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WORKBENCH
VOLUME 62, No. 6 ISSUE #298

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EDITORIAL
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EDITOR'S NOTES

It isn't hard to see that home improvement is getting more popular all the time. Just look at all the people flocking to the home centers on any given weekend. Or the dozens of new home improvement magazines, books, DVDs, and TV shows.

But what's probably more significant is *why* so many DIYers are strapping on their tool belts. A recent study reported the top three reasons people do DIY projects are to save money (90%), add desirable features to their home (89%), and enhance their home's value (83%).

Now, if you're a longtime *Workbench* reader, all three reasons probably strike a chord with you. After all, the project plans, building techniques, and tool information included in each issue are meant to help you accomplish all three.

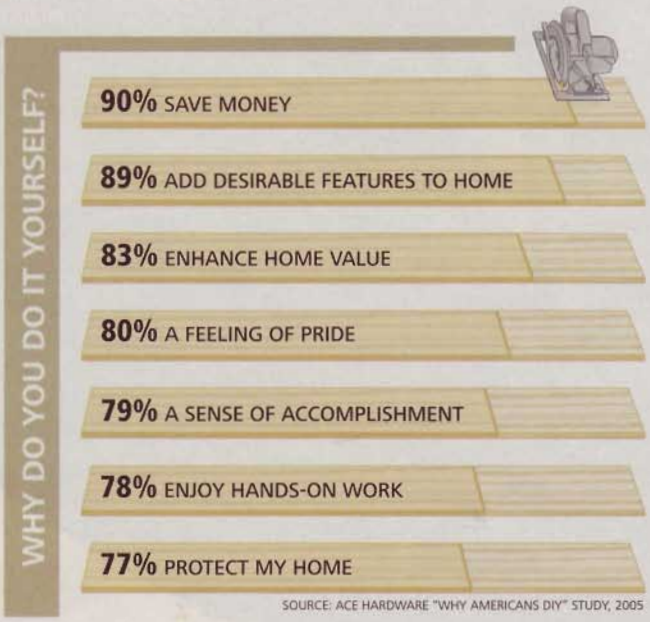
Bath Makeover — The bath makeover featured in this issue is no exception. It's actually a suite of woodworking projects that give the bath a rich, contemporary flair. In addition to these projects, we also installed a glass-block shower and then tiled the shower and floor.

Granted, this is a fairly large-scale remodeling project. And the material costs (excluding bath fixtures) came in at around $3,200, which is certainly no small amount. Still, if not for doing it yourself, the bath would easily cost four or five times that much.

The second reason people "DIY" is to add desirable features to their home. For this bath makeover, those features include storage, comfort, and a custom look that transforms an ordinary bath into an elegant oasis.

As for that third reason, it's clear that a bath remodel like this will increase the value of your home. (According to another study I read, 87% of the cost of a new bath is recouped when you sell the house.) Until that time, though, there are the less tangible but immensely satisfying rewards — like the feeling of pride, the sense of accomplishment, and, of course, the sheer enjoyment of doing it yourself.

Tim



SOURCE: ACE HARDWARE "WHY AMERICANS DIY" STUDY, 2005

COVER STORY

Bring your bathroom into the modern age with this elegant makeover. It features bold styling and a unique blend of straight-grained oak and a matte-black finish. Though it looks elaborate, the simple design makes it an easy job for any DIYer.

HOME & SHOP PROJECTS

DEPARTMENTS

WORKBENCH ONLINE

Check out WorkbenchMagazine.com for cutting diagrams, plans, and bonus content. From this issue, you'll find:

Bathroom Makeover Bonus Features

- Cutting Diagrams & Shop Drawings
- Video: Tour the Bathroom Makeover
- Free Article: Building Laminate Counters
- Free Bonus Plan: Storage Platform

TOOL REPORTS

SKILL-BUILDING TECHNIQUES

PITTSBURGH PAINTS

Virtual Painting

Use this simple, affordable software to visualize the rooms in your house painted in any of Pittsburgh Paints' thousands of colors.

For some of us, the most difficult part of painting a room is selecting and coordinating colors. No matter how many of those little color cards we hold up to a wall, we just can't see how a paint color will actually look until the entire room is painted. Only then do we realize that "medium toast" and "soft butter" combine for a fine breakfast, but a lousy color scheme.

Fortunately, Pittsburgh Paints now offers software that lets you paint and repaint any room in your house as many times as you like without ever lifting a brush. That's right, *your* house. Not just a bunch of virtual rooms that bear no resemblance to your own.

The software, titled "Visions at a Glance," lets you import your own digital photos of the rooms in your house, and then change the color of the walls, ceiling, trim, and other features with the click of a mouse.

There's a bit of up-front work involved, as you have to trace areas of the room using the cursor, but once those areas are "masked" and defined, you can quickly change the colors and see a remarkably realistic depiction of how your room will look in various hues.

A sample version of the software (which only lets you paint virtual rooms) is available online. The full version, which allows you to use your own digital photos, sells for $10.99 and can be downloaded to your computer, mailed to you on a CD-ROM, or purchased from your local Pittsburgh Paints dealer.

For more information or to locate a dealer in your area, call 800-428-7806 or visit VoiceofColor.com

Front Row (L to R): Keith Albright, Corey Smith, Denver Gravely, Andrew Hewitt, Maribeth Rizzuto, Jay Wetterhus.
Back Row (L to R): Dan Ledesma, Sam Salley, Adam Deeds, Jerry Lavender, Troy Johnson, Steve Hilton.

Carpenters and Scholars

It's time for our annual tip-of-the-hat to SkillsUSA and its sponsors. SkillsUSA is the national organization for students in trade, industrial, and technical occupations education. Each year, the organization hosts the SkillsUSA Championships, in which students compete against one another in their chosen fields.

This year we recognize the winning carpentry contestants *(Photo, above)* who are judged on their skills in framing and finish carpentry. The carpentry competition was sponsored by Irwin Industrial Tools. For more information, visit SkillsUSA.org or call 703-777-8810.

Wrong Connection: In the October 2006 issue of *Workbench*, we referred to Bosch's unique power cord system as "Quick Connect." The real name of that feature is "Direct Connect." Our apologies to Bosch on this missed connection.

TOOL HAZARDS

The U.S. Consumer Product Safety Commission (CPSC) recently issued a public safety notice for a Porter-Cable brad nailer and a voluntary recall of a Ryobi radial arm saw.

The Porter-Cable nailer (model BN200V12) can fire while the switch is in the off position. Owners of this model should contact Porter-Cable to receive free caution labels for the tool and an insert for the instruction manual that describes the hazard. Contact Porter-Cable at 800-940-3126.

Ryobi's radial arm saws (models RA200 and RA202) are being recalled because the plastic motor housing can crack and allow the blade assembly to fall during operation. The only remedy is to return the saw to Ryobi for a payment of $75. To arrange a return, contact Ryobi at 800-525-2579.

A QUICK GUIDE TO PROPER

Jointer Setup

Set outfeed table height correctly to ensure flat surfaces and eliminate snipe.

Q: *When I use my jointer, the edges of the boards don't come out flat along their entire length. And the jointer cuts deeper over the last few inches of the board. Is there something wrong with the jointer, or is the problem caused by my technique?*

James Calhoun
Atlanta, GA

A: There's probably nothing wrong with your jointer or your technique. The problems are most likely caused by the outfeed table being set too low in relation to the cutterhead knives.

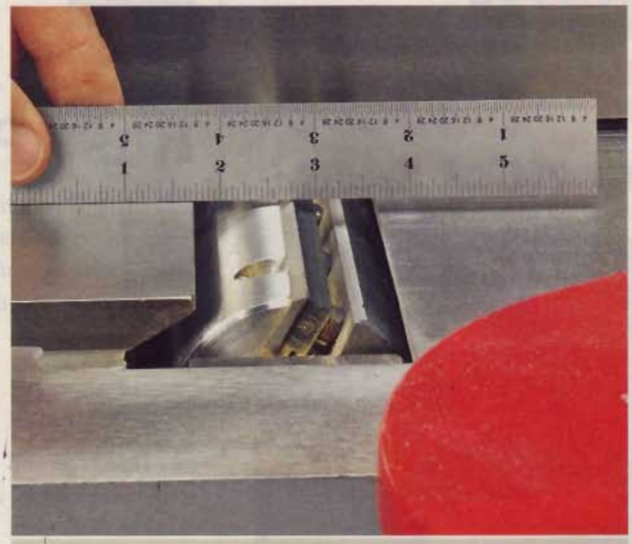
If the outfeed table sits too low, the board won't be supported after it passes over the knives *(Incorrect Table Height)*. While the weight of the board is still on the infeed table, the jointed portion of the edge will be flat. But eventually, the weight of the board shifts, causing the leading end to rock down onto the outfeed table. This changes the angle at which the board meets the knives.

Then, as the trailing end of the board clears the infeed table, it's no longer supported and drops down further onto the knives. This results in a deeper cut, called snipe, at that end of the board.

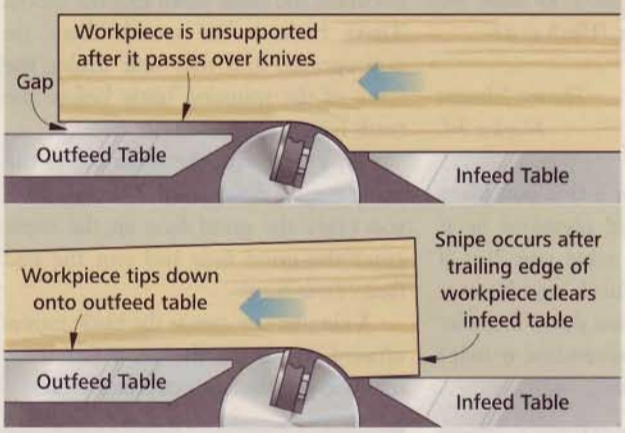
Luckily, it's easy to reset the height of the outfeed table *(Photo, above)*. When it's set correctly, the table height is exactly the same as the highest position of the jointer knives. As the board passes over the knives, it gets full support from both tables *(Correct Table Height)*.

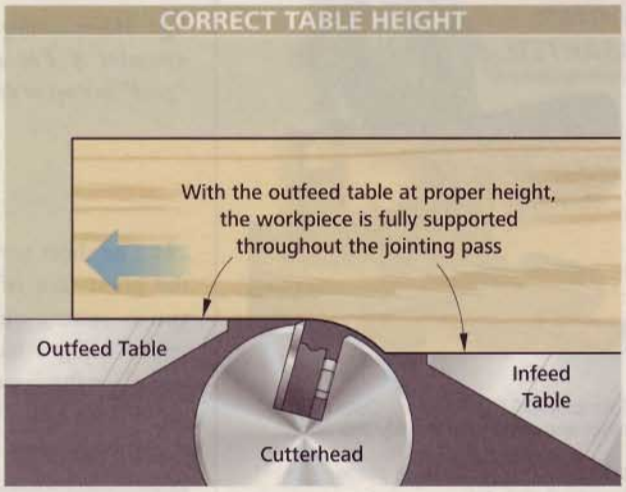
To adjust the outfeed table, all you need is a 12" steel rule. Unplug the jointer, and then turn the cutterhead to bring one of the knives to the top of its rotation. Lay the rule on edge over the outfeed table and that knife. Then raise the table until the rule clears the knife.

Now adjust the outfeed table, and check its position by rotating the cutterhead back and forth by hand. The knife should just contact the rule without moving it.



To align a jointer outfeed table, lay a 12" steel rule across it, and then adjust the table so the knives just touch the rule.





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CLEAN & COAT TO

Rust-Proof Tools

Q: My tools get put in "cold storage" every winter in my unheated shop, and the bare metal surfaces inevitably rust. What's the best way to prevent the rust from forming?

Thomas Reynolds
Duluth, MN

Protect tools during storage by spraying bare metal parts with rust inhibitor.

A: Bare steel and cast-iron surfaces on tools can develop a "flash" film of rust quickly. And even a fine film can be damaging, as well as tough to remove. To prevent this, you need to clean and protect your tools before you store them.

Clean Means Dry—Sawdust and dirt absorb moisture. So rust prevention starts by getting rid of debris. Clean external surfaces, such as cast-iron tabletops, and don't forget internal metal parts like saw trunnions.

Coatings Seal Surfaces—After cleaning, coat bare surfaces—especially cast iron—with a protectant such as DriCoat or Boeshield T-9, both available from woodworking suppliers *(Photo)*. On cast tables, I like to buff them with 220-grit paper on a random-orbit sander before I spray on the protective coating.

WHICH WAY IS UP FOR

Clean Plywood Cuts?

Q: When cutting plywood, I can never remember if I'm supposed to have the "good" face up or down. Which is it?

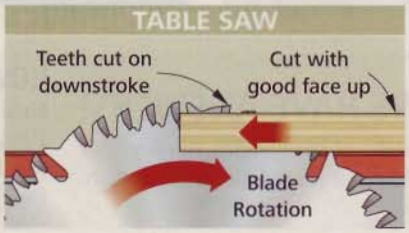
Darren Johnson
Naples, FL

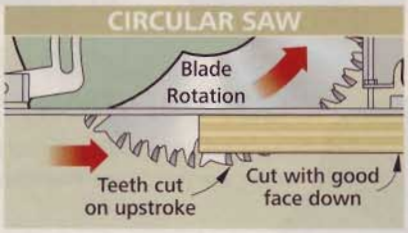
A: The short answer is that you place the good face of the plywood *up* if you're cutting on a table saw. But if you're using a handheld circular saw, you place the good face *down*. To make these rules easy to remember, it helps if you understand why.

Tearout on Exit — Most tearout occurs as the blade teeth exit the wood. That's because the wood fibers are unsupported and may tear under the force of the spinning blade before the teeth have a chance to cut through.

On a table saw, the teeth cut as the blade rotates downward. That means if you place the good face *up*, the teeth enter the good face and exit the bad face *(Table Saw)*.

A circular saw cuts as the blade rotates upward, so placing the good face *down* results in the cleanest cut *(Circular Saw)*.





SIMPLE JIG FOR RIPPING

Thin Strips

This easy-to-build jig lets you cut multiple strips to identical thickness — without adjusting the fence or risking a kickback.

It's always a challenge when a project calls for cutting thin wood strips on a table saw. If the strip falls to the *outside* of the blade, you have to reposition the rip fence for each cut. If it's *between* the fence and blade, it can cause a kickback.

A better solution is this jig submitted by George Person from Costa Mesa, CA. It lets you cut identical strips without moving the fence — and with virtually no chance of kickback.

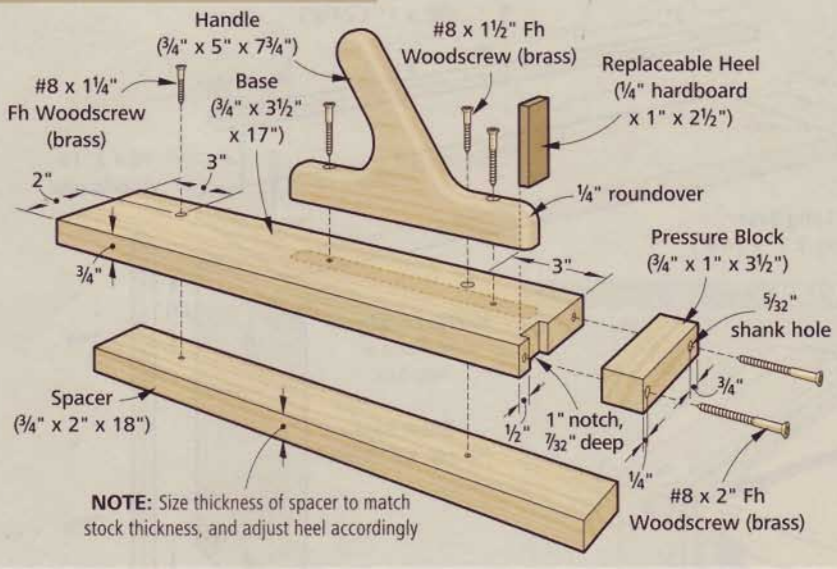
The jig works like a big push block that rides against the rip fence as you make a cut. A wide base captures the workpiece beneath *(Photo)*. And a replaceable heel, which is held in place by a pressure block, hooks over the end of the workpiece to push it through the saw blade *(Inset Photo)*.

To keep the jig from rocking, a spacer that's the same thickness as the workpiece is attached to the base of the jig. You'll want to make several spacers to match common stock thicknesses.

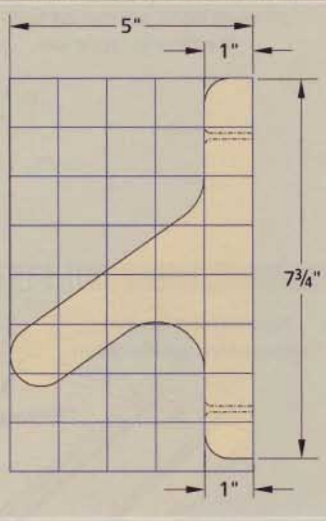
A replaceable heel *(right)* pushes the stock through the blade when ripping.

To make the jig, start by cutting the base to size *(Construction View)*. Then notch the end of the base to accept the hardboard heel. Note that this notch is a bit shallower than the heel thickness. That way, when you screw the pressure block in place, it holds the heel securely. To complete the jig, cut a handle to shape *(Handle Parts View)*, and attach the appropriate-thickness spacer.

CONSTRUCTION VIEW



HANDLE PARTS VIEW



STANLEY FatMax XTREME

BEST TIP WINNER!

George Person wins a Stanley FatMax Xtreme tool package that includes a "Fubar," chalk box, two 30-ft. tapes, a 48" level, a utility knife, demolition drivers, and an AntiVibe hammer — a $230 value!

SEND US YOUR TIPS

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POST-FORMED COUNTERTOP

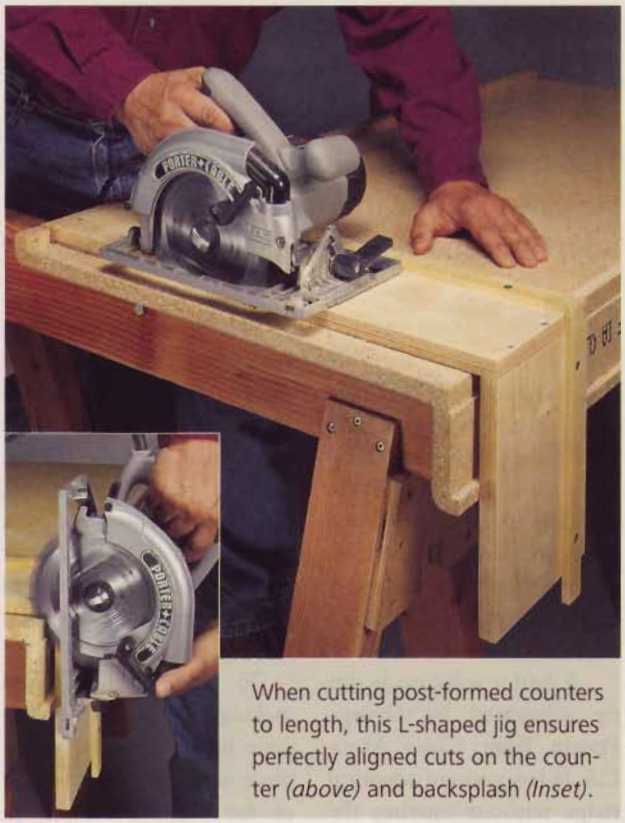
Cutting Guide

A post-formed countertop is convenient in that it has a built-in backsplash. That's a liability, however, when cutting it to length. You can't cut the countertop *and* backsplash in one pass with a circular saw. And if you make two passes, it often leaves a small ridge of material because the cuts don't align.

To solve the problem, Don Van Horn of Albany, New York, sets the counter upside down and uses an L-shaped jig to guide the saw *(Photos, right)*. The edge of the jig indicates the path of the saw blade. So you simply align the edge with the layout line, secure the jig with double-sided tape, and make the cuts.

