don't call for something beefier. Like a lot of outdoor projects, wood retaining walls sometimes wait for years before they reveal the true skills of their makers. It's not that difficult to put together something that looks good when new, but time and natural forces will eventually betray poor craftsmanship or engineering.

First of all, you're trying to restrain the soil equivalent of a small glacier, especially on steep slopes. The forces working to push the wall over or apart are slow, but they are

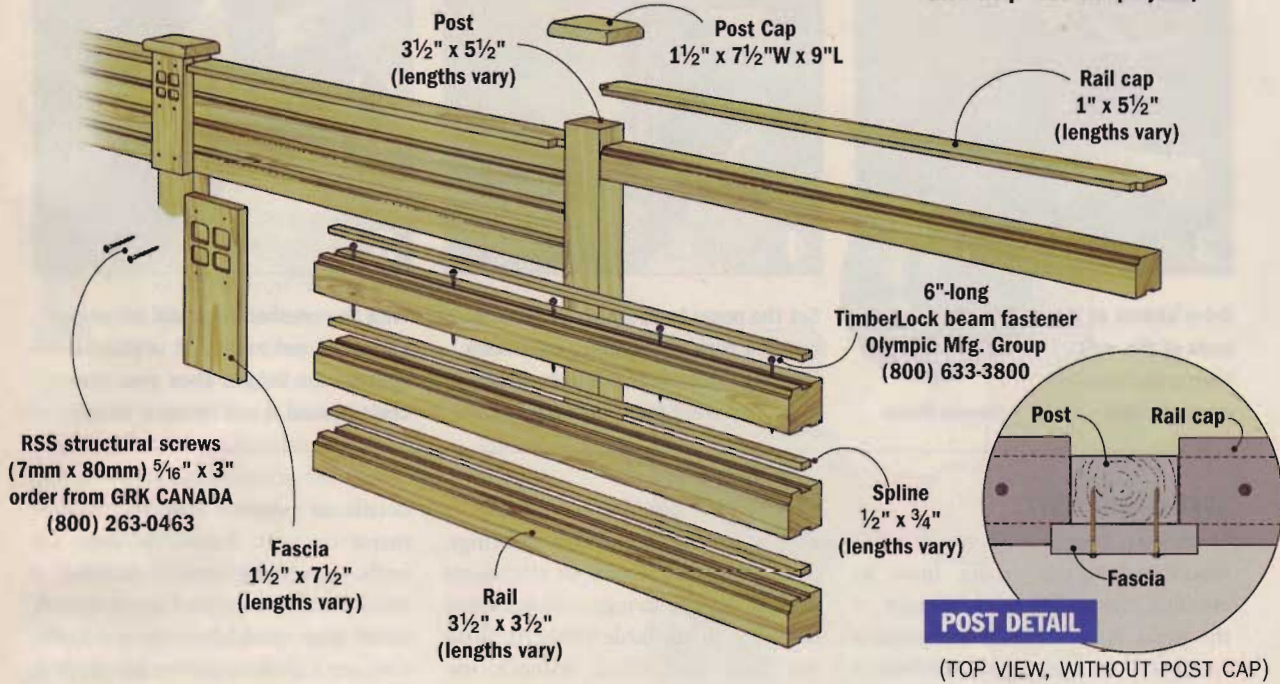


1 Dig a rough trench to establish the location of the wall. Fine-tuning will come later, when the posts are in.

RETAINING WALL CONSTRUCTION VIEW

(All lumber is pressure-treated southern yellow pine.)

(Special thanks to the Southern Forest Products Association for their help with this project.)



relentless, and in many states the structure also has to cope with vertical movement of the ground from freeze/thaw cycling. Some situations require heavy reinforcement with steel cables or buried timbers that resist the soil's movement. I managed without those, but I did pour concrete post footings for strength (FOOTING ANATOMY).

One important safety note: Any time you're going to dig deep holes in your yard, call your local utility companies to arrange for marking

of underground cables or buried gas and water lines. (The service is free but you're responsible for scheduling it, and for damage if you don't.)

The existing sidewalk established the line for my wall, and I roughed out a trench with a shovel (FIG. 1). My trench depth ranged from 1"-4" below the top of the sidewalk, to allow for a shallow gravel drainage bed underneath the rail sections.

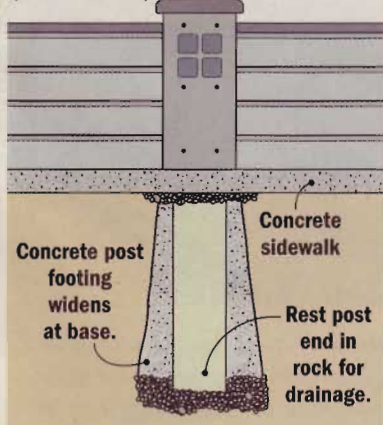
The layout I used features a 4x6 post every six feet, which keeps the rail sections a manageable length.

Each post hole measures at least 2 ft. deep, and I angled the sidewalls into a wedge shape that resists frost heaving (FIG. 2). If you're near a sidewalk, keep the posts and footings a few inches away — sidewalks aren't built to withstand lateral loads.

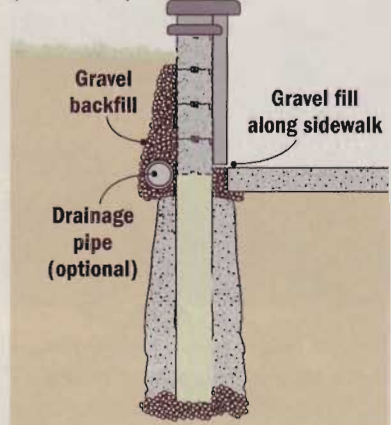
If your site is fairly level from end to end, the trench depth and number of rails in each section will be consistent. If it slopes, you'll have to dig the trench slightly deeper (and use more rails) in some sections so the top of the wall stays level.

FOOTING ANATOMY

(FRONT VIEW)



(SIDE VIEW)



As you dig each post hole, shape the sidewalls like a wedge, wider at the bottom and tapering toward the top.



3 Drive stakes at the ends of the wall, then transfer level marks to run a string between them.



4 Set the posts temporarily in place with crushed rock underneath, then mark the height for cutting. The lower string aligns the front faces of the posts.



5 With the crushed rock still intact (for drainage), set each post in place and recheck the height. Then pour concrete around it and recheck plumb.

SETTING THE POSTS

With the holes dug, you'll need wood stakes and string lines to establish the position and height of the posts. A water level (or a string level) will let you mark the height accurately at both ends of the wall (FIG. 3). I ran two string lines, one for the top of the posts, another to keep the fronts of the posts in a straight line. Then with a 2" layer of crushed rock in each hole, I dropped the posts in to mark them for cutting to length with a miter saw (FIG. 4). Number the posts to keep the sequence in order. (If you prefer, you can leave the posts a little long, set them in concrete, then snap a chalk line and cut them off

later with a circular saw.) When it comes time to pour the footings, place each post, check its alignment with the guide strings, and get some concrete in the hole (FIG. 5). With the hole half filled, recheck the post's height and plumb before you pour in the rest of the concrete.

FASCIAS ADD DESIGN MOTIF

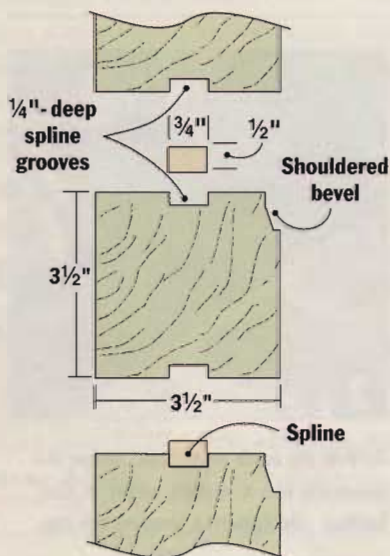
As I mentioned earlier, with this landscape wall design the posts anchor the wall but don't directly hold the rails. Instead, the rail sections nest behind 2x8 fascia boards fastened to the posts.

Aside from this load-bearing function, the fascias also let you explore design options. You can rout

details or patterns that match elements on your house, or come up with something new. I wanted a small Craftsman-style "four-square" motif that would be easy to duplicate, so I built a jig to use with a router and a bearing-guided dishing bit (JIG ELEVATIONS). I simply clamped the jig onto each workpiece and followed the pattern with the router (FIG. 6). I also used the jig to drill a consistent series of screw holes for fastening each fascia to its post.

Once the concrete footings have had at least a day to cure, you can install the fascias. Clamp them to each post, then use hardened steel screws (paint heads before installing) to secure them (FIG. 7).

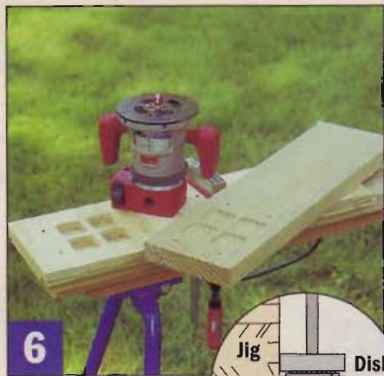
RAIL ELEVATIONS (END VIEW)