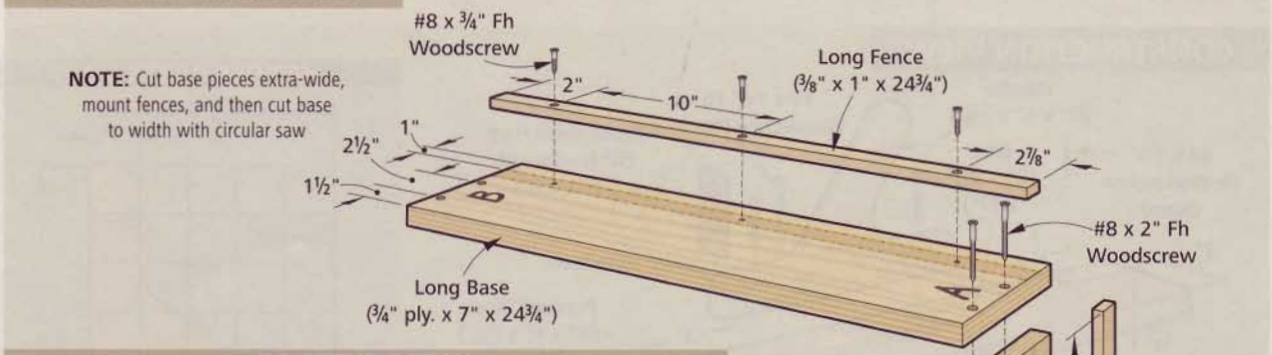
To build the jig, start with two extra-wide bases, and attach a fence to each one. Note that the lengths of the long base and its fence are identical, while the short base gets a fence that overhangs each end by 1⅛". This makes it easy to align the fences when assembling the jig. After screwing the jig together, use your circular saw to trim it to width.

One thing to note is that the jig can be configured in two ways, depending on which end of the countertop you're cutting *(Jig Setup Detail)*. To avoid confusion when reconfiguring the jig, it's a good idea to label it, as shown.

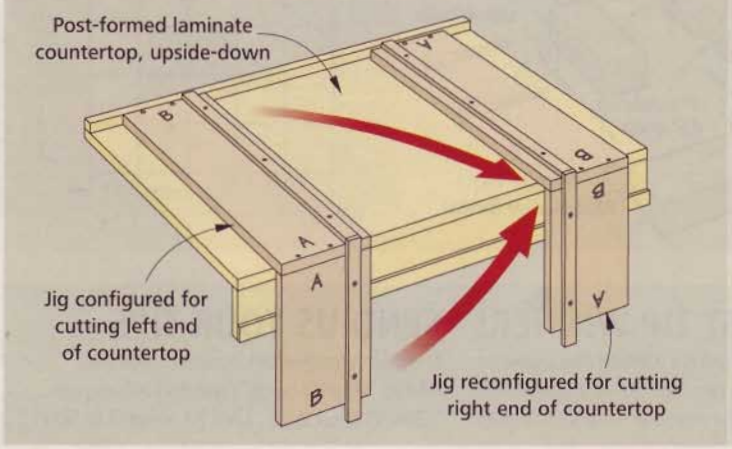


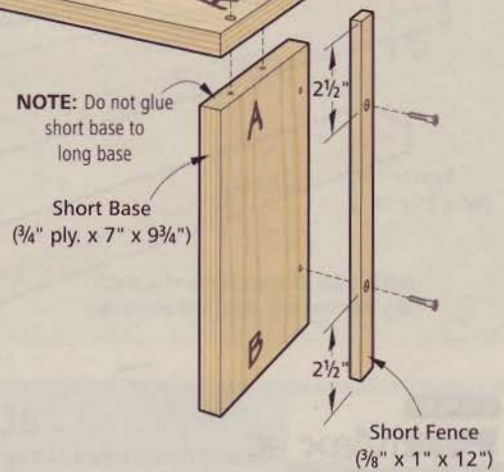
When cutting post-formed counters to length, this L-shaped jig ensures perfectly aligned cuts on the counter *(above)* and backsplash *(Inset)*.

CONSTRUCTION VIEW

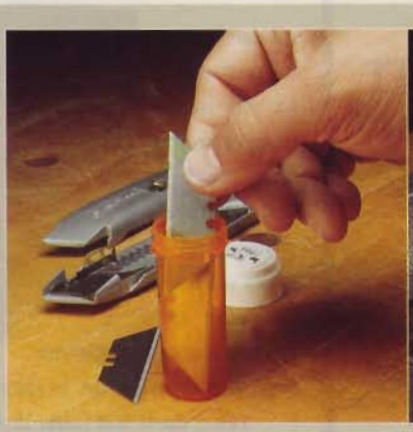


JIG SETUP DETAIL





Quick Tips



SAFE BLADE DISPOSAL

Stanley Krasovic of Honesdale, Pennsylvania, disposes of his used utility knife blades and other sharp items in a small medicine container. When the container is full, he simply caps it and throws it away. That way, there's no need to worry about someone accidentally getting cut or having the blades cut through the garbage bag.

A CASE FOR LABELING

Plastic cases are convenient for organizing tools and accessories — until you open one upside-down and spill the contents all over the floor. And that's easy to do since the cases often look the same on top and bottom. To prevent this, Karl Schmitt of Warren, Michigan, attaches labels that clearly indicate which side should face up.

HANDY HOSE STORAGE

To keep his air hose and extension cords from getting tangled up, John Downs of Moyock, North Carolina, stores them on an ordinary garden hose hanger mounted on the wall. The curved bracket provides ready access to the hose and makes it easy to hang it back up. Hose hangers are available at most hardware stores and home centers.

BUILDING A BETTER

Clamp Cart

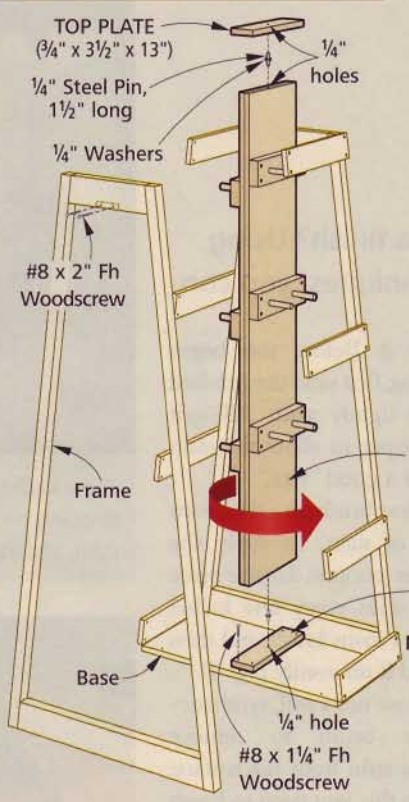
When Bill Bulkeley of Roseburg, Oregon, built the clamp cart from the February 2006 issue of *Workbench*, he replaced the fixed divider with one that rotates like a revolving book rack.

In his version, the divider fits between a top and bottom plate, and is held in place by means of two steel pivot pins *(Mounting Detail)*. Washers keep the divider from binding against the top and bottom plates.

Start by cutting the top and bottom plates to fit between the frame pieces. Then drill a centered hole in each plate to house the pivot pin. The plates are simply screwed in place, as shown.

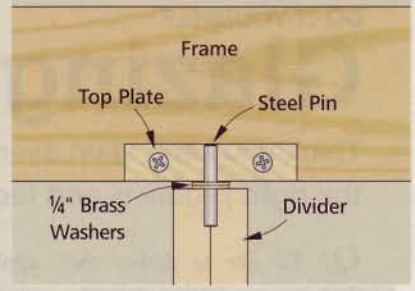
As for the divider, it's made up of two pieces of ¾" plywood that are glued and screwed together. Cut it to fit between the plates, less ⅛" for clearance. Then, after drilling a hole in each end for the pivot pin, install the divider.

CONSTRUCTION VIEW



NOTE: Make divider by gluing and screwing two pieces of ¾" plywood together

MOUNTING DETAIL



DO-IT-YOURSELF

Glazing

Think you can't stain over a finish? Using the right products and techniques, you can.

Q: *I'd like to darken the stain on my kitchen cabinets. Do I have to strip and sand all the finish off the wood, or is it possible to apply stain over the existing finish?*

Christopher Rice
Carlisle, PA

A: You can change the color of wood even if it's already been finished. Furniture manufacturers do it all the time by applying a "glaze" over stained and sealed wood.

To do your own glazing in the shop, you'll need two things: the right type of stain, and this simple "staining" technique.

The key is to use a thick stain with enough body to adhere to the finish. I'd recommend either Zar Wood Stain or Old Masters Wiping Stain. Most wood stains are too thin and won't "stick" to the finish.

Just as important as which stain you use is how you apply it. Before you begin glazing, first sand the finished piece lightly with 220-grit sandpaper to allow the stain to get a good "bite."

Next brush on a thin, even coat of stain. To apply the proper amount, dab the piece with stain every few inches using a foam brush, and then spread it on evenly *(Fig. 1)*.

Now use a stiff, synthetic-bristle brush to remove excess stain from the surface. To do this, you need to brush aggressively: Apply firm pressure on the bristles as you brush back and forth with the grain of the wood *(Fig. 2)*. Also be sure to wipe off your brush occasionally on a paper towel to remove excess stain from the brush. You'll know you're on the right track as the color evens out and the brush strokes disappear.

Finally, switch to a soft-bristle brush to smooth the stain and soften any brush strokes *(Fig. 3)*. Let the stain dry overnight, and then apply a new topcoat of finish.

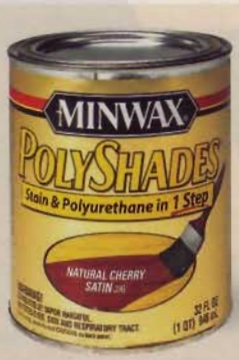
Photo courtesy of Old Masters

These kitchen cabinets were "glazed" a darker tone *without* stripping off the existing finish. The key is to apply a thick stain, and then brush it aggressively to even out the color.

1] Start by applying a thin coat of stain. To do this, use a foam brush to dab the surface with stain every 3". Then use the brush to smooth it out.

2] Use a stiff-bristle brush to work the stain into the surface and remove excess. Keep working until the surface is even and relatively smooth.

3] Switch to a soft, natural-bristle brush for the final pass over the project to further smooth brush strokes and even out the color of the stain.



COLOR & TOPCOAT IN ONE

If you're looking for a one-step approach to changing the color of a project without stripping off the existing finish, then you may want to try a stain and polyurethane blend like Minwax PolyShades. Since this finish mixes both the stain and the protective topcoat into one product, you don't have to apply an additional topcoat over it.

Just as with the stain, the first step when using PolyShades with a previously finished project is to sand the project lightly with 220-grit sandpaper. Then, brush on a light coat with a natural-bristle brush. Once it dries, rub the surface with 000 steel wool, and apply a second coat. Apply additional coats to further darken the color.

DECIPHERING THE DIFFERENCES:

Floor Finish vs. Poly

Q: I'm getting ready to refinish my floor. Should I use a special polyurethane "floor finish," or can I get by with standard polyurethane?

Parker Day
Plano, TX

A: The differences in the products are subtle, but they're distinct enough that you wouldn't want to use standard polyurethane on a floor, or floor finish on furniture.

Floor finish has fewer solids in it, which makes it thinner than standard polyurethane. This means you'll have to apply several coats to build up a protective finish. But each coat dries quickly, so you can apply several coats in a day.

The thin consistency has a big benefit when finishing a floor, however. You can spread it on quickly and easily. And it's self-leveling, so it evens out as it dries to create a smooth, consistent finish.

Standard polyurethane, on the other hand, is thicker. This allows you to finish vertical surfaces without having the finish run or drip *(Inset Photo)*. This thickness also means you'll be able to apply fewer coats to build the finish.

Floor finish *(above)* is thin, which lets it flow out well over a large, flat surface. Polyurethane *(right)* is thicker to prevent runs and drips when applied to vertical surfaces.

Tool Report

Lithium ion is still the big news in cordless, but don't count NiCad out just yet. Also, need a unique stocking stuffer? We've got a few suggestions.

LITHIUM-ION UPGRADES — Lithium ion continues its march toward total dominance of the cordless tool universe. Most recently, both **Milwaukee (1)** and **Hitachi (2)** announced new lines of 18-volt lithium-ion-powered tools. You may recall that Milwaukee touched off the lithium-ion revolution a couple of years ago with their V28 tool line. Now their new V18 line demonstrates their commitment to the platform for the future. But for Hitachi, this is their first foray into the lithium-ion arena.

The big news, though, is that both companies designed their new lithium-ion batteries to work with existing nickel-cadmium (NiCad) tools. In the case of Milwaukee, that means you'll be able to buy an upgrade consisting of two lithium-ion batteries and a charger for use with the NiCad tools you already own. The kit sells for around $130. For the time being, Hitachi is only offering their lithium-ion batteries and charger along with new tools, but a similar upgrade kit is expected soon.

The most important thing to know is that the new chargers will charge both the old NiCad batteries *and* the new lithium-ion ones. So whether you're buying more cordless tools or just upgrading the tools you have, you can simply use one charger to charge all of your batteries.

Both companies are starting with limited offerings of tools sold individually and in combination kits *(Photos, right)*. The selection will likely expand if sales of these tools go well. Also, you can expect other manufacturers to follow suit with "upgrade" kits that make lithium-ion batteries and chargers available for existing tools.

LITHIUM ION AT HOME — All the hype about professional-grade lithium-ion power tools makes it easy to forget that lithium ion first came to power tools in consumer brands (Dremel and Skil were the first to offer lithium-ion-powered tools). Well, now lithium ion has come full circle, and Black & Decker can claim bragging rights as the first consumer brand to offer a *full-sized* drill/driver powered by lithium ion.

The new **SC1400 (3)** features a built-in 14.4-volt lithium-ion battery that powers an all-new motor. Black & Decker claims 210 in. lbs. of torque from the new powerplant, which is twice as much as their first generation 18-volt NiCad cordless drills.

I really like the size and style of this drill, and I've always believed that 14.4 volts are more than enough power for most DIY jobs. But I have a couple of problems with the built-in battery.

First of all, when the battery runs out of juice, you're on hold for up to three hours while the battery recharges. Furthermore, when the battery reaches the end of its life, so does the drill.

So, what's the upside to this drill? Well, it's smaller and lighter than other 14.4-volt drills because of the lithium-ion battery, which means it won't wear you out to carry it around for extended periods of time. And

Black & Decker's onboard "fuel gauge" lets you track battery level.

1 **Milwaukee**
V18 Lithium Ion

2 **Hitachi**
HXP Lithium Ion

3 **Black & Decker**
SC1400

the battery will hold a charge for up to 18 months while sitting idle, so it's likely to be ready to go anytime you need it. The question is whether that's enough to justify the $130 price tag, which is high for Black & Decker and certainly more than similar consumer-level models sell for.

THOSE OTHER BATTERIES — In the face of all this lithium-ion news, you might assume that NiCad is on its way out. You need only look at DeWalt's recently revamped line of NiCad cordless drills for proof that this just isn't the case.

The **XRP (4)** line of cordless drills includes seven models of drill/drivers and hammer drills in three different voltages (12-volt, 14.4-volt, and 18-volt). According to DeWalt, new motors and transmissions in the drills deliver 15 percent more speed than their nearest competitors and 10 percent more run time than previous XRP drills. Two new chuck designs further set these drills apart from the pack.

All of the drill/drivers are outfitted with a brand new "axial locking chuck," which features a locking sleeve that slides back to lock the jaws and prevent them from loosening once the bit is secured in the drill. This prevents the chuck from losing its grip on the bit during high-vibration applications, or in tight quarters where the chuck may rub against other objects.

The hammer drills feature a self-tightening chuck that actually tightens while the drill works to prevent the bit from slipping under a heavy load. This chuck is also vented to prevent dust from building up inside the chuck, which can be a real problem when drilling in concrete or masonry.

Despite the enhancements in the line, pricing has remained largely unchanged, with prices ranging from $170 for a 12-volt drill up to $310 for an 18-volt model.

WRENCHES IN THE WORKS — Three new wrenches offer evidence that even the most time-tested designs can be improved upon. Look for these to show up in stockings across the country this holiday season.

First up is the **Channellock WideAzz (5)** (pronounce that "z" sound carefully) Adjustable Wrench. This is an 8" adjustable wrench with jaws that open to over 1⅝" (1" is typical). Without making the body of the wrench any larger, Channellock managed to increase the jaw capacity by almost 63 percent. If you've ever had an adjustable wrench that was just too small for the nut or bolt you were trying to tighten, you know how valuable this is.

I've used the wrench a couple of times now, and I'm quite pleased with how sturdy it is and how smoothly the jaws adjust. My only complaint is that Channellock doesn't offer this in a 10" version, which would offer more leverage on larger nuts and bolts. This model sells for about $25.

A different take on adjustability comes from Loggerhead Tools. The newly released **Bionic Grip (6)** is an open-ended version of the Bionic Wrench (featured in the December 2005 *Workbench*). Just like its predecessor, this cross between a plier and a wrench grips multiple sides of a nut or bolt and automatically adjusts to fit hardware from 7/16" to ¾" (11 mm to 20 mm). Expect to pay about $33.

The third member of our wrench trio is the **Black & Decker Auto Wrench (7)**. The wrench is much like any other 8" adjustable wrench except for the fact that the jaws are battery-powered — simply push a button, and the jaws open and close. Of course, you can still turn the adjustment screw by hand, as well.

4 **DeWalt**
XRP Cordless Drill

5 **Channellock**
WideAzz Wrench

6 **Loggerhead Tools**
Bionic Grip Wrench

7 **Black & Decker**
Auto Wrench

FOR MORE INFO:

Milwaukee V18
MilwaukeeTool.com
800-729-3878

Hitachi Lithium-Ion Cordless Tools
HitachiPowerTools.com
800-706-7337

Black & Decker SC1400 Drill, AutoWrench, and HandiSaw
BlackandDecker.com
800-544-6986

DeWalt XRP Cordless Drills
DeWalt.com
800-433-9258

Channellock WideAzz Wrench
Channellock.com
800-724-3018

Loggerhead Tools Bionic Grip
LoggerheadTools.com
888-564-4374

ColdHeat Freestyle Glue Gun
ColdHeat.com
800-334-0573

This wrench received mixed reviews around the *Workbench* offices. To some, it's a gimmick. Others feel the self-closing feature could come in handy when trying to reach into a tight spot where adjusting the wrench might be difficult. But everyone agrees it will be a wildly popular stocking stuffer for just under $30.

PINT-SIZE RECIPROCATING SAW — A different offering from Black & Decker that received unanimous acceptance is the **HandiSaw (8)**. This miniature, cordless reciprocating saw has countless uses — cutting holes in drywall, cutting plastic pipe, pruning shrubs — any job for which reciprocating action makes sense, but a full-size saw doesn't.

The saw uses U-shank jig saw blades and is powered by a built-in, 6-volt NiCad battery. It comes with two blades and a charger that also serves as a docking station. This one is a great gift for about $40.

FREESTYLE GLUING — ColdHeat, the company behind the first-ever cordless soldering iron, just sent us a sample of their new **Freestyle (9)**, the first-ever truly cordless glue gun. We're impressed.

What distinguishes the Freestyle from other "cordless" glue guns is that it has a removable NiCad battery that maintains its heat while it's in use, rather than having to periodically return the gun to a base to heat it back up. The battery will provide heat for about 90 minutes of continuous use. Additionally, it uses standard hot-melt glue sticks rather than expensive specialty glue cartridges that are necessary in other cordless glue guns. The Freestyle should be available at retailers nationwide by the time you read this, or you can buy one directly from ColdHeat's website for about $30.

8 Black & Decker
HandiSaw

9 ColdHeat
Freestyle Glue Gun

3 Faux FINISH PICTURE FRAMES

These stylish frames would cost big bucks in a frame shop. But you can make your own from inexpensive MDF and add a simple, distinctive faux finish to each. The result is three frames that look as good as the photographs they surround.