8 I used a faux raised-panel cutter to rout a shouldered bevel on the rails. Orient the rails face up for this.



9 This edge-guided router setup, with a 3/4" straight bit, produced the spline grooves. Keep guide on the front face.

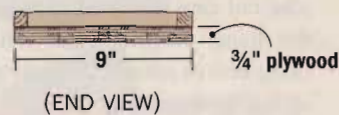
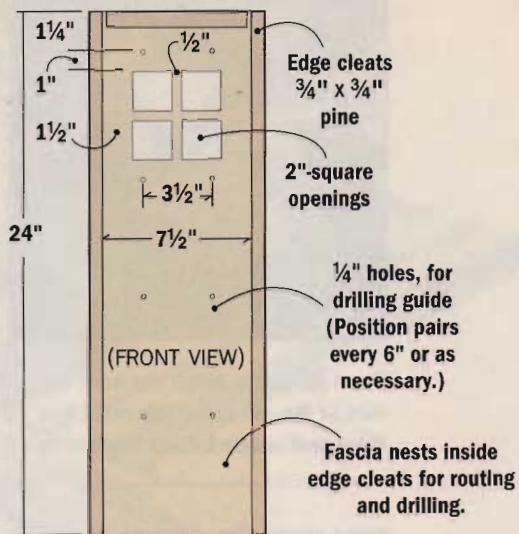


6 You can add a design to the fascias with a router, jig, and bearing-guided dishing bit (inset).



7 The fascias bear the wall's load directly, so use serious fasteners to secure them to the posts. I got RSS structural screws from GRK, (800) 263-0463.

JIG ELEVATIONS



ROUTING THE RAILS

It would have been possible simply to stack the 4x4 rails together to fill the wall sections in, but this wasn't the best long-term solution, and it sure wasn't the look I wanted. Again, simple routing added visual appeal and strength to the design.

First, a shouldered bevel routed on the top front edge of each rail helps dress up the wall, and it sheds water (RAIL ELEVATIONS, FIG. 8). I used an edge guide and a cutter that's designed for a raised-panel look. (Porter-Cable's #43154 or Bosch's SS-85480M will cut this profile.)

Next came spline grooves, centered in the top and bottom of each rail. The splines help align the rails

during assembly, and lock them as a unit to resist the soil's force. Use a 3/4" straight bit here, again with an edge guide (FIG. 9). Don't cut the rails to length yet. Each section will vary a little, so trim to fit as you go.

ASSEMBLING THE RAIL SECTIONS

Before you lay the first rail in place, you'll need to make sure each trench section is the right depth and is level from post to post. To keep the top of the wall level along a run that slopes, you'll have to grade the trench in a series of steps, increasing the number of rails as the ground descends. When each section of the trench is graded, allow for and add a layer of gravel for a drainage bed,

then set the first rail in place and adjust it until it's level (FIG. 10).

Next, nail a spline in the top groove of your first rail, and place the next rail on top of it (FIG. 11). To lock the rails together, I drove long screws called TimberLok beam fasteners, made especially for this purpose (Olympic Manufacturing Group, 1-800-633-3800). A latex stain went on after I assembled each section (FIG. 12). I also added more gravel alongside the bottom rails.



10 After laying a gravel drainage bed in the trench, set the first rail in place and tamp it until it sits perfectly level.



11 Nail a spline in the rail's top groove, then set the next rail in place and fasten it with several 6"-long screws.



12 Apply paint or stain while you can still tilt the rail sections clear of the post fascias. I used solid-color latex stain.



13 Use a jig saw to notch the front corners of the rail caps. This relief lets them nest snugly behind the fascias.



14 After routing the edges of the rail caps with a roundover bit, fasten them in place with galvanized deck screws.



15 The post caps install the same way. You should have about a 1" space between them and the rail caps below.

TRIM ADDS THE ACCENT


The rail caps and post caps provide the icing on the cake. With the exception of affording a little shelter to the end grain on the posts and fascias, their function is strictly decorative. But they're easy to make, so that's fine. I said earlier that the relatively light engineering requirements for this retaining wall allowed me some leeway with the design.