The faux finishes are what really make these frames stand out. We turned to faux finisher **Kelle Collins** *(right)* to devise three unique finishes that anybody can create using common items like paint, glaze, and drywall joint compound. See the details of her techniques on the following pages.

Mottled **Metal**

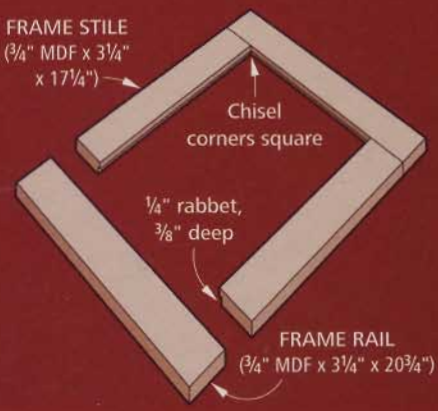
Despite this frame's seemingly simple construction, its textured metallic finish makes it a perfect fit for any contemporary setting.

At *Workbench*, we pride ourselves on creating simple projects that anyone can build. And it doesn't get much simpler than this picture frame.

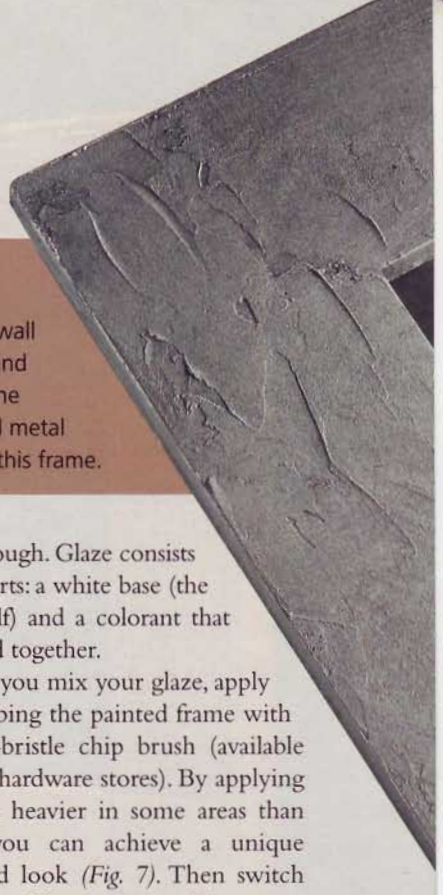
The frame is, quite literally, just MDF rails and stiles that are cut to size and glued together. (You can buy a quarter-sheet of MDF at most home centers for $5.) We even used butt joints, so you don't have to fuss with fitting miters in the corners.

To make the frame, just rip the parts to width, cut them to length, and then glue and clamp them together. As you tighten the clamps, take care to prevent the pieces from slipping out of alignment.

Once the glue dries, rout a rabbet around the inside of the frame opening to accept the photo and mat. Chisel the corners of the rabbet square, and then you're ready to apply the faux finish.



Making a Metallic Finish



Paint, glaze, and drywall compound create the textured metal look of this frame.

Though the faux-finish on this frame looks elaborate, it's easy to create. And the main ingredients are readily available: paint and drywall joint compound. The only item that you may need to special-order is the glaze *(see the Source Box on page 39)*.

The first step is to prime the frame, and then apply a basecoat of paint that will complement the topcoat *(Fig. 1)*. This ensures a uniform color on the completed frame.

The textured look of this finish is created with drywall joint compound. The compound is quite thick, so you'll need to thin it with paint primer before applying it to the frame *(Fig. 2)*.

Apply Texture—Kelle used a special Japanese scraper to apply the compound *(Fig. 3)*, but a common putty knife works fine. To create the look, load the knife with compound, and begin applying a thin layer of it to the frame.

As you apply the compound, the idea is to pivot and turn the knife to create lines and texture across the surface *(Fig. 4)*. Also, leave parts of the frame bare to add depth. You'll want to do this on both the face and edges of the frame.

If you're not happy with the look when complete, you can always sand and recoat parts of the frame after the compound dries.

Add a Topcoat—The multi-toned look of the topcoat is created with a combination of paint and glaze. The painting part is easy; just use a small roller to coat the faces of the rails and stiles, and then a narrow brush to paint the edges *(Figs. 5 & 6)*.

The glaze, though, is what really adds interest and visual depth to the frame. For those unfamiliar with glaze, it's a thinner, more translucent product than paint that allows what's underneath to show through. Glaze consists of two parts: a white base (the glaze itself) and a colorant that get mixed together.

Once you mix your glaze, apply it by dabbing the painted frame with a coarse-bristle chip brush (available for $1 at hardware stores). By applying the glaze heavier in some areas than others, you can achieve a unique variegated look *(Fig. 7)*. Then switch to a rag to dab up some of the excess glaze and further accentuate the multi-toned appearance *(Fig. 8)*.

1] Prime and paint the frame with a gray basecoat to complement the metal finish.

2] Thin three parts joint compound with one part primer to form a thin paste.

3] After mixing, load a Japanese scraper (shown) or a putty knife with compound.

4] Apply a thin layer to the frame. Pivot the knife, and leave parts bare to add depth.

5] When the compound dries, roll the surface of the frame with silver paint.

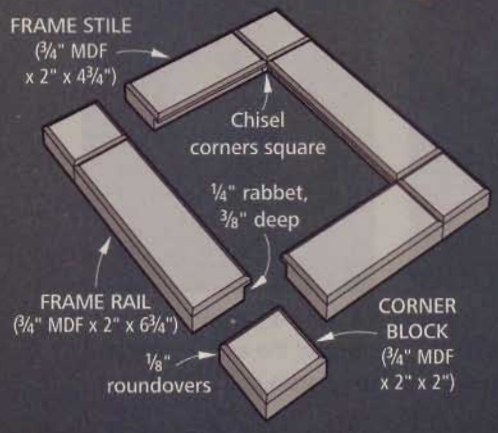
6] Use a small brush to coat the edges of the frame with the silver paint.

7] Once the paint dries, dab black glaze on the frame with a coarse chip brush.

8] Use a dry rag to mop up some of the excess glaze and to create a multi-toned look.

Woven **Fabric**

These two frames have a warm, soft look with light brown hues to complement a beach photograph. The frame on the left has the unique texture of cloth, while the frame on the right is a variation of the finish shown on page 37.



The construction of this frame is quite similar to the "mottled metal" frame shown on page 32. Only this time, the frame is comprised of eight pieces instead of four: two rails, two stiles, and four corner blocks.

To give this frame a softer look, we also rounded the ends and edges of each piece. This is easy to do with an ⅛" roundover bit on the router table.

After rounding the ends and edges of each piece, you can again glue the frame together. But the process is a little bit different here. Because of all the pieces involved in this glue-up, it's best to start by gluing two of the corner blocks to the ends of each stile to create two stile assemblies. Once the glue dries, you can glue the rails in place between these two stile assemblies to complete the frame.

At that point, all that's left is to rout a rabbet around the inside of the frame opening and chisel the corners square.

Creating the Look of Cloth

Brushing a crosshatch pattern into thinned drywall joint compound helps create the woven fabric texture on this frame.

Our goal with this frame was to create a soft, warm look that would complement a colorful beach portrait nicely. So we chose a faux finish with the texture of cloth and a warm brown tone that looks like sand.

As with the "mottled metal" finish on page 35, the main ingredients needed here are paint, glaze, and drywall joint compound. The tools are also the same: a chip brush, a paint roller, and a sanding block. The only other tool you'll need is a Malachite comb, a texturing tool available from art stores or online *(Sources, page 39)*.

Prime & Coat—The first step is to prime and basecoat the frame with paint. This time, we used a light tan basecoat to closely match the "sandy" color of the topcoat *(Fig. 1)*.

The texture of this frame is also created with drywall joint compound that's thinned with a bit of paint primer *(Fig. 2)*. But this time, the frame gets completely covered with compound. To do this, use a paint roller to coat the face of the frame *(Fig. 3)*.

Comb on Texture—With the frame coated, now you can use the Malachite comb to create the texture. To do this, pull the comb over the frame from top to bottom in a sweeping motion to scratch into the compound *(Fig. 4)*. Take care to keep the scratches parallel as you make additional passes across the frame. Now let the compound dry.

To create the crosshatch effect in the finish (and make it really look like cloth), you need to apply one more coat of drywall compound on top of the first. Then, comb this new coat perpendicular to the direction of the first to complete the textured look.

At this point, the texture may be a bit too pronounced for your liking. If so, use a sanding block to knock off any high spots *(Fig. 5)*.

Finish Up—Now you can apply the topcoat. This time, we used glaze to allow some of the white color to show through. We chose a sandy brown color *(Fig. 6)*. After mixing up the glaze, use a chip brush to dab it onto the surface of the frame *(Fig. 7)*. Feel free to apply glaze in some areas more liberally than in others to create a multi-toned effect. Then follow up with a rag to remove any excess *(Fig. 8)*.

1] Prime and basecoat the frame with a light tan paint to match the topcoat.

2] Mix drywall compound and primer together in a 3:1 ratio to thin it out.

3] Use a ½"-nap paint roller to completely coat the face of the frame with compound.

4] Use a Malachite comb to create the texture by making a smooth, sweeping motion.

5] When the compound dries, use 220-grit sandpaper to knock off any high spots.

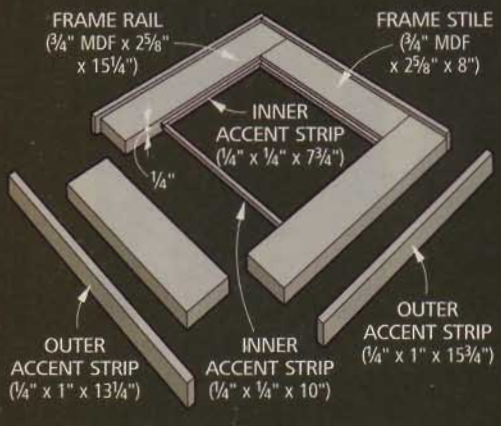
6] Mix the base and Autumn Brown colorant in a 6:1 ratio to create the glaze.

7] Use a stiff chip brush to dab the glaze onto the frame for a multi-toned look.

8] Alternate between brushing and dabbing to give the frame a mottled appearance.

Aged **Leather**

A faux finish that looks like old leather gives this frame a more rustic, almost antique appearance. Then, to add a touch of refinement, we applied accent strips to the inside and outside edges of the frame.



Our final picture frame is almost identical to the "mottled metal" frame shown on page 32: MDF rails and stiles joined together with butt joints and glue.

Where this frame differs is in the accent strips applied to the inside and outside edges of the frame. These strips are ripped to width and cut to length from ¼" poplar. Here again, they meet at the corners with butt joints.

In addition to providing a decorative touch, the inner strips on this frame serve another purpose. They form a rabbet in the back of the frame that holds the "picture stack" (glass, photo, and backer). This means the strips have to be positioned so that the depth of the rabbet equals the combined thickness of the stack. An easy way to do that is to position the strips with shims while gluing them in place.

After gluing on the inner strips, set the outer strips aside until after finishing the frame (shown at right). That way, they won't interfere with applying the finish.

Get the Look of Leather

We saved the most elaborate-looking finish for last. Though it appears intricate, there's an easy trick for creating this aged leather look: cheesecloth.

While the other finishing techniques require applying thinned drywall joint compound directly to the frame, this time you spread cheesecloth over the frame first. Then you put the compound over the cheesecloth. When you remove the cloth, the unique texture remains.

Before we get to that, you'll want to prime and basecoat this frame like the others. We used a dark brown color, and we brushed and rolled it on for a super-smooth surface *(Figs. 1 & 2)*.

Lay Down Cloth—Now it's time for the texture. Rather than just laying the cheesecloth over the frame, pull and bunch it to create visual interest *(Fig. 3)*.

The compound, which is again thinned with primer, gets applied in a smooth, even layer with a putty knife *(Fig. 4)*. You'll want to work on just one side of the frame at a time, and peel up the cheesecloth before moving on to the next *(Fig. 5)*. Otherwise, the compound can dry if you don't work quickly.

Time for a Topcoat—The topcoat is a combination of two colors of Aqua's Stain & Seal *(Sources, page 39)*, which are worked into the surface with a chip brush and a rag. Applying the color is simple: It just takes a lot of working back and forth between the two colors and tools.

To do this, just dab one color of stain on parts of the frame with a brush, and then fill in the other parts of the frame with the other color. Now switch between the brush and the rag to "push" the colors around until they blend with one another *(Figs. 6 & 7)*.

Once the stain dries, glue on the outer accent strips, and paint all the strips with a complementary color *(Fig. 8)*.

This "aged leather" look comes from applying drywall compound over cheesecloth. Two colors of stain create the variegated topcoat.

DESIGN OPTION

One variation of this technique *(shown on the frame on page 34)* is to just leave off the topcoat.

1] Prime the frame, and paint it with a brown basecoat to match the frame's topcoat.

2] Apply a second basecoat with a ⅛" nap roller to create a smooth surface.

3] Lay cheesecloth over the frame, and pull and bunch it to create visual interest.

4] Apply an even coat of thinned drywall joint compound with a putty knife.

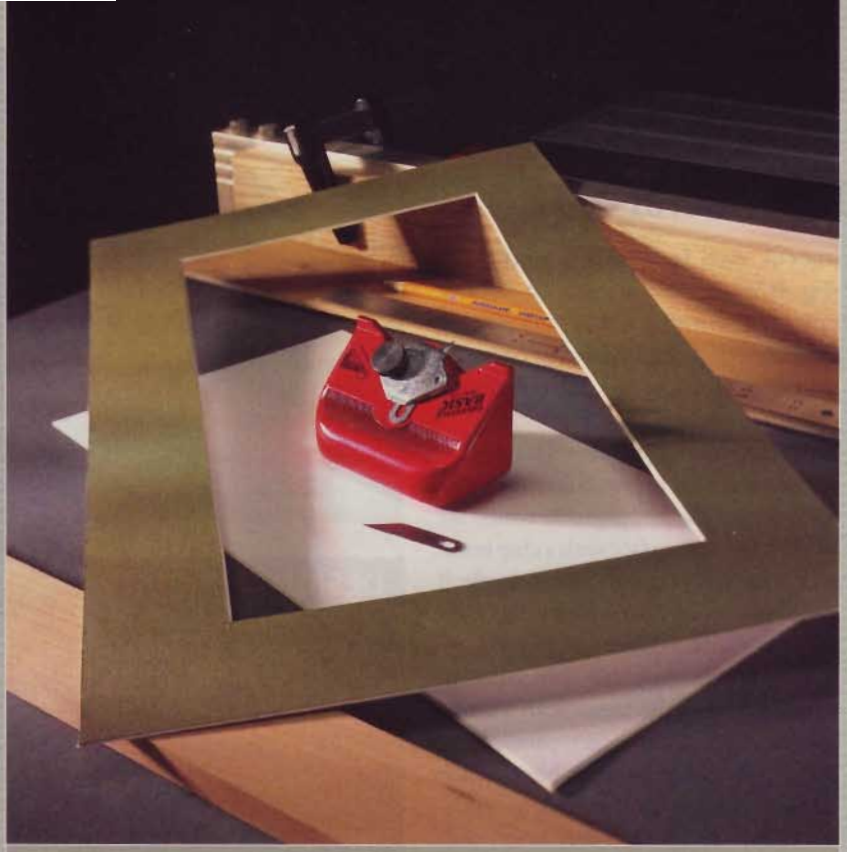
5] Carefully peel off the cheesecloth to reveal the interesting texture beneath.

6] Now use a chip brush and a rag to dab two different colors of stain onto the frame.

7] Continue brushing and dabbing until the two colors blend together.

8] Glue on the outer accent strips, and paint all the strips with bronze paint.

Perfect Mats

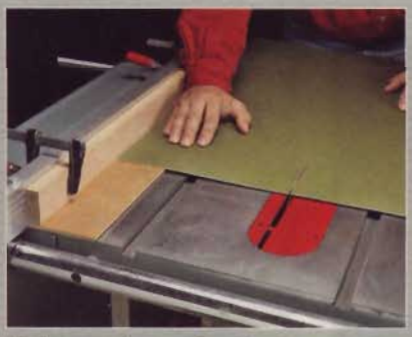


Cutting a crisp, clean opening in a mat board doesn't take fancy mat-cutting equipment. This simple jig uses an auxiliary fence clamped to the table saw's rip fence that guides a mat cutter in a perfectly straight line.

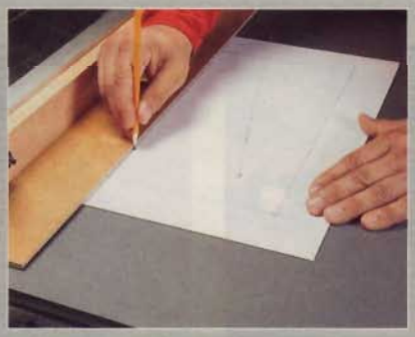
Adding a mat to your picture frame is a great way to give it more visual interest. And contrary to popular belief, you don't need a lot of expensive equipment to cut the opening in the mat board. This jig works with an inexpensive mat cutter and a table saw rip fence to cut the opening precisely *(Photo, left)*.

The main part of the jig is an L-shaped auxiliary fence that clamps to the table saw's rip fence. This fence does two things. First, it lets you cut the mat board to size on the table saw *(Fig. 1)*. And second, it guides the mat cutter as you cut the opening *(Fig. 4)*.

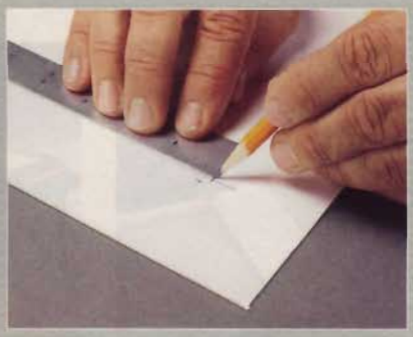
In addition to the fence, the jig has a hardwood stop that fits in the miter-gauge slot in the table saw. This stop sticks above the surface of the saw by ⅛", which provides a surface for butting two layers of mat board against it: a bottom piece that serves as a backerboard, and then the mat itself.



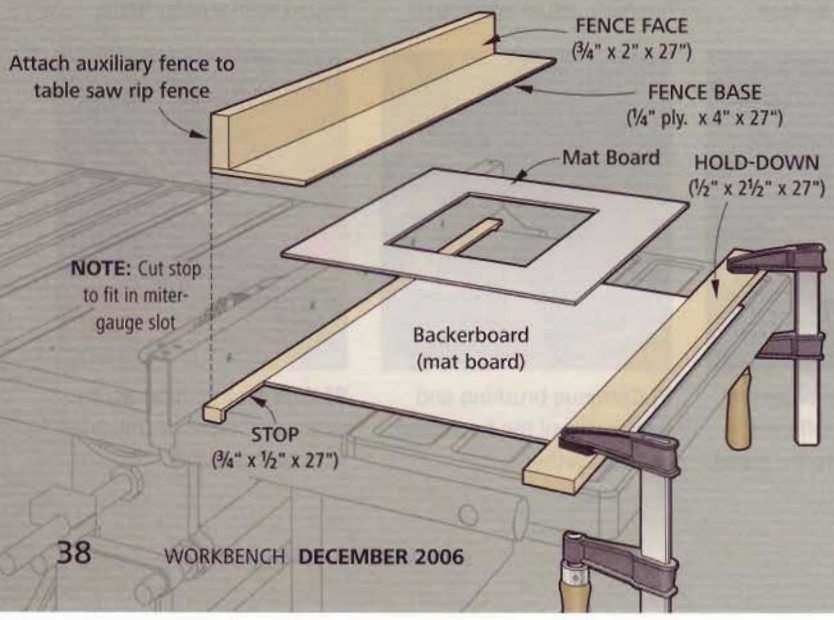
1] First, cut the mat board to size on the table saw. Use the auxiliary fence to prevent the mat from sliding under the rip fence.

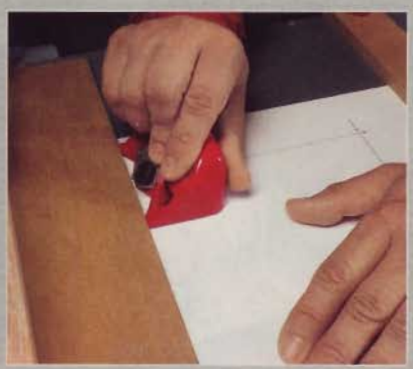


2] Slide the auxiliary fence over the stop to set the mat width, and mark all four sides of the opening on the *back* of the mat.



3] To ensure crisp, clean corners, extend the layout lines ⅛" beyond each corner of the desired opening.





4] Now set the mat cutter into position, plunge it into the mat, and slide it along the fence, exerting pressure downward.

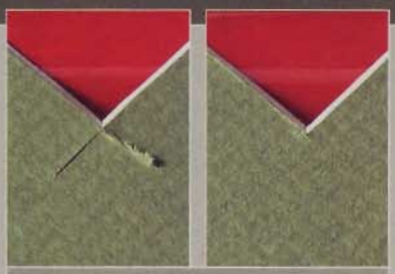
The final piece of the jig is a hold-down made from scrap wood. It gets clamped in place on top of the backer-board to hold the mat board in position.

To cut a mat, butt the mat board against the stop, and slide the auxiliary fence over the stop to establish the width of the mat opening.

Once you have the width of the opening established, it's just a matter of marking the cutlines, as shown in *Figs. 2 & 3* below. Then use the mat cutter to cut the opening *(Fig. 4)*.

CLEANER CORNERS

Mat cutters (like the one shown at left) have the blade mounted to cut a 45° bevel. This isn't a problem for most of the cut, but it does make getting a clean beveled corner tricky. We found that starting and stopping the cut ⅛" beyond each corner *(as shown in Fig. 3)* produces a clean corner *(far right)*. And always move your cutter slowly and deliberately to avoid "overshooting" the corner *(near right)*.



Cutting too far causes messy mat corners *(left)*. Stopping ⅛" beyond the corner yields clean results *(right)*.

Assembling The Picture "Stack"

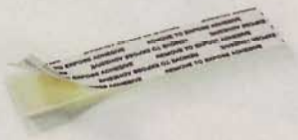
Your frames are almost ready to mount. All that's left is assembling the picture "stack"—glass, mat, photo, and backer.

Glass—There's no need to get too fancy when choosing glass: Regular ⅛" glass works fine. Just have it cut ⅛" smaller than the frame opening.

Backing & Adhesive—To prevent the photo from warping, apply it to a piece of foamboard. Then, use photo mounting strips to secure your work to the backing *(Fig. 1)*.

To secure all the contents in the frame, you can screw turnbuttons to the frame rails and stiles. Or, if your stack is thicker than the opening, try offset clips *(Fig. 2)*.

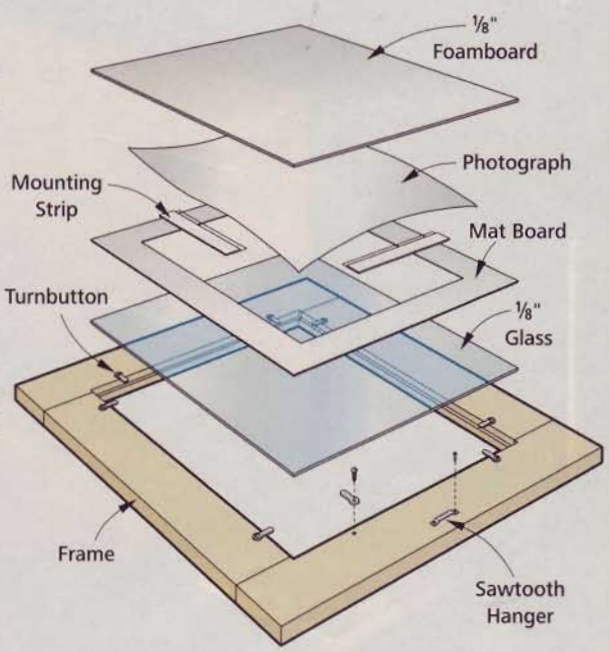
The last step is getting the frame ready to hang on the wall. For simplicity, we chose sawtooth hangers that just slip over a nail or screw head *(Fig. 3)*.



1] The adhesive on these mounting strips is set back from the edge, so no adhesive touches the photo.

2] For securing the frame contents, use turnbuttons *(left)*. For a thicker "stack," use offset clips *(right)*.

3] Sawtooth hangers are an easy way to mount a frame to the wall.



SOURCES

PAINT, GLAZE, & FINISH TOOLS
Benjamin Moore Paints
Woodsmith Store
800-444-7002
("Coventry Gray" on metal frame; "Guest House" on cloth frame; "Nightshades" on leather frame.)

AquaGlaze, AquaColor, Stain & Seal, & Metallic Paints
877-278-3289
ArtFauxStore.com
*(**AquaGlaze:** "White" on metal and cloth frames.*
***AquaColor:** "Black" on metal frame; "Autumn Brown" on cloth frame.*
***Stain & Seal:** "Rich Brown" and "Antique Mahogany" on leather frame.*
***Metallic Paint:** "Silver" on metal frame; "Bronze" on leather frame.)*

Malachite Comb
866-333-4463
CreateForLess.com

MOUNTING HARDWARE
Matboard, Foamboard, Turnbuttons, Offset Clips, & Sawtooth Hangers
800-246-4726
Framing4Yourself.com

See-Thru Mounting Strips
800-828-4548
DickBlick.com

HIGH-STYLE

Bath Makeover

Turn an ordinary bathroom into an elegant oasis by building a new vanity and wall unit, a stylish storage bench, and even a walk-in shower that's built with glass block.

This great-looking glass-block shower is designed for DIY installation *(page 54)*.

Bathrooms in new homes these days are increasingly becoming more than just functional spaces. They're outfitted with high-end cabinetry and flooring, as well as high-dollar spa showers and sleek fixtures.

This is all well and good if you have a big bathroom and a bigger budget. But even if you don't, there is still a way to make over your bath to be more stylish and functional. That way is, of course, to do it yourself by building the suite of stylish projects you'll see on the upcoming pages.

Designer Vanity—It all starts with the wall-mounted vanity shown at left. It sports sleek, contemporary lines that give it great looks, and it has ample storage space inside.

Atop the vanity is a wall unit that incorporates display shelves and a medicine cabinet, plus a large mirror that's illuminated by a lighted valance overhead. Together these projects form a great-looking set. Construction begins on page 42.

More In Store—We also added a bench, *below*, that provides a place to perch, plus storage space. And you'll find one more project—the storage platform seen under the vanity in the photo at left—as a free plan at Workbenchmagazine.com.

Shower Power—That brings us to the stunning glass-block shower at right. It's a remarkably easy kit that you install in place of an existing bathtub.

In addition to comfortable seating, this bench adds valuable storage space *(see page 52)*.

FORM MEETS FUNCTION:

Modern Vanity

The centerpiece of this bathroom is the vanity. Rather than sitting on the floor, it mounts to the wall. The design is contemporary without being cold and pays an additional dividend: floor space underneath that makes the bathroom feel bigger.

To make up for interior space lost in height, the vanity is extra wide. And it's divided into a bank of drawers on one side and open storage on the other *(Vanity Overview)*.

We topped the vanity with a black counter, plus a stylish sink and faucet. You'll find information about them, the other products used, and a *Materials List* for the project on page 51.

You might think building a vanity that hangs from the wall would complicate construction, but it doesn't. This vanity cabinet is built from ¾" plywood (we used riftsawn oak) and assembled with strong, simple joinery *(Vanity Overview, below)*.

At the corners, tongues get formed on the top and bottom panels that lock into narrow dadoes in the end panels. A set of wider dadoes capture the dividers. A pair of cleats are used for mounting the cabinet to the wall. Then a back panel encloses the cabinet. Out front, the final step is adding solid-wood edging to cover the exposed plywood edges.

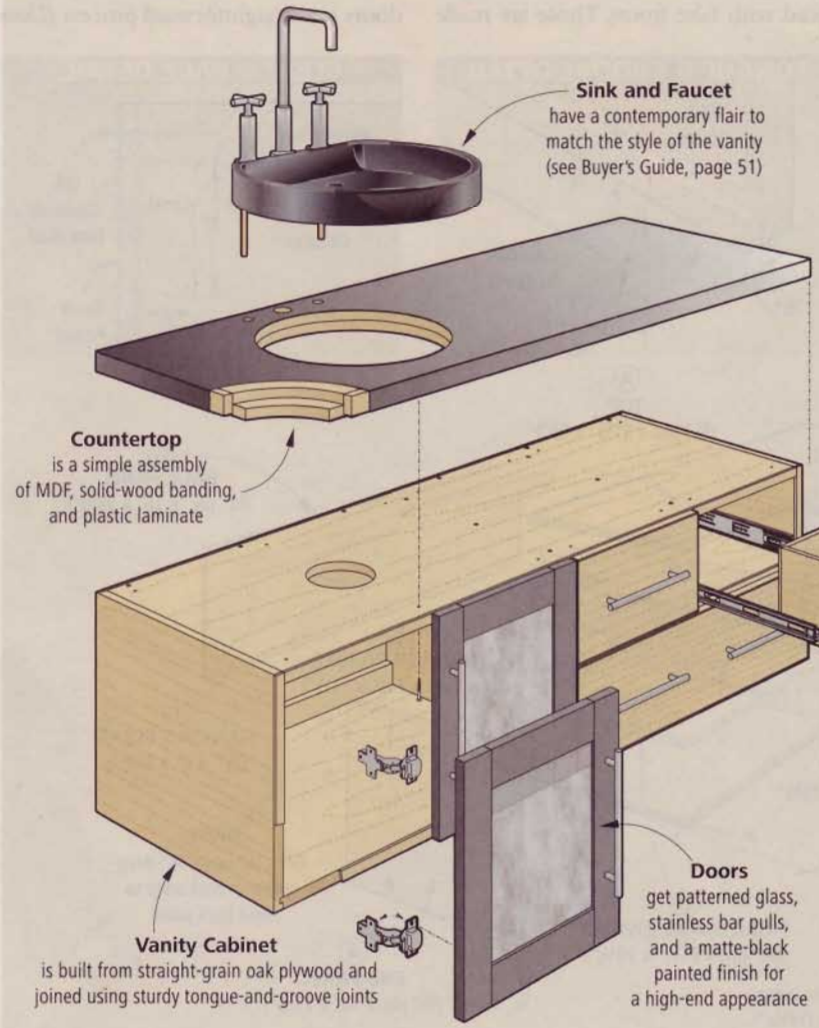
Cut the Panels To Size—The best place to start construction is by cutting those plywood panels to size. Just be sure to double-check the dimensions—found in the *Vanity Assembly* on page 44 and in the *Materials List* on page 51—before you cut. Note, too, when laying out and cutting the end panels that the grain on them runs horizontally.

Keeping this in mind, cut the vanity top and bottom (A), end panels (B), and dividers (C, D, E) to size. Because plywood sheets are cumbersome, you may want to cut the panels slightly oversize first. Then you can trim these more-manageable pieces to exact size easily. Just be sure to use the straight factory edges of the plywood sheet as guides to ensure that you end up with straight, square panels.

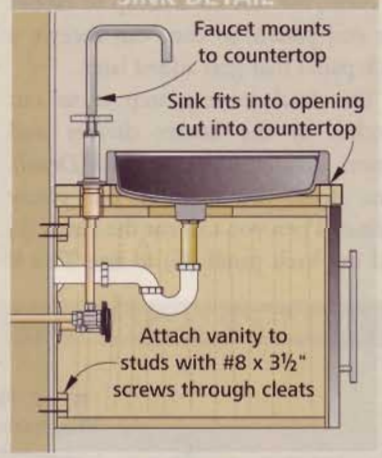
Tongue-and-Groove Joints—With the panels sized, you can cut the tongue and groove joints used to assemble the cabinet. I did this using a table saw equipped with a dado blade.

You'll find more fully detailed construction illustrations on the upcoming pages. And, if you want an even closer view, you can download our project designer's drawings free at WorkbenchMagazine.com.

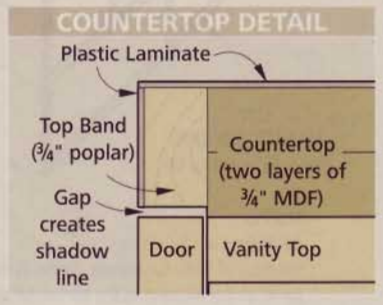
VANITY OVERVIEW



SINK DETAIL



COUNTERTOP DETAIL



Vanity: Cabinet, Drawers, & Doors

The first step in building the vanity is to set up a dado blade to cut all the ¾"-wide dadoes that will receive the dividers *(Vanity Assembly)*.

Then you can restack your dado set (for a ⅜"-wide cut) to form the tongues and grooves that will join the vanity top and bottom to the ends *(Tongue & Groove Detail)*. Cut the grooves first.

Once they're done, you can cut the rabbets that form the tongues with the same dado blade setup. Just add an auxiliary fence to your table saw rip fence, and bury the blade so it projects just ¼" beyond the face of the fence. Test your setup in scrap plywood first, and then cut the rabbets in the top and bottom panels.

Next, use this same setup to rabbet the end panels, so they can receive a back panel that gets added later.

The final joinery step is to cut notches in the center divider and drawer divider *(Cleat & Back Detail)*. That done, dry-assemble the vanity cabinet. Then you can cut the cleats (F) and the back panel (G) to size. This is also the time to drill holes for the screws that help hold the cabinet together.

After drilling the holes, you can assemble the vanity. **Note:** This is easier if you screw the drawer divider to the horizontal divider before installing it.

Once the glue sets, cut the ¼" edging (H). You'll find tips for doing that on page 90. Then glue the edging to the front of the vanity.

Build the Drawers—Now you can outfit the vanity, starting with the drawers. There are two sizes—matching narrow ones up top and a wide drawer below. Though the widths differ, some dimensions, as well as the construction, are identical.

The drawers are solid-wood boxes with plywood bottoms, and they're faced with false fronts. Those are made from edged plywood, just like the vanity cabinet *(Drawer Assembly, page 45)*.

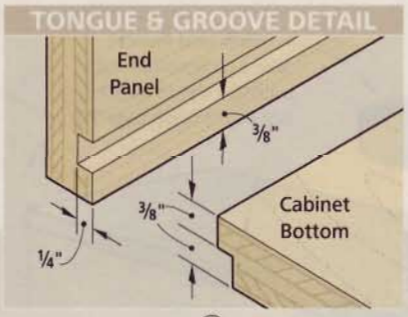
Start by cutting the narrow drawer fronts and backs (I) and the wide front and back (J) to size from ½" poplar. Then cut all the sides (K) to size.

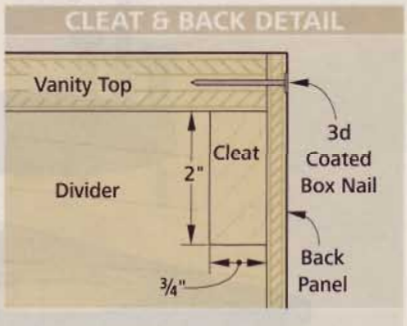
Joinery for the drawer boxes is simple. Just rabbet the drawer fronts, and then cut the ¼"-wide grooves that receive the drawer bottoms. After doing that, cut the drawer bottoms (L, M) to size.

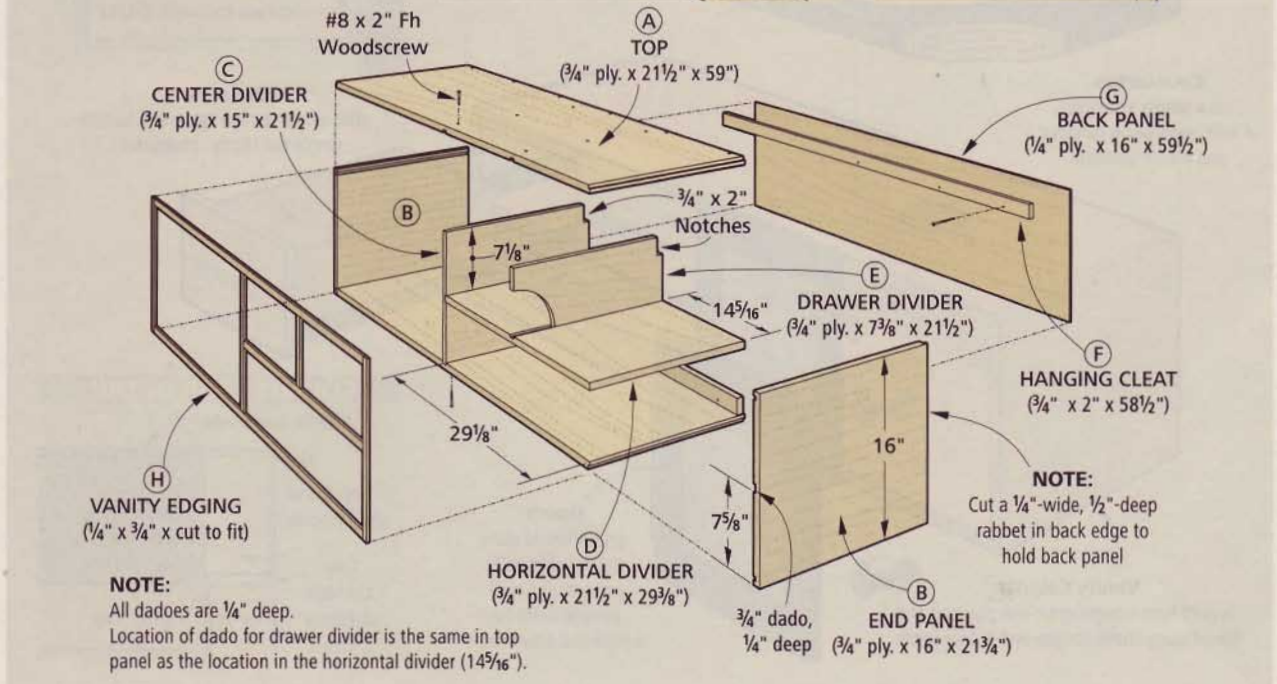
Drill holes for screws, and then you can assemble the drawer boxes

Now you can cut the false fronts (N, O) to size from ¾" plywood. As with the vanity case, these are wrapped with edging (P). The only difference is that the drawer edging is thinner (⅛").

Doors Come Next—Building the doors is a straightforward process *(Door*







Assembly). They're made up of poplar rails (Q) and stiles (R) that simply get butt-jointed and secured with glue and pocket screws *(Pocket Screw Detail).*

After cutting and assembling the door parts, rout a rabbet around the inside face of the opening, and bore holes for the hinge cups. Also cut lengths of glass stop (S), but don't install any glass yet.

Countertop—With the cabinet done, it's time to build the countertop. You can see in the *Vanity Overview* on page 43 that the countertop is a thick MDF slab that's banded with solid stock and then covered with plastic laminate.

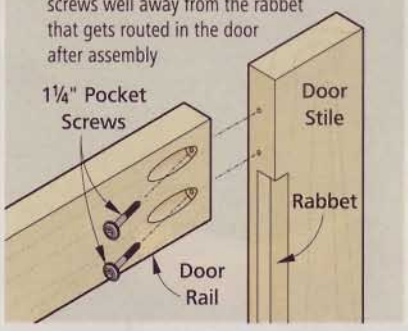
The *Countertop Detail* on page 43 shows another unique feature. The banding that goes on the front edge and exposed end of the counter is cut ⅛" narrower than the thickness of the MDF substrate. Once the countertop is installed, this creates a shadow line between the countertop and the vanity.

To build the counter, just cut two substrate layers (T) to size. Then glue them together, making sure to keep the edges aligned. Next, cut the banding (U, V), miter it to length, and glue it on.