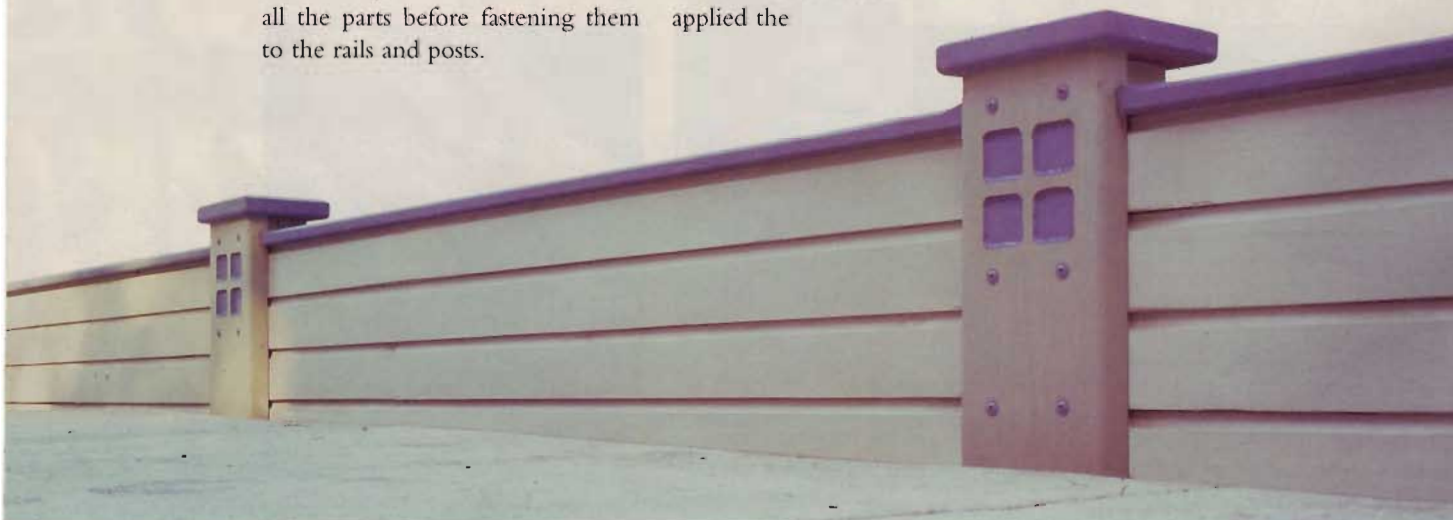
The trim pieces did more than add shape to the wall, however. They also gave me more to work with for a color scheme. The fascias and the rails allowed for two shades of a gray/khaki stain — a good start. But the muted blue/gray accent color had so far made it only onto the fastener heads and the routed four-square pattern in the fascias. Using the same color on the rail and post caps dressed up the look more. And for this step, I found it easier to stain all the parts before fastening them to the rails and posts.

You can use stock lumber sizes for the trim components if you want — 5/4x6 decking for the rail caps, and 2x8 material for the post caps. Again, I chose to add some routed details. The corners and lower edges of the rail and post caps got a 1/4"-radius roundover, and the top edges got dressed with a larger roundover bit I borrowed from one of my woodworking buddies. It's not necessary to replicate these details exactly, but I do recommend routing all exposed edges with some sort of rounded contour for safety.

Because the rail caps are wider than the rails, you'll need to notch their front corners to fit around the fascias (FIG. 13). I did this with a jig saw, then routed the roundover detail on the edges. Like the rails, the rail caps have to be cut to fit for each section. I measured, cut, and routed all of them, then applied the

accent color stain and let them dry. With that done, it was simply a matter of fastening them to the rail sections with 2" galvanized deck screws (FIG. 14). Finally, the wall got topped off with the post caps, secured with 2 1/2" screws (FIG. 15). Assembled, each post and rail section should resemble the example shown in the FOOTING ANATOMY illustration back on page 65.

After I put my tools and painting supplies away, I grabbed a shovel to backfill the trench with gravel. While I was working, a man and his young son walked by. He stopped and said, "I really like your wall. It's kind of . . . graceful." He seemed to hesitate with the word, like it was an odd description for a retaining wall. I guess it is, but then adding some style and grace to the project was the whole plan. 



Using A Circular Saw

For a couple of summers during high school I worked with a framing crew. I'd like you to believe I built houses, though that wouldn't be the truth. No, I was the chief "go-fer" and cleanup guy. To this day my broom-handling skills are topnotch, but just watching the carpenters work also gave me an

education in the art of framing. I especially liked watching an older carpenter named Pete. He wasn't the fastest framer around, but what he lacked in speed Pete more than made

up for in accuracy. Experience certainly played a part in this, though he also benefited from some well-worn cutting jigs. Sure, there were other carpenters who cut everything free-hand and were good at it. But I've found that, when armed with versions of Pete's jigs and a little know-how, even the greenest greenhorn can get accurate results.

SETTING UP

Before you plug in your saw and start cutting, check it over. Make sure your

blade is sharp and none of the teeth are damaged. Retract the blade guard to check for binding or other problems, and inspect the cord and plug for damage or wear.

On most saws, the tilt scale is fairly crude and lacks an adjustment feature, so don't trust it for precise angle settings. For 90° cuts, set the blade for the maximum depth cut and position a square against the blade and sole plate, then cinch the locking lever tight. If the saw has an adjustable cursor or 90° stop, index them to this setting.

Repeat the process before making 45° cuts. If your saw lacks stops, make your own marks on the tilt scale so you can quickly hit these settings again.





1 Adjust blade depth so the gullets extend past the bottom of the workpiece to clear sawdust from the kerf.



2 Once you've cut partway through the sheet, install a Kerf Keeper to help keep the stock aligned and supported.



3 For finish cuts, an edge guide — either homemade or commercial — steers the saw in a straight line.

BUZZ THROUGH SHEET GOODS

Though my table saw is equipped with extension and outfeed tables, I often cut full sheets of plywood with my circular saw. Without a helper, 4-ft. × 8-ft. sheets are too unwieldy to cut safely on a stationary saw.