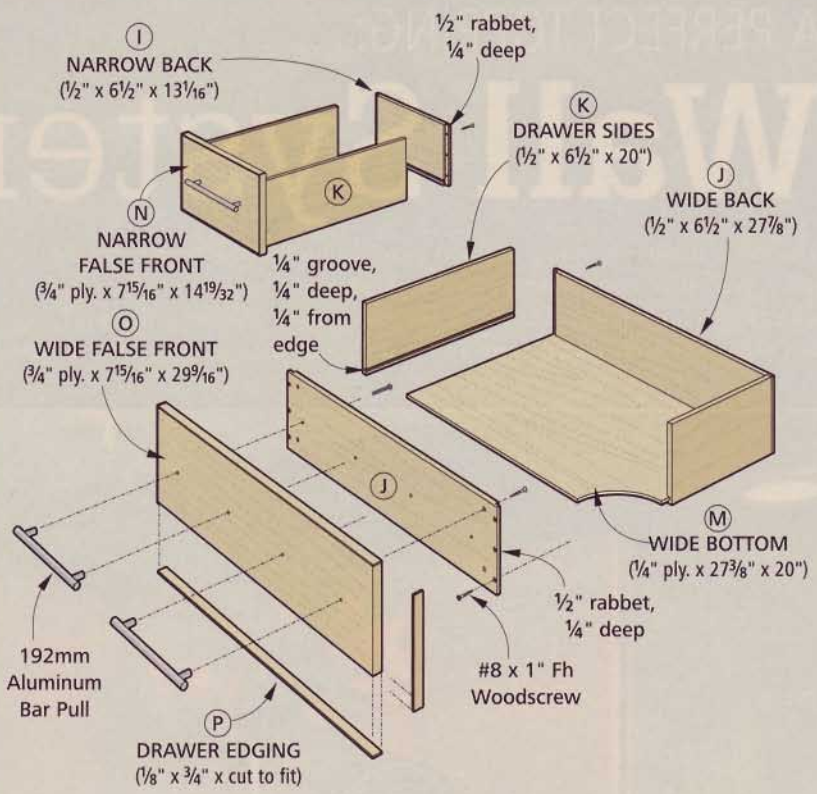
Then you can cover the face, edge, and exposed end with plastic laminate. To see how easy this process is, see the free article at WorkbenchMagazine.com.

You now have all the parts for the vanity complete. But don't assemble everything just yet. It's simpler to paint and finish all the bathroom projects at once, before they get put together.

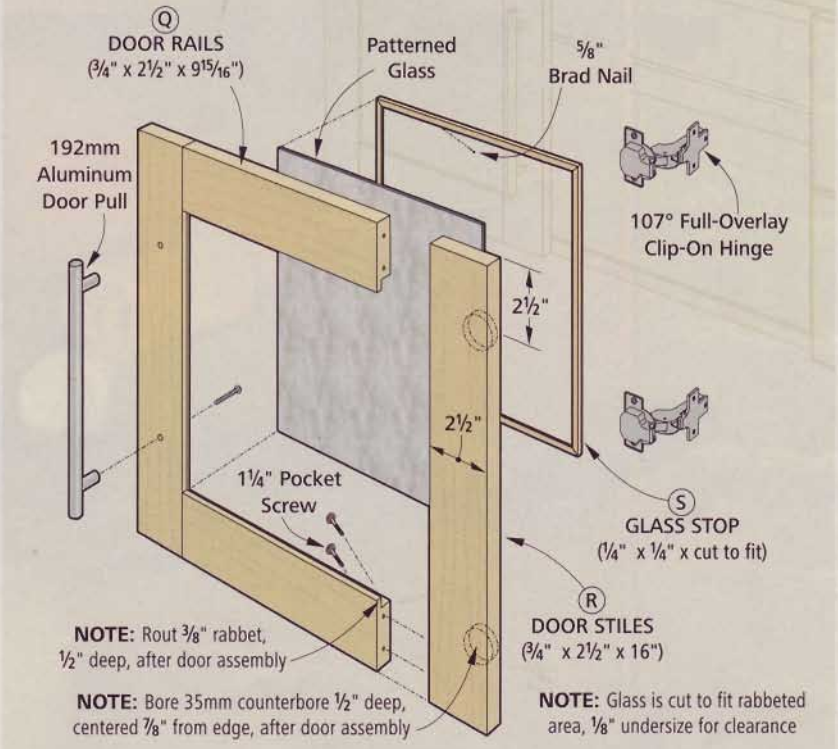
POCKET-SCREW DETAIL



DRAWER ASSEMBLY



DOOR ASSEMBLY



WORKBENCH®

BATHROOM VANITY

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MATERIALS LIST

MATERIAL LIST

	Part	Qty	Size	Material
VANITY CASE				
A	TOP/BOTTOM	2	¾" x 21½" x 59"	Oak Plywood
B	ENDS	2	¾" x 16" x 21¾"	Oak Plywood
C	CENTER DIVIDER	1	¾" x 15" x 21½"	Oak Plywood
D	HORIZ. DIVIDER	1	¾" x 21½" x 29⅜"	Oak Plywood
E	DRAWER DIVIDER	1	¾" x 7⅜" x 21½"	Oak Plywood
F	HANGING CLEATS	2	¾" x 2" x 58½"	Oak
G	BACK PANEL	1	¼" x 16" x 59½"	Oak Plywood
H	VANITY EDGING	1	¼" x ¾" x cut to fit	Oak
DRAWERS				
I	NARROW FRT./BK.	4	½" x 6½" x 13 1/16"	Poplar
J	WIDE FRT./BK.	2	½" x 6½" x 27⅞"	Poplar
K	DRAWER SIDES	6	½" x 6½" x 20"	Poplar
L	NARROW BOTTOM	2	¼" x 12 9/16" x 20"	Oak Plywood
M	WIDE BOTTOM	1	¼" x 27⅜" x 20"	Oak Plywood
N	NRW. FALSE FRT.	2	¾" x 7 5/16" x 14 19/32"	Oak Plywood
0	WIDE FALSE FRT.	1	¾" x 7 5/16" x 29 9/16"	Oak Plywood
P	DRAWER EDGING	1	⅛" x ¾" x cut to fit	Oak
DOORS				
Q	DOOR RAILS	4	¾" x 2½" x 9 15/16"	Poplar
R	DOOR STILES	4	¾" x 2½" x 16"	Poplar
S	GLASS STOP	1	¼" x ¼" x cut to fit	Poplar
VANITY COUNTERTOP				
T	TOP SUBSTRATE	1	1½" x 22" x 59¼"	MDF
U	TOP BAND-FRONT	1	¾" x 1⅜" x 60"	Poplar
V	TOP BAND-END	1	¾" x 1⅜" x 22¾"	Poplar

	Part	Qty	Size	Material
WALL PANEL				
W	WALL PANEL	1	¾" x 42" x 29⅞"	Oak Plywood
X	PANEL EDGING	1	⅛" x ¾" x 42"	Oak
Y	SHORT SHELVES	2	¾" x 6¾" x 14 15/16"	MDF
Z	LONG SHELF	1	¾" x 6¾" x 29 15/16"	MDF
MEDICINE CABINET				
AA	CABINET SIDES	2	¾" x 21 7/16" x 5"	Oak Plywood
BB	TOP/BOTTOM	2	¾" x 14" x 4¾"	Oak Plywood
CC	BACK PANEL	1	¼" x 14½" x 21 7/16"	Oak Plywood
DD	CABINET EDGING	1	¼" x ¾" x cut to fit	Oak
EE	ADJ. SHELVES	2	¾" x 4⅞" x 13 7/16"	Poplar
FF	DOOR RAILS	2	¾" x 2½" x 9⅞"	Poplar
GG	DOOR STILES	2	¾" x 2½" x 21 5/16"	Poplar
HH	GLASS STOP	1	¼" x ¼" x cut to fit	Poplar
LIGHTED VALANCE				
II	VAL. TOP/BOTTOM	2	¼" x 6⅝" x 59½"	Hardboard
JJ	VALANCE FRONT	1	¾" x 1½" x 60"	Poplar
KK	VALANCE ENDS	2	¾" x 1½" x 6⅞"	Poplar
LL	VALANCE CLEAT	1	1½" x 1" x 58"	Pine/Fir

HARDWARE *(see Buyer's Guide for Pulls & Glass)*:
- (40) #8 x 2" Fh Woodscrews
- (50) #6 x 1" Fh Woodscrews
- (24) 1¼" Washer-head Pocket Screws
- (4) Flush-Mount Panel Clips (#00M85.02)*
- (3 pr.) 107° Full-Overlay Hinges (#00B10.01)*
- (3 pr.) 20" Full-Extension Drawer Glides (#02K36.20)*
- (1 pack) Dark Oxide Shelf Pins (#00S10.52)*

*Items available from Lee Valley (LeeValley.com; 800-871-8158)

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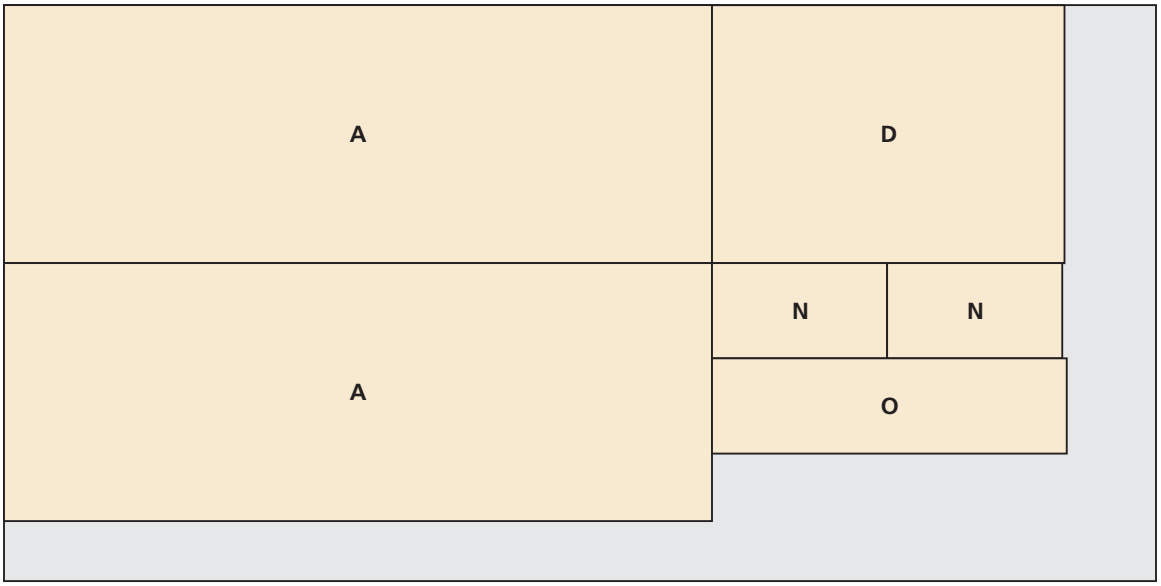
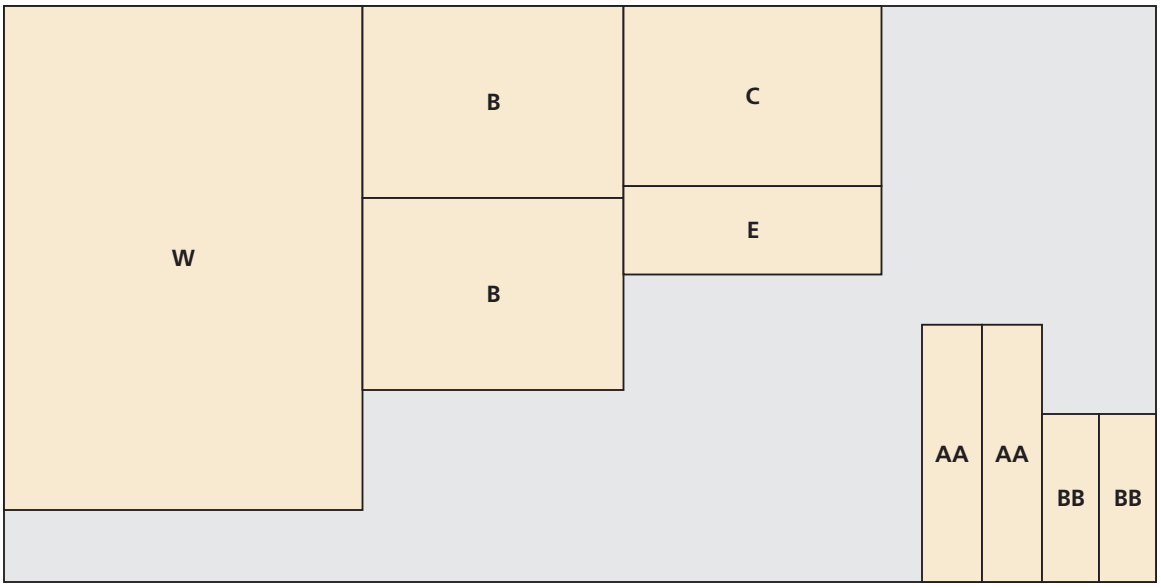
CUTTING DIAGRAM



¾ x 48 x 96 RIFT SAWN RED OAK PLYWOOD



¾ x 48 x 96 RIFT SAWN RED OAK PLYWOOD

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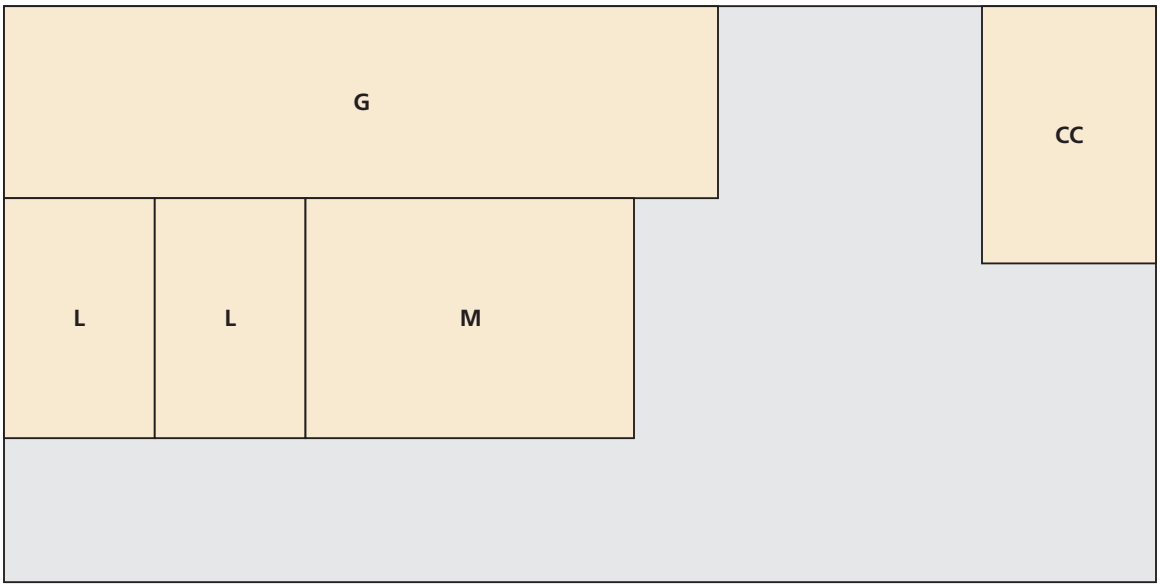
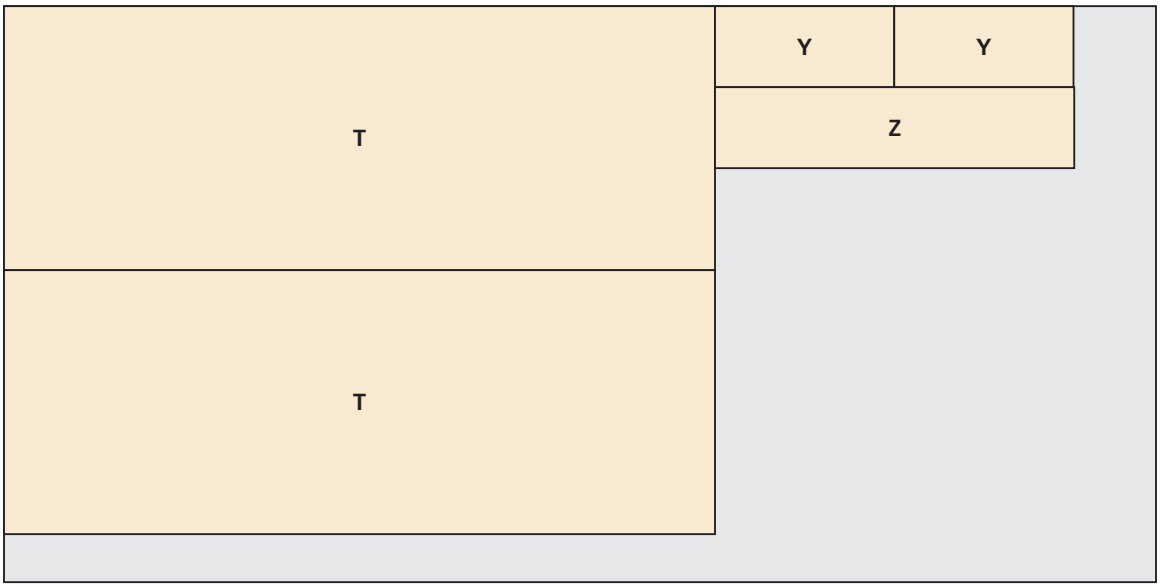
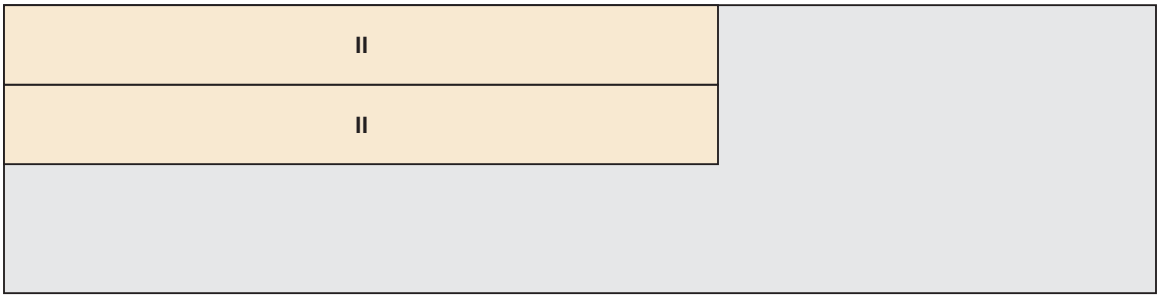
CUTTING DIAGRAM



¼ x 48 x 96 RIFT SAWN RED OAK PLYWOOD



¾ x 49 x 97 MDF



¼ x 24 x 96 TEMPERED HARDBOARD

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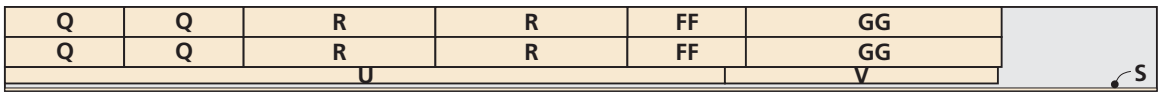
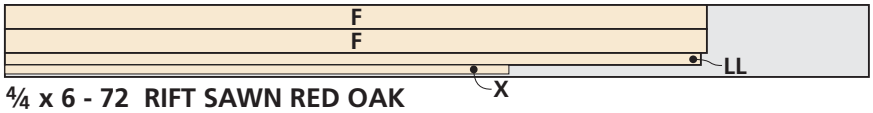
CUTTING DIAGRAM