You can trim a sheet into more manageable, slightly oversize pieces, then make your finish cuts at the table saw. Set the blade depth so the gullets of the teeth extend just below the board (FIG. 1). A lower setting will create unnecessary drag on the blade and you'll get a rougher cut due to the entry angle of the blade's teeth.

Since straightedge accuracy isn't essential for such cuts, I snap a chalk line or use a drywall square to mark my line, then freehand the cut.

Once I've cut partway into the sheet, I'll stop and insert a Kerf Keeper before completing the cut

(FIG. 2). This keeps the plywood from sagging and binding the blade, but even with this device, you need to support the sheet both left and right of the cut. After the oversize piece is cut out, place its factory edge against the rip fence when making the final trim pass on the table saw.

USE A GUIDE FOR FINISH CUTS

For greater accuracy when cutting sheet goods, I use a homemade edge guide (FIG. 3). It consists of a straight-edged 1x4 glued and screwed to a 12"-wide piece of tempered hardboard. The first saw pass will trim the guide to width. From then on you can align the edge of the hardboard with the line of cut, and clamp the guide to the workpiece. Since kerf width can vary from blade to blade, I always use the same blade with the jig to eliminate inconsistencies.

MORE PLYWOOD TECHNIQUES

When you cut plywood, especially hardwood veneered sheets, you want to minimize tearout. I've come across a number of tricks that accomplish this.

Starting with the saw, make sure you use a sharp plywood-cutting blade — typically one with 80-140 teeth. A zero-clearance hardboard sole plate also helps reduce splintering (FIG. 4).

Always put the plywood's best face down — just the opposite of what you do on a table saw. Because the blade on a circular saw is spinning upward at the point of contact, you want the teeth to enter the good face so any splinters occur on the poorer, or "exit," side of the material. Scoring the cut with a sharp utility knife or placing masking tape over the line of cut also helps reduce tearout.



6 Framers often take advantage of gravity, letting it pull their worm-drive saws through the cut. Tilt the 2x stock on edge and simply guide the saw.



7 Square cuts on wide stock require a guide. This simple jig or a Speed Square helps cut angles too.



8 Clamping boards together lets you gang-cut them all in one pass. Though it takes time to set up, this one-cut method ensures uniform lengths.

Seven Rules for Safe Sawing

1. Adequately support your stock and clamp it down firmly whenever possible.
2. Keep fingers well away from the path of blade.
3. Don't overextend your reach, and keep the cord slack so it doesn't create drag on the saw.
4. Whenever possible, support the wide part of sole plate on the workpiece — not on the cutoff.
5. Don't wedge or tie the blade guard in the up position, exposing the blade.
6. Keep a steady cutting speed — don't force the saw through the workpiece.
7. Let the blade come to a stop before lowering the saw or setting it down.



4 Double-face tape holds a zero-clearance plate to the saw. The plate and a fine-tooth blade reduce splintering.



5 To make plunge cuts, retract the guard, line up the blade, then pivot the saw down into the cut.

Occasionally, you may need to cut an opening in a panel. To make this plunge (or pocket) cut you must pivot the saw from the front edge of the sole plate to lower the blade into the stock (FIG. 5). Once the sole plate rests on the workpiece you can finish the cut. Repeat this procedure for each side of the opening. Unless you overlap the cuts at the corners of the opening, you'll need to finish them with a handsaw.

DIMENSIONAL LUMBER TRICKS

While generally easier to handle than sheet goods, dimensional lumber presents its own set of challenges — thicker stock, repetitive cuts, and longer pieces. It just takes a different set of tricks to achieve the same high quality results.

You can put gravity to work cross-cutting 2x stock, especially if you're

using a worm-drive saw. A favorite trick of framers is to tilt the stock on edge and let the saw's weight push it through the cut (FIG. 6).


Crosscutting wider stock calls for a saw guide. I use a two-sided cutoff jig that handles both 90° and 45° cuts (FIG. 7). Some store-bought squares can serve the same purpose. When you need to cut multiple pieces the same length, gang-cutting lets you cut all the boards in one pass (FIG. 8).

Another common need is to form notches for lap joints. By making multiple cuts with the saw through the notch layout, then clearing the waste with a chisel, you can quickly complete this task (FIG. 9).

I'd hacked my way through posts on several deck projects before I discovered a trick for cutting them off cleanly. First, you build a U-shaped jig that slips snugly onto the post.

With the jig clamped in place and the saw's blade at full depth, you then take passes on two opposing sides of the post (FIG. 10).

Most of the time, I prefer to use my table saw to rip lumber. But in a pinch, I can get the job done using a circular saw equipped with a ripping guide (FIG. 11). Always clamp the board in place so you can keep both hands on the saw.

These tips have all served me well, but I'm sure there are other circular saw techniques and jigs out there if you keep your eyes open. As that great American philosopher Yogi Berra once said, "you can observe a lot just by watching." 



9 To notch your stock, make multiple cuts within the notch layout — with the blade set to the depth of the notch — then use a chisel to remove the waste.



10 A U-shaped jig keeps the blade aligned when you make cuts from opposing sides of the post.

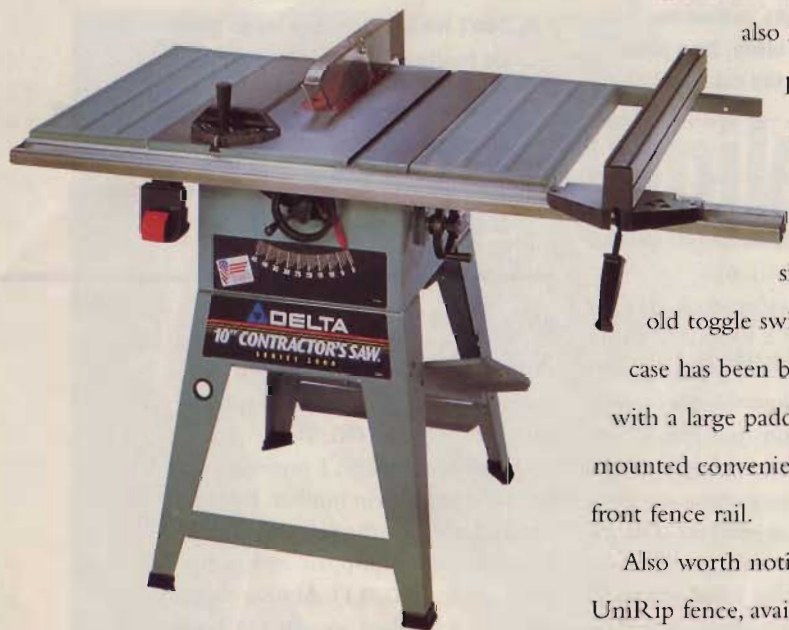


11 An edge guide lets you accurately rip stock. Clamps allow you to use both hands to steer the saw. Sacrificial top caps on your sawhorses are a must.

Tools & Shop Gear

Delta Redesigns Contractor's Saw Series

Delta International Machinery has redesigned its Contractor's Saws, making several upgrades, and dubbing the line Series 2000.



All saws in the line share two quite welcome improvements. First, there's a new stand that has an integral dust chute. This stand also has just three pieces, making it easier to assemble than the previous version. Second, the old toggle switch on the saw case has been replaced with a large paddle switch mounted conveniently on the front fence rail.

Also worth noting is the new UniRip fence, available on the

model 36-444 (shown). It replaces Delta's old Jet-Lock fence, and borrows its T-square design from Biesemeyer, the well-known after-market fence manufacturer Delta purchased a few years back. The fence has a 30" cutting capacity to the right of the blade.

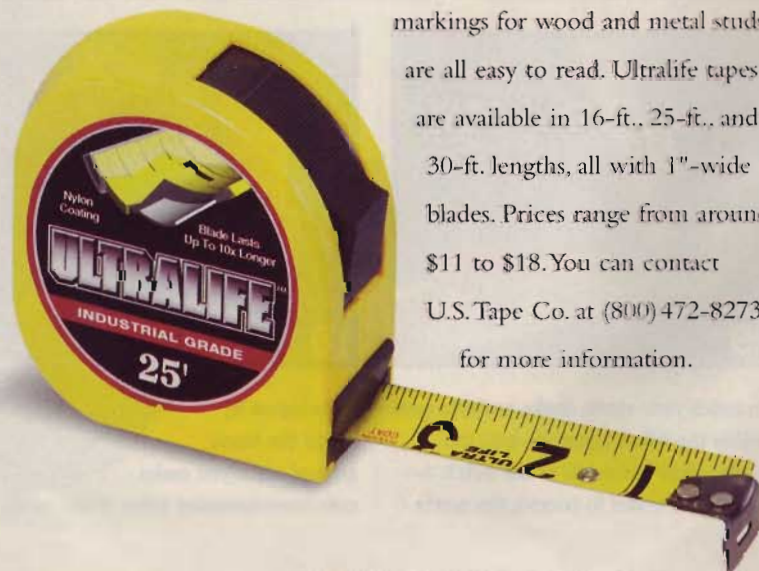
Series 2000 Contractor's Saws are available in several models, with either a Unifence, UniRip, or Biesemeyer fence, and feature cutting capacities from 28" to 50" right of the blade. Street prices run from around \$550 to \$850. Call Delta at (800) 438-2486 or go to www.deltawoodworking.com.

Nylon Blade Lengthens Measuring Tape Life

Looking at the Ultralife tape rule from U.S. Tape Co. you can tell it's a well-made tool, but nothing appears overly remarkable. A closer look reveals a unique nylon-coated metal blade. Manufacturing the blade involves pushing it through a die as nylon is extruded around it. The nylon protects the blade and prevents the numbers and graduations from wearing off. U.S. Tape Co. claims the coating gives the blade a life up to 10-times longer than a conventional tape's steel blade.