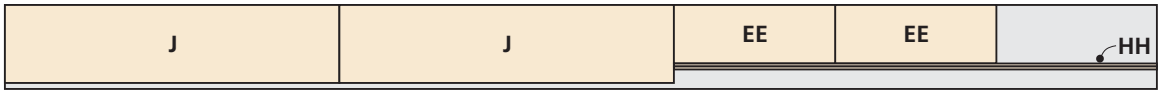


¾ x 7 - 96 POPLAR



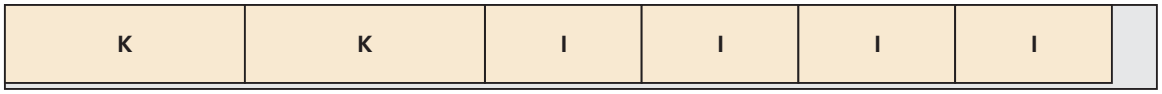
¾ x 6 - 72 RIFT SAWN RED OAK

¾ x 3 - 96 RIFT SAWN RED OAK

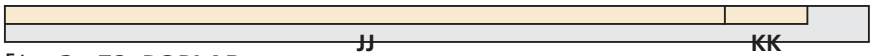


½ x 7 - 96 POPLAR

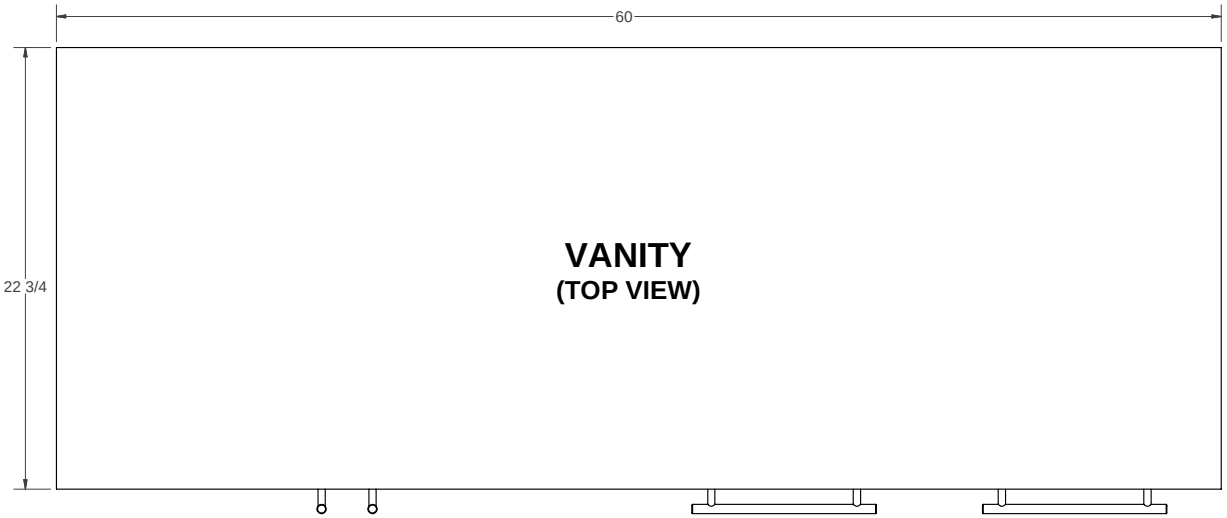
½ x 7 - 96 POPLAR



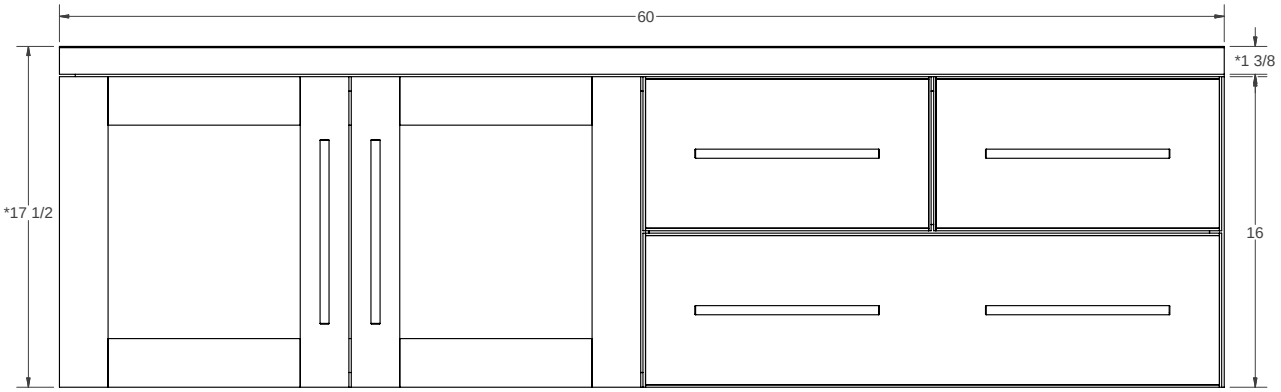
½ x 7 - 96 POPLAR



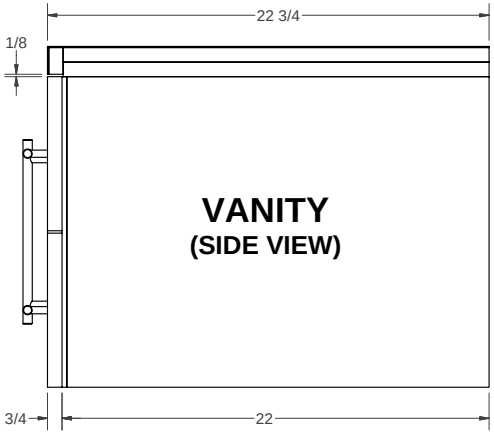
⅝ x 3 - 72 POPLAR



VANITY
(TOP VIEW)



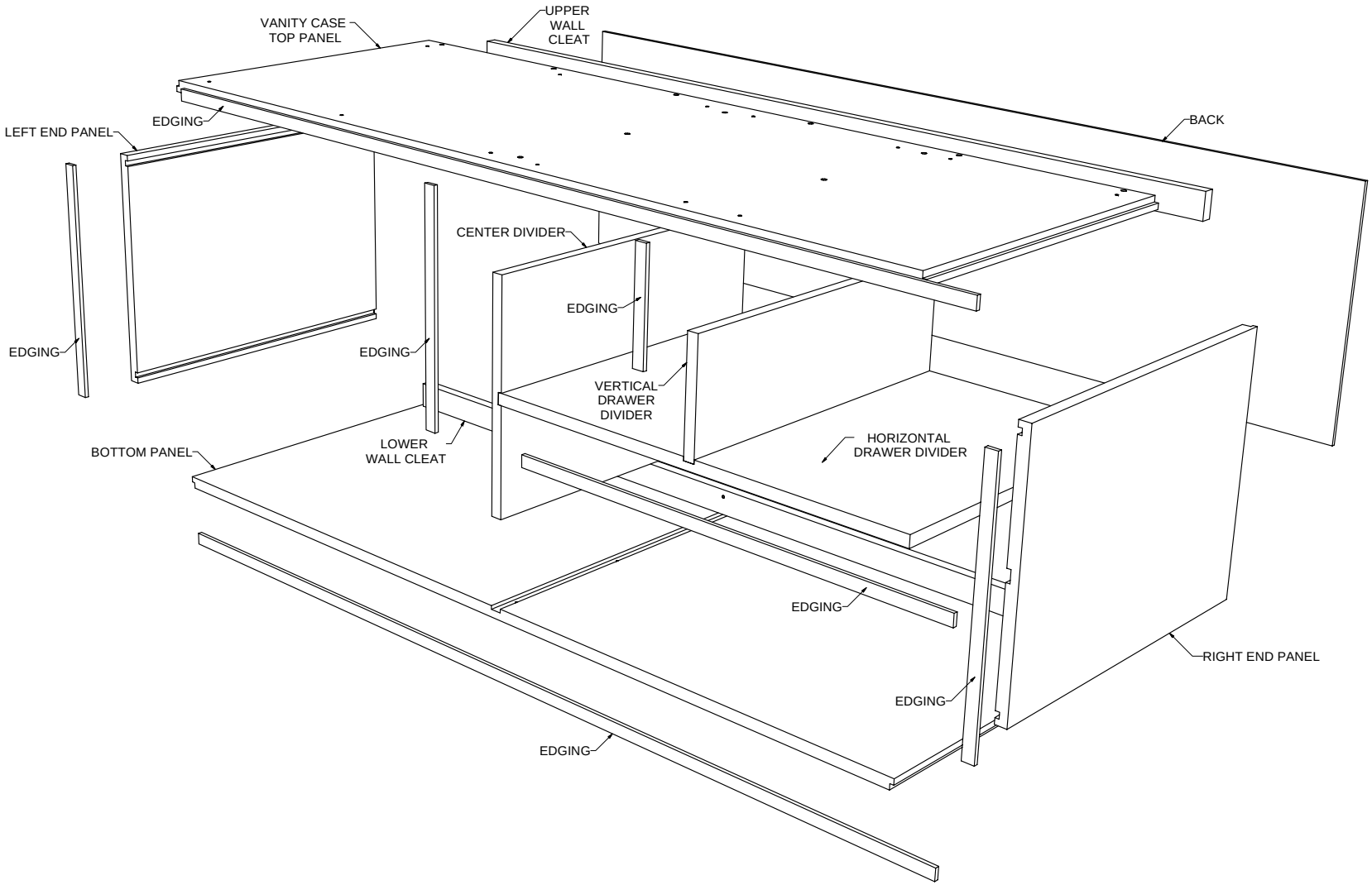
VANITY
(FRONT VIEW)



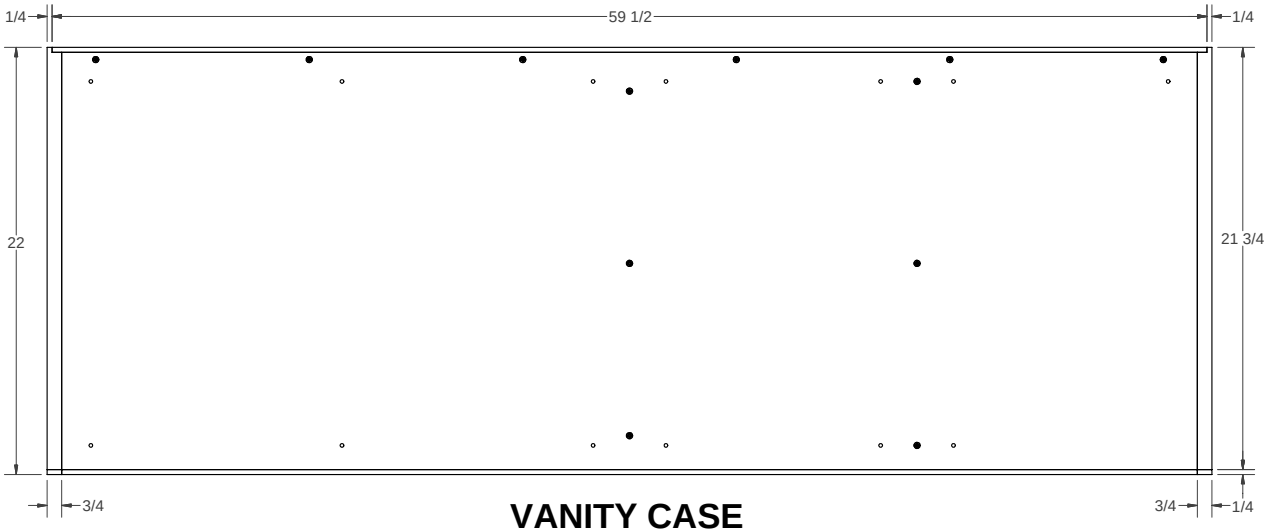
VANITY
(SIDE VIEW)

* TWO LAYERS OF MDF AND ONE LAYER OF PLASTIC LAMINATE

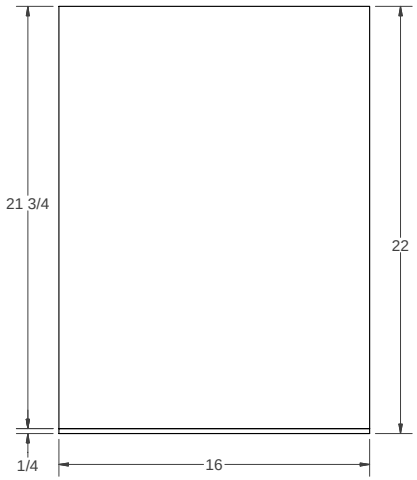
WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 1/14



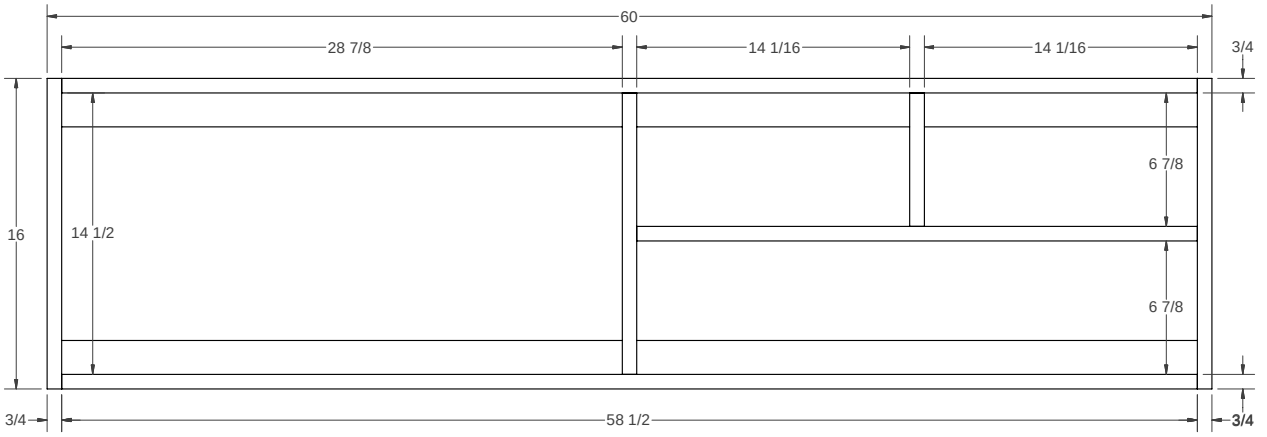
WORKBENCH #298	BATHROOM MAKEOVER	VAINITY	DATE:	SHEET: 2/14



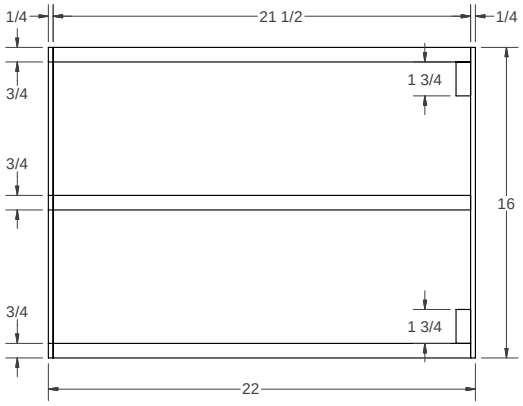
VANITY CASE
(TOP VIEW)



VANITY CASE
(SIDE VIEW)

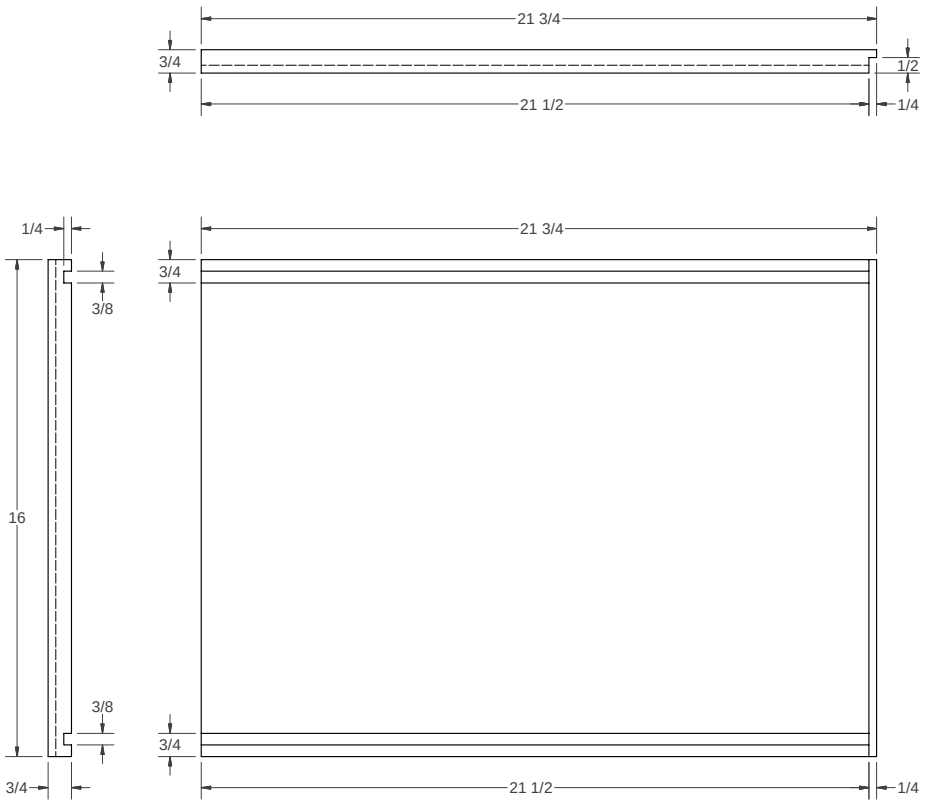


VANITY CASE
(FRONT VIEW)

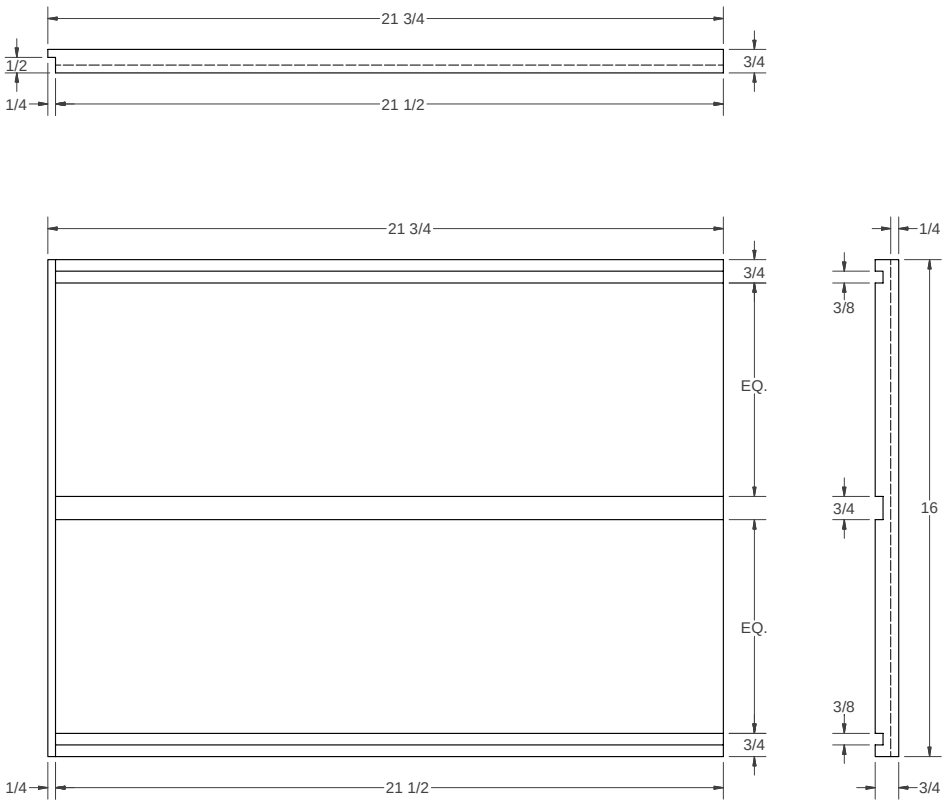


VANITY CASE
(SECTION VIEW)