The Ultralife tape also has a blade wiper to clean the blade and keep debris out of the case, and a

blade hook with a reinforcing gusset. Large numerals and graduations in inches and feet/inches, as well as markings for wood and metal studs are all easy to read. Ultralife tapes are available in 16-ft., 25-ft., and 30-ft. lengths, all with 1"-wide blades. Prices range from around \$11 to \$18. You can contact U.S. Tape Co. at (800) 472-8273 for more information.



Milwaukee Electric Tool Debuts a Souped Up Sawzall

The latest efforts from the folks at Milwaukee Electric Tool have resulted in the Super Sawzall model 6537-22. One of the saw's most touted features is a variable-speed 10-amp motor that drives the blade at 0-3,200 strokes-per-minute, the fastest of any reciprocating saw on the market. Stroke length is 1 1/4".

In addition to fast cutting, this saw offers Milwaukee's impact protection system designed to shield the saw's gears, bearings, and motor. It isolates these mechanisms from impacts encountered when the blade strikes an object or gets



stopped abruptly during tough cuts. The saw also features a tool-free blade clamp.

Street price for the Super Sawzall 6537-22 should be around \$220,

which includes a steel carrying case and an assortment of blades. You can call Milwaukee at (800)414-6527, or try the company's web site: www.mil-electric-tool.com.

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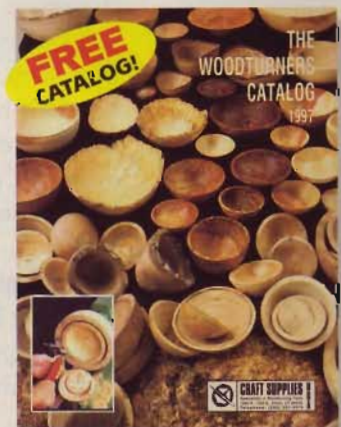


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Product Information Number 176

It's a Chisel, It's a Rasp, It's a WoodChuck

The WoodChuck combines a carpenter's chisel with a two-sided wood rasp. Nicholson, the tool's manufacturer (and a division of Cooper Tools) makes the chisels from file steel, with one half-round face and one flat face, each with a fine-toothed rasp. The chisels have a flat-ground tip and are available in 1/2", 3/4", or 1" blade widths. Prices range from \$10 to \$12 each. Contact Cooper Tools at (919) 362-1670 or on the web at www.coopertools.com.



Big Air, Small Space

Campbell Hausfeld's VT6299 air compressor draws air via a cast iron twin-cylinder pump coupled to a 5-hp 120/240-volt motor. That assembly sits atop a 30-gallon tank, providing a small footprint and excellent balance when you have to move the machine.

The VT6299 develops 125 maximum psi and delivers 6.6 cubic feet per minute (CFM) at 40 psi and 5.8 CFM at 90 psi. Warranted for three years, the compressor sells for around \$450. Call (800) 543-6400, or check www.campbellhausfeld.com.



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Home & Yard Products

Paint Roller Cleaner Saves Water, Time; Reduces Mess

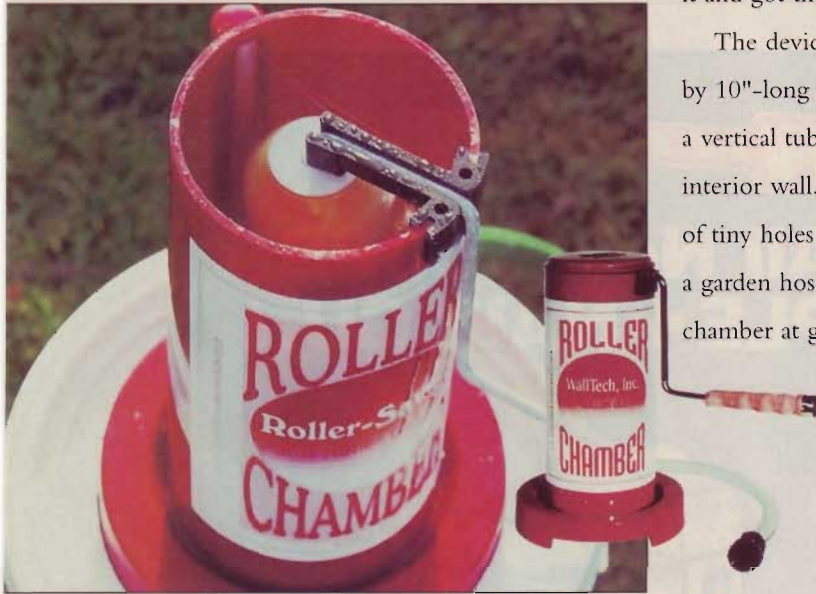
The Roller Chamber Roller-Saver will, according the manufacturer, WallTech Inc., clean paint-filled

rollers in 30 seconds, using just one gallon of water — a claim I thought far-fetched until I tested it and got the promised results.