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 3/14

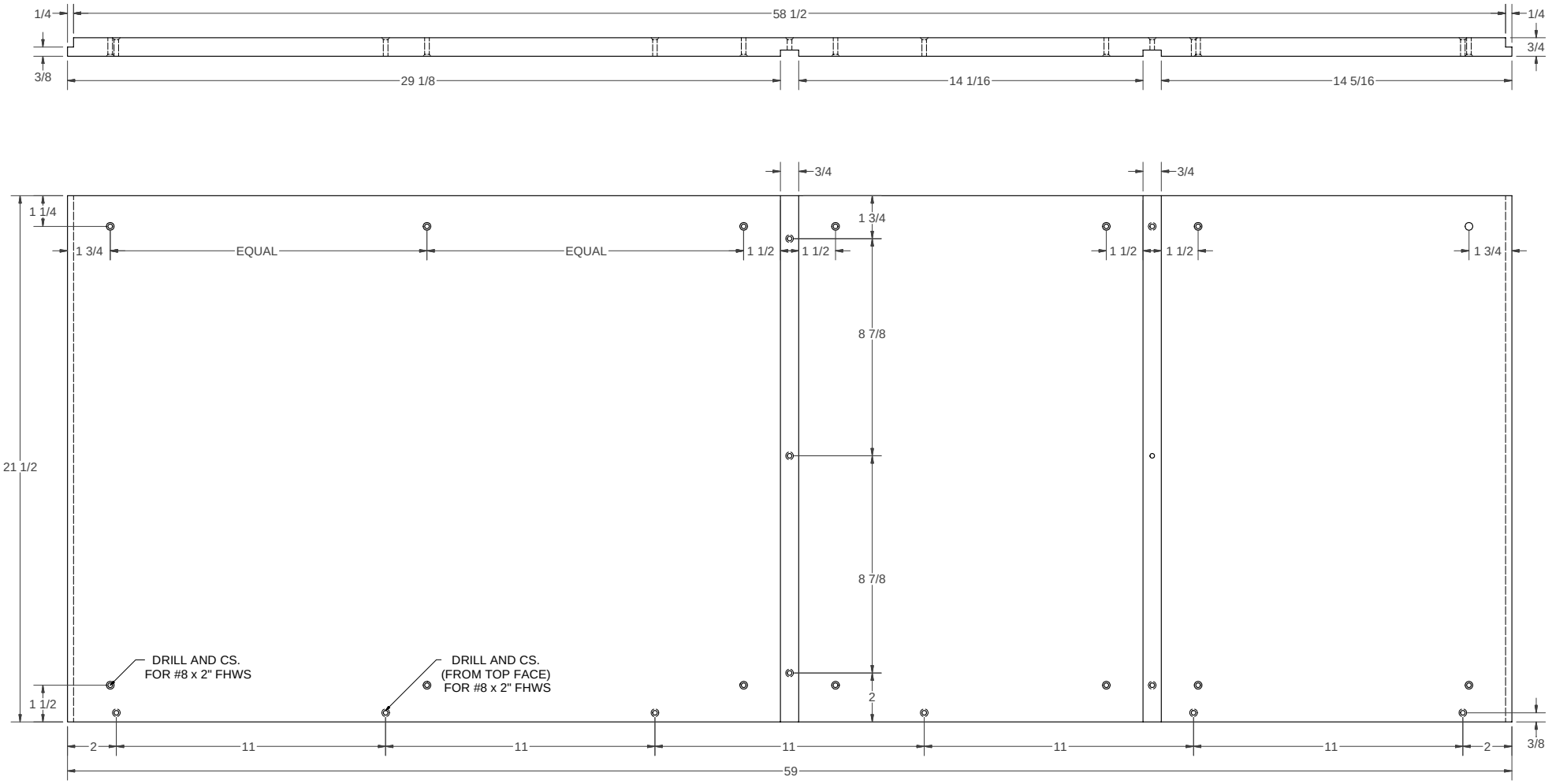


VANITY CASE
LEFT END PANEL



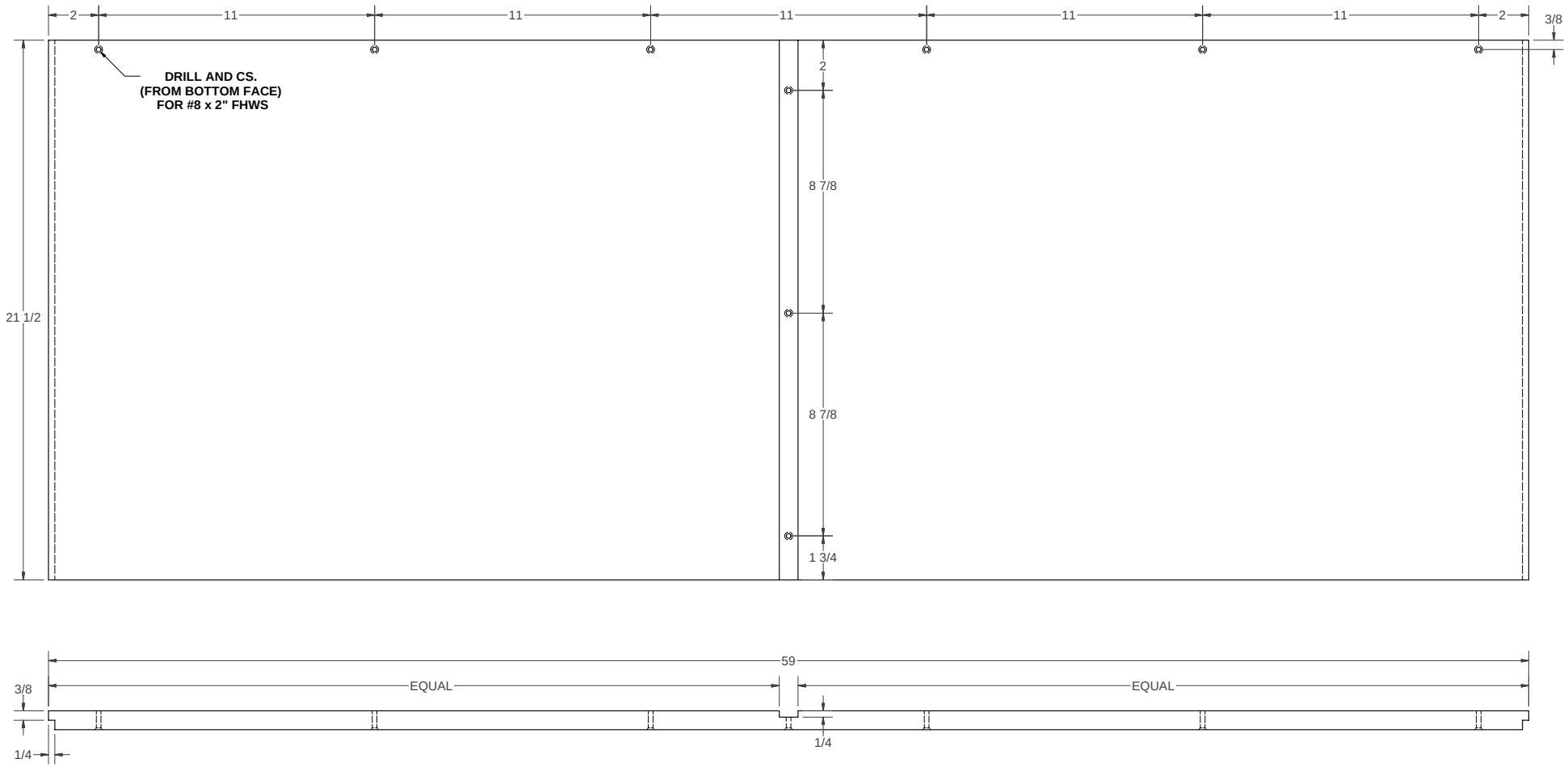
VANITY CASE
RIGHT END PANEL

WOODSMITH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 4/14



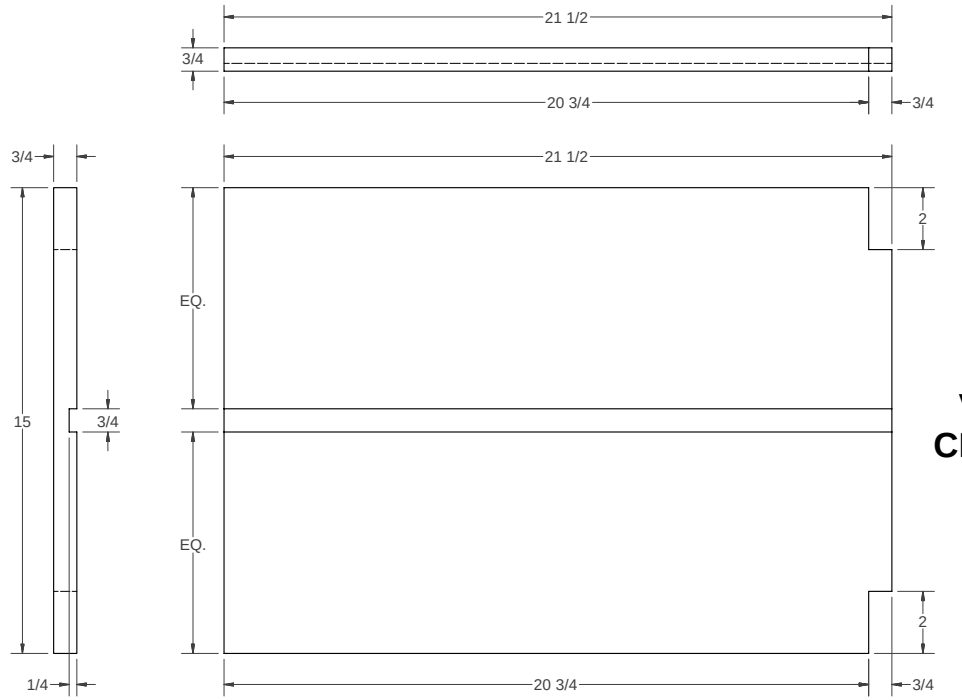
VANITY CASE TOP PANEL

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 5/14

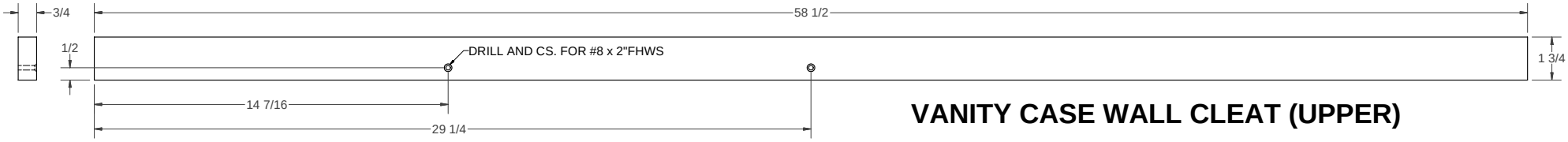


VANITY CASE BOTTOM PANEL

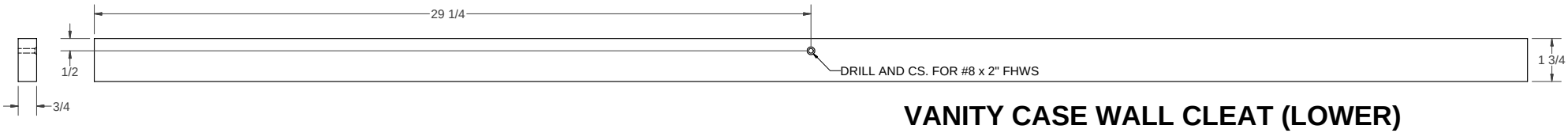
WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 6/14



VANITY CASE CENTER DIVIDER

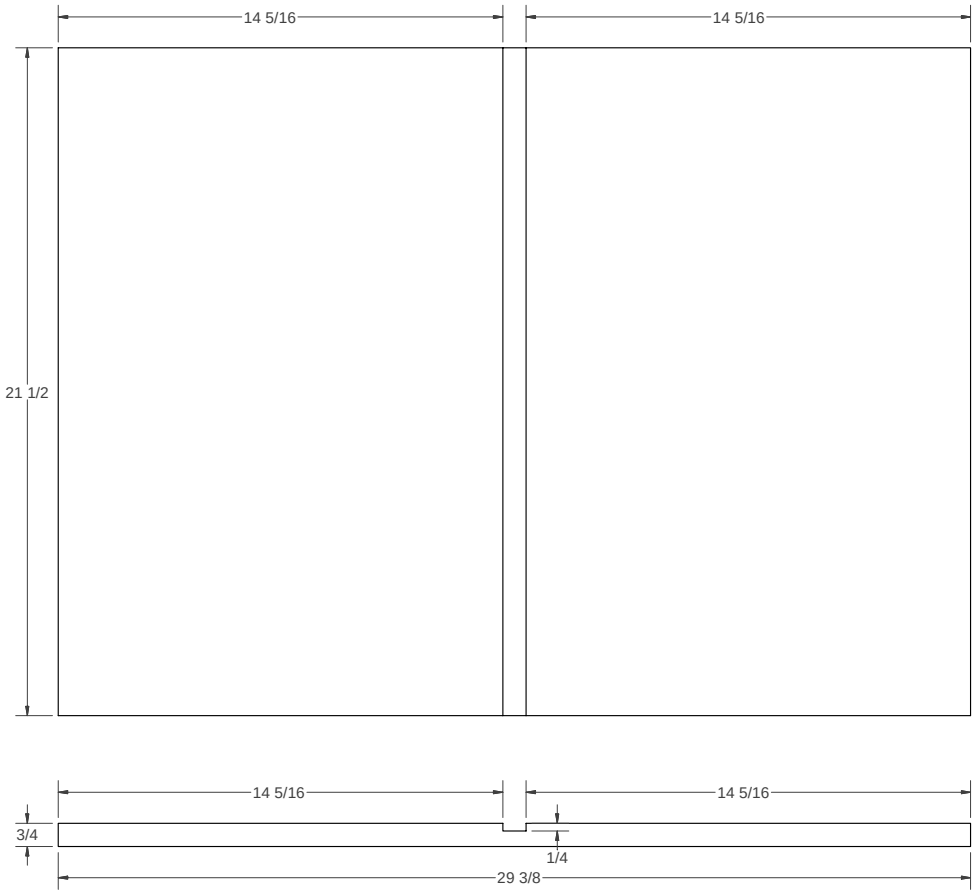


VANITY CASE WALL CLEAT (UPPER)



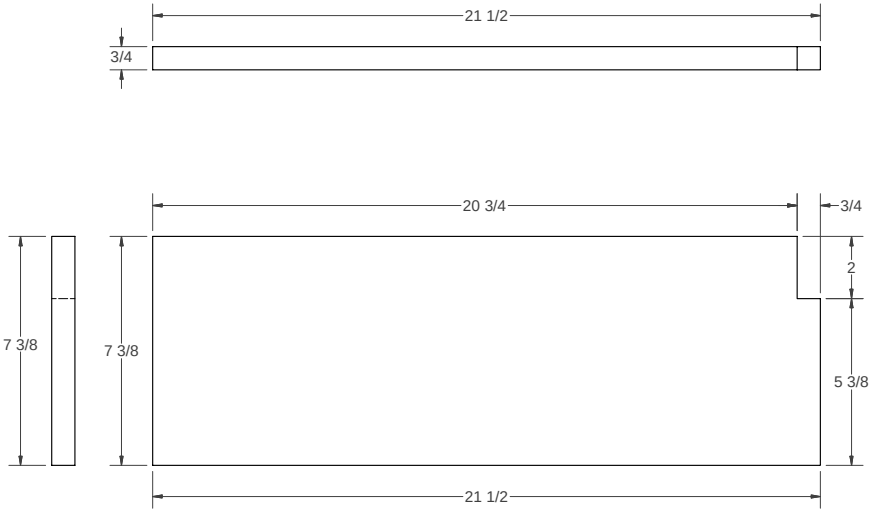
VANITY CASE WALL CLEAT (LOWER)

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 7/14



VANITY CASE

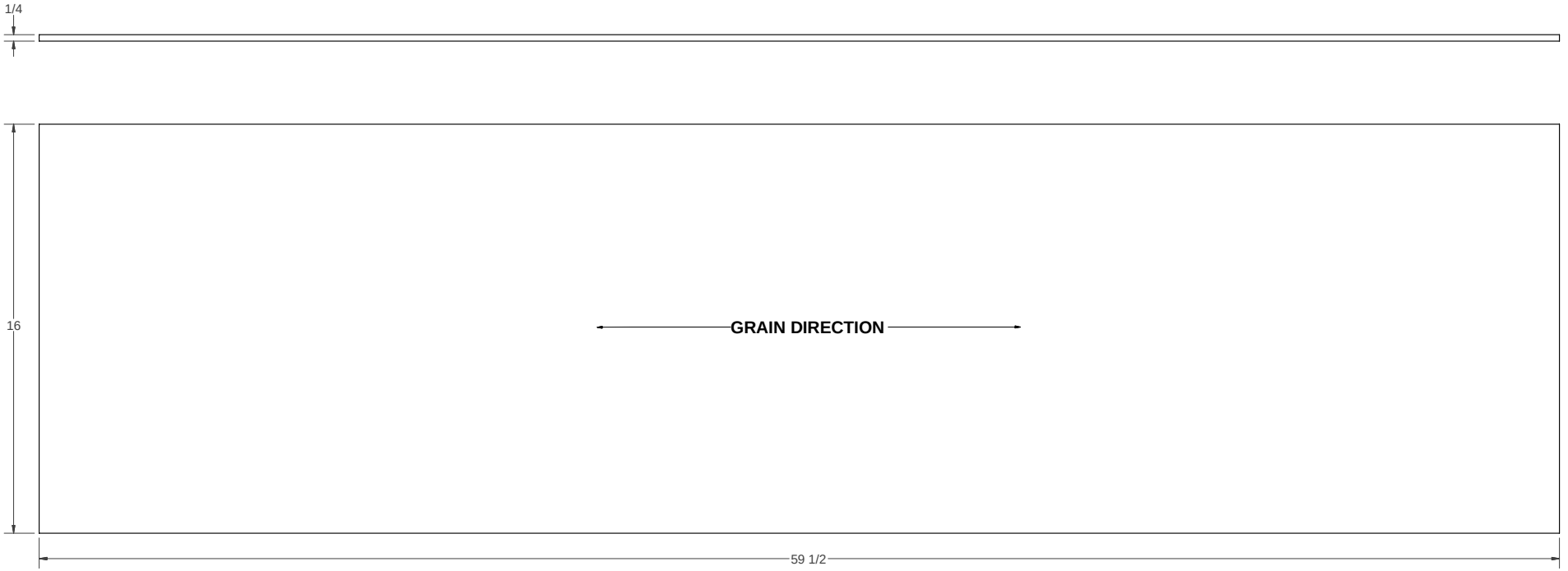
HORIZ. DRAWER DIVIDER PANEL



VANITY CASE

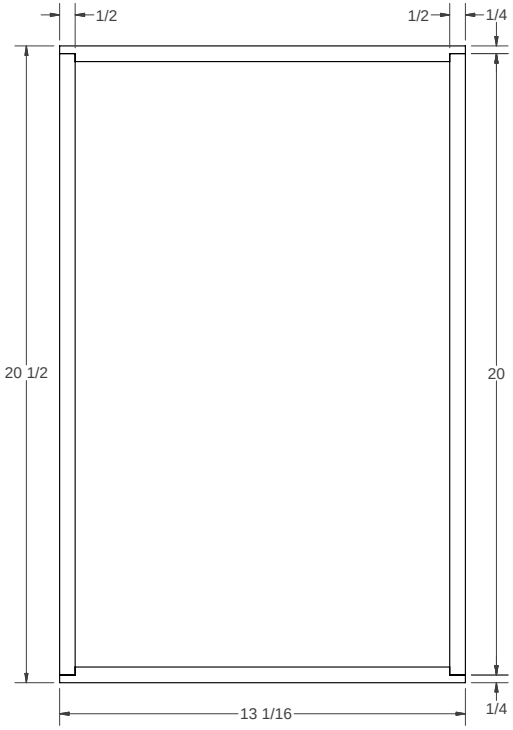
VERT. DRAWER DIVIDER PANEL

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 8/14

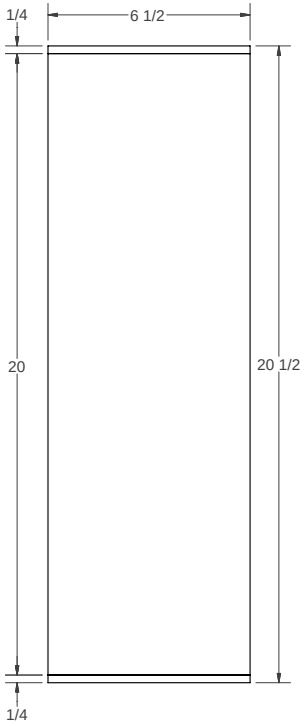


VANITY BACK PANEL

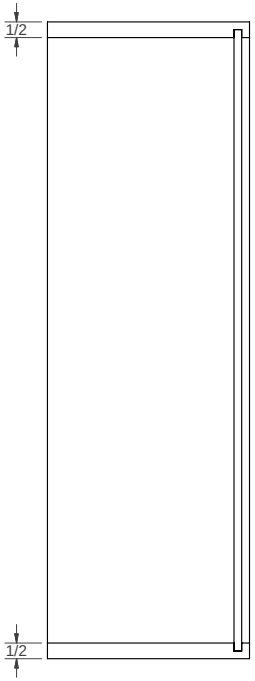
WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 9/14