The device consists of a 6"-dia. by 10"-long plastic chamber with a vertical tube recessed into one interior wall. The tube has a row of tiny holes that, when hooked to a garden hose, spray water into the chamber at great velocity.

To clean a roller, you clip a plastic guide onto the roller frame, slip the roller

inside the chamber, and put on the lid. Place the Roller-Saver atop a five-gallon bucket or in a sink and turn on the water. Spray from the holes in the vertical tube strikes the roller slightly off-center, spinning the roller rapidly and soaking it with fresh water as the paint-laden water gets thrown off. After 30 seconds, shut off the water and the roller continues to spin, throwing off most of the remaining water. The Roller Saver costs about \$25 from WallTech at (888) 762-4583 or on the web at www.rollersaver.com.



An In-Ground Sprinkler System You Don't Have to Build In

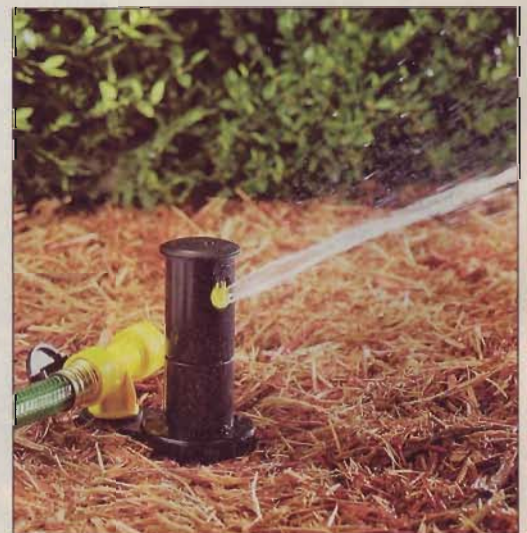
Built-in sprinkler systems are convenient, but require digging trenches and seasonal maintenance. Portable sprinklers are inexpensive but have to be moved and reset all the time. New Snap-N-Rain Sprinklers from L.R. Nelson Corp. aim to bridge the gap between these products.

Like in-ground sprinklers, Snap-N-Rain heads are recessed, and sit flush with the ground when not in use. Water pressure raises the heads to sprinkle the same targeted area every time. These sprinklers differ because you don't bury any water

supply pipes. Instead, you connect your garden hose to the sprinkler with a snap fitting. Turn on the water, and up pops the head. By running hoses between heads, you can use multiple heads at the same time, provided you have adequate water pressure. Residual water drains from each sprinkler after use, preventing it from freezing.

Snap-N-Rain Sprinkler heads sell for

around \$25 each in home and garden stores. Contact L.R. Nelson Corp. at (800) 635-7668.



Computer Software Makes Decorating a Virtual Breeze

Broderbund Software Inc. has introduced a new tool for DIY'ers who use a computer mouse for planning before swinging a hammer. *Total 3D Home Deluxe* (for PCs with

Windows 95 or higher) combines four aspects of home design in one program: remodeling, decorating, budgeting, and shopping. Even computer or DIY novices can design and

decorate a single room or whole house, down to the furniture, paint, and appliances, then go on a 3D tour.


The software allows you to drag-and-drop specific rooms into your plan, then combine them to build a house. Plug in doors, windows, etc. and you get 2D and 3D views. Then the fun begins. There are slick

"interactive showrooms," and 20,000 home furnishings from over 45 major manufacturers. As you pick appliances, furniture, floor and wall coverings, and fixtures, you can place them in your plan. Then you can "walk" through and "fly" over your house, and create shopping lists for products and materials.

Total 3D Home Deluxe isn't a hardcore construction tool, but for less than \$50 it lets you view finished, decorated rooms and print images you can use yourself or give to a contractor. Call Broderbund at (617)761-3000 or check the web at www.totalhomenetwork.com.



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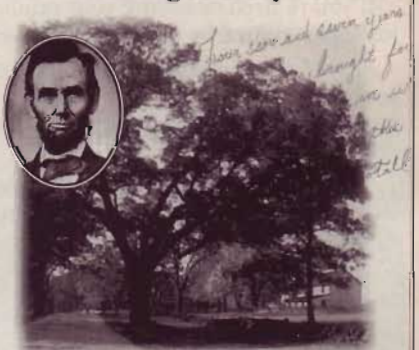



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Floating Works of Art



So deep and glossy is the finish on a Philip Greene canoe, it can remind you of the flawless surface of a quiet wilderness lake. Greene and his staff of three emphasize quality, spending 250 to 400 hours to craft a canoe, or 20 hours on one paddle. Cedar or redwood strips comprise the graceful hulls, but it's the hardwood accents and custom touches such as hand-caned seats and inlay that make the Wood Song Canoes works of art. Based in Round O, South Carolina, the company turns

out just 20 handcrafted boats per year. Although he still contends you must paddle it to truly appreciate his creations, Greene no longer minds if his canoes wind up on display, miles from any lake. You can reach him at (843) 835-8137.