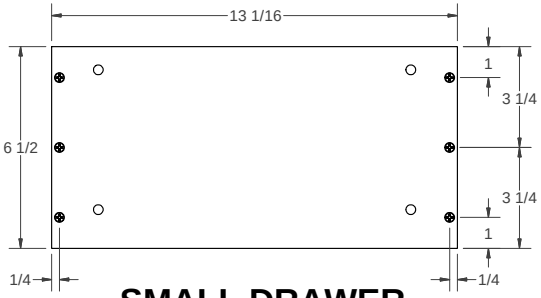
SMALL DRAWER
(TOP VIEW)



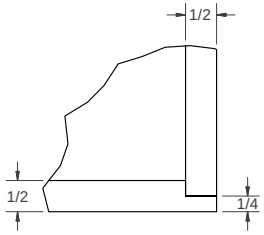
SMALL DRAWER
(SIDE VIEW)



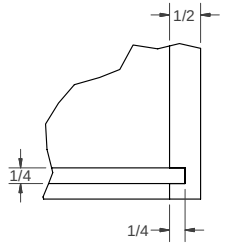
SMALL DRAWER
(SECTION VIEW)



SMALL DRAWER
(FRONT VIEW)



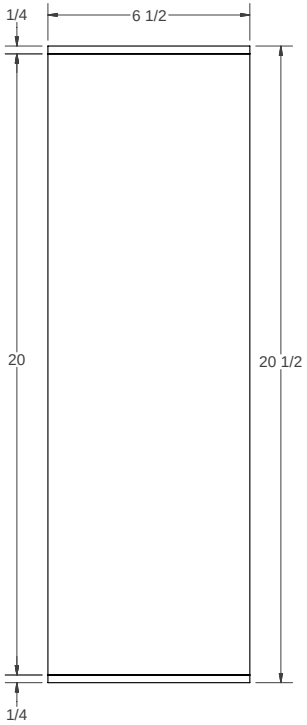
JOINERY DETAIL



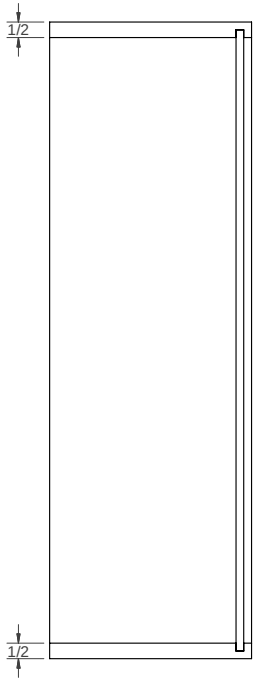
DRAWER BOTTOM DETAIL

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 10/14

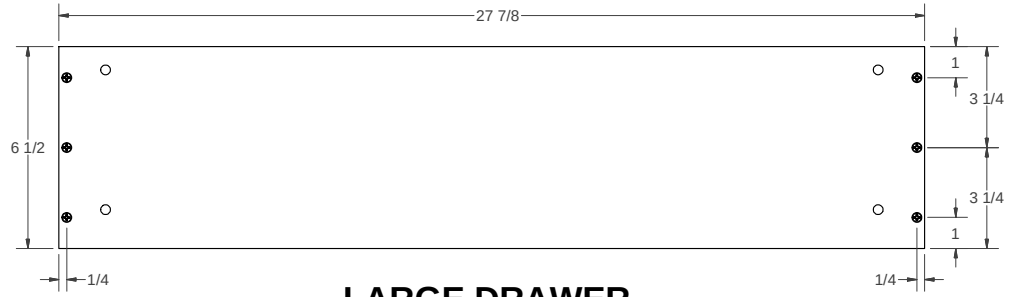
LARGE DRAWER
(TOP VIEW)



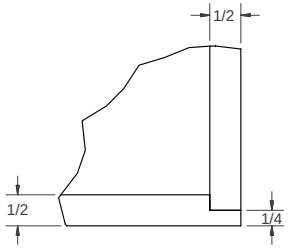
LARGE DRAWER
(SIDE VIEW)



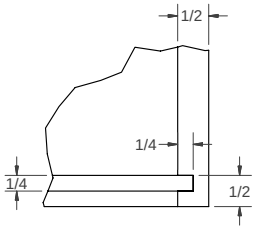
LARGE DRAWER
(SECTION VIEW)



LARGE DRAWER
(FRONT VIEW)

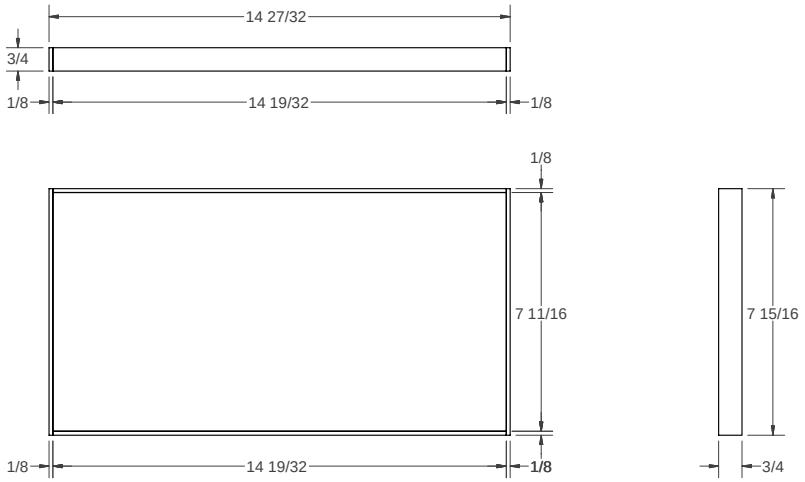


JOINERY DETAIL

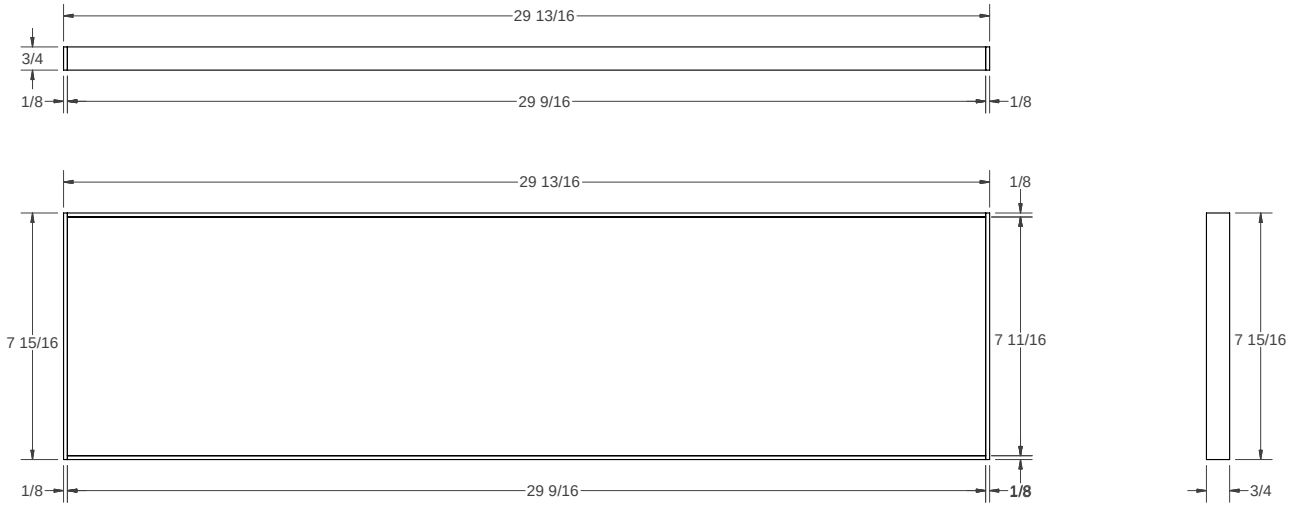


BOTTOM DETAIL

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 11/14

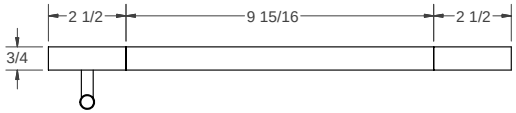


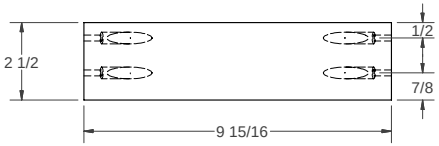
SMALL DRAWER FALSE FRONT

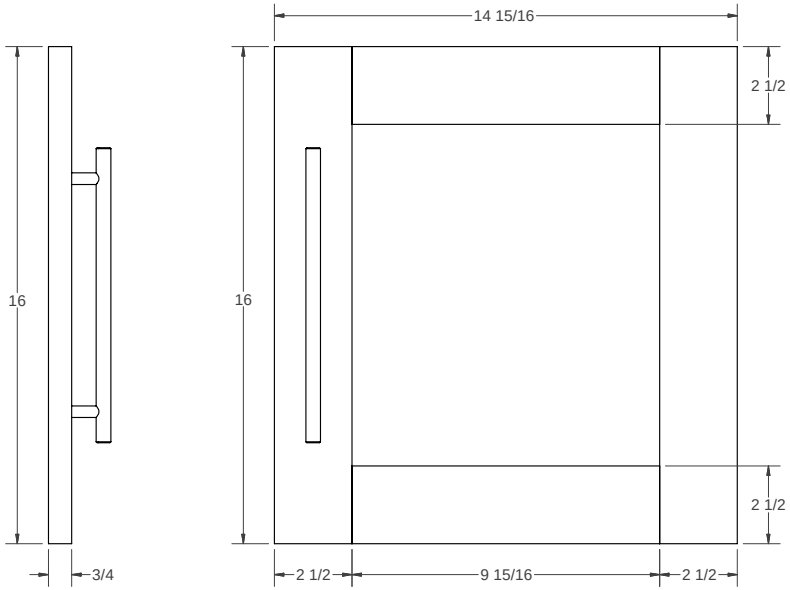


LARGE DRAWER FALSE FRONT

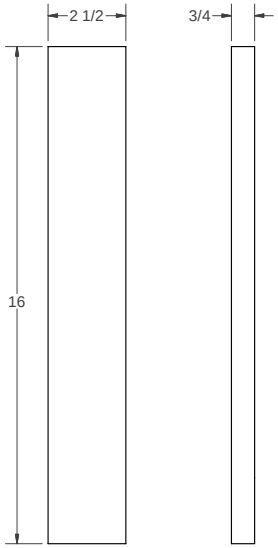
WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 12/14



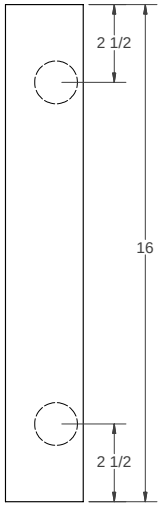


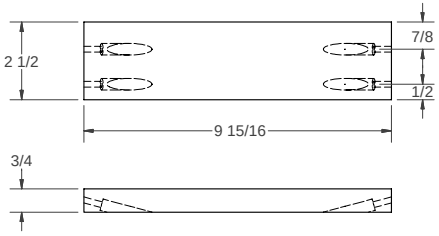


VANITY DOOR

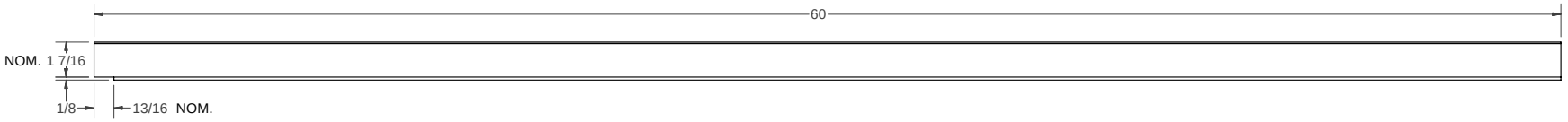


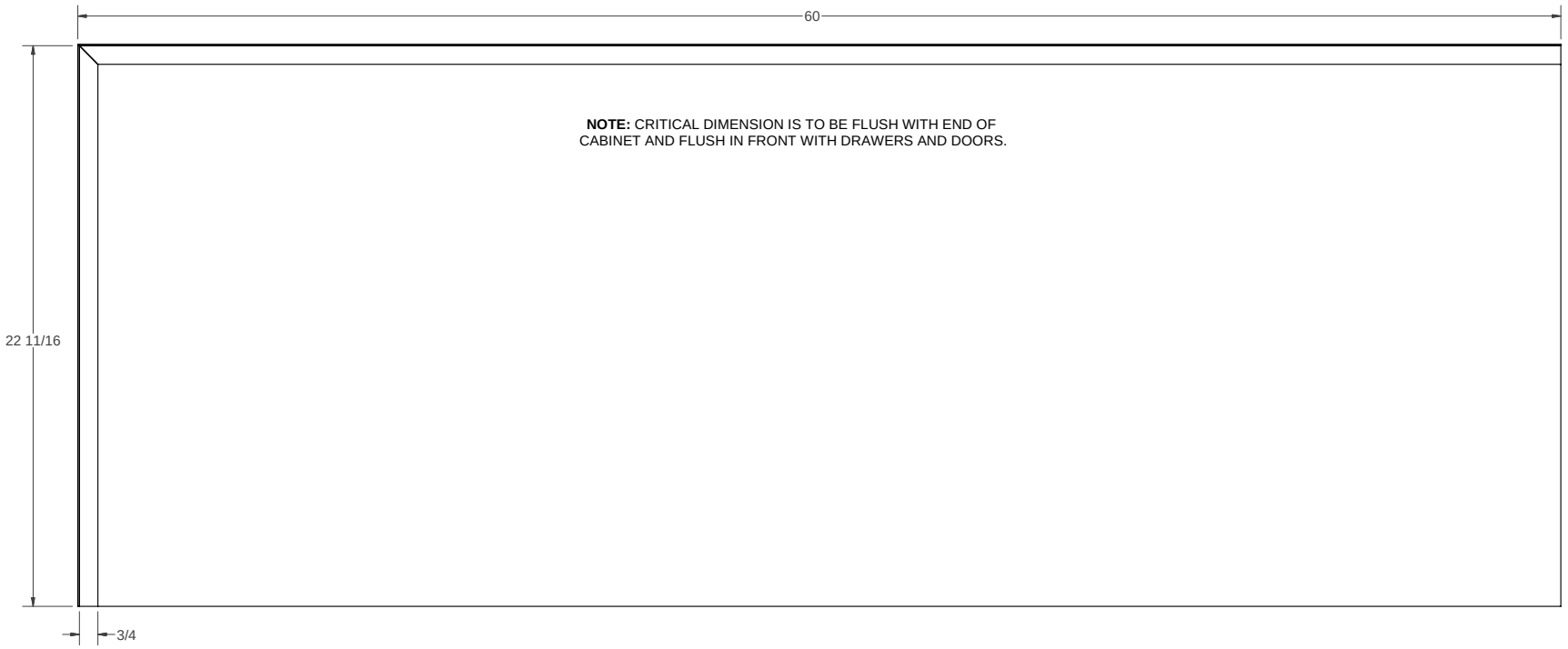
VANITY DOOR
(RAILS-STILES)

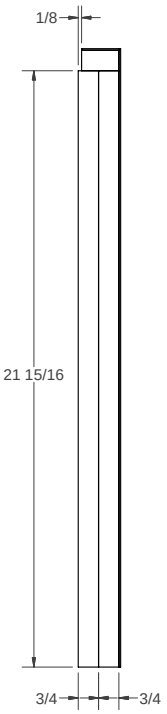




WORKBENCH#298		VANITY	DATE:	SHEET: 13/14

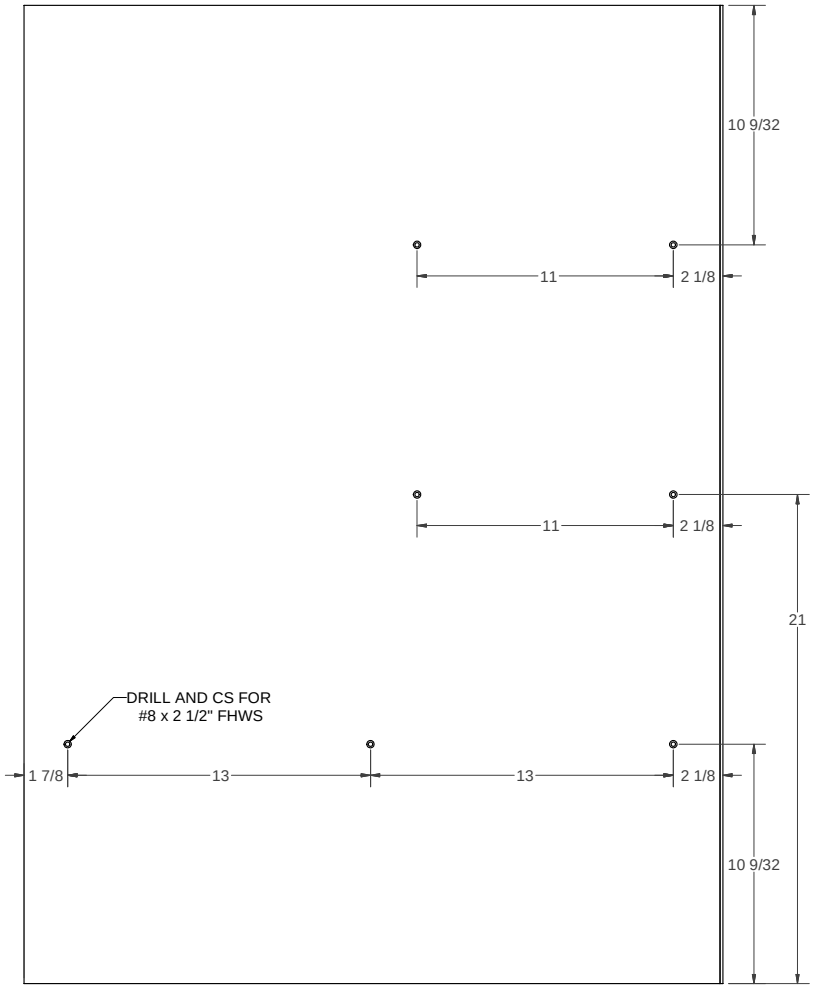




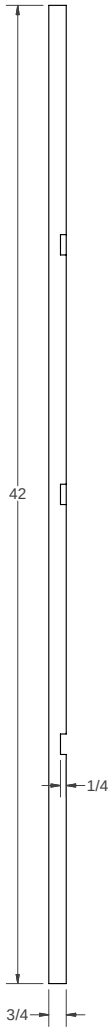


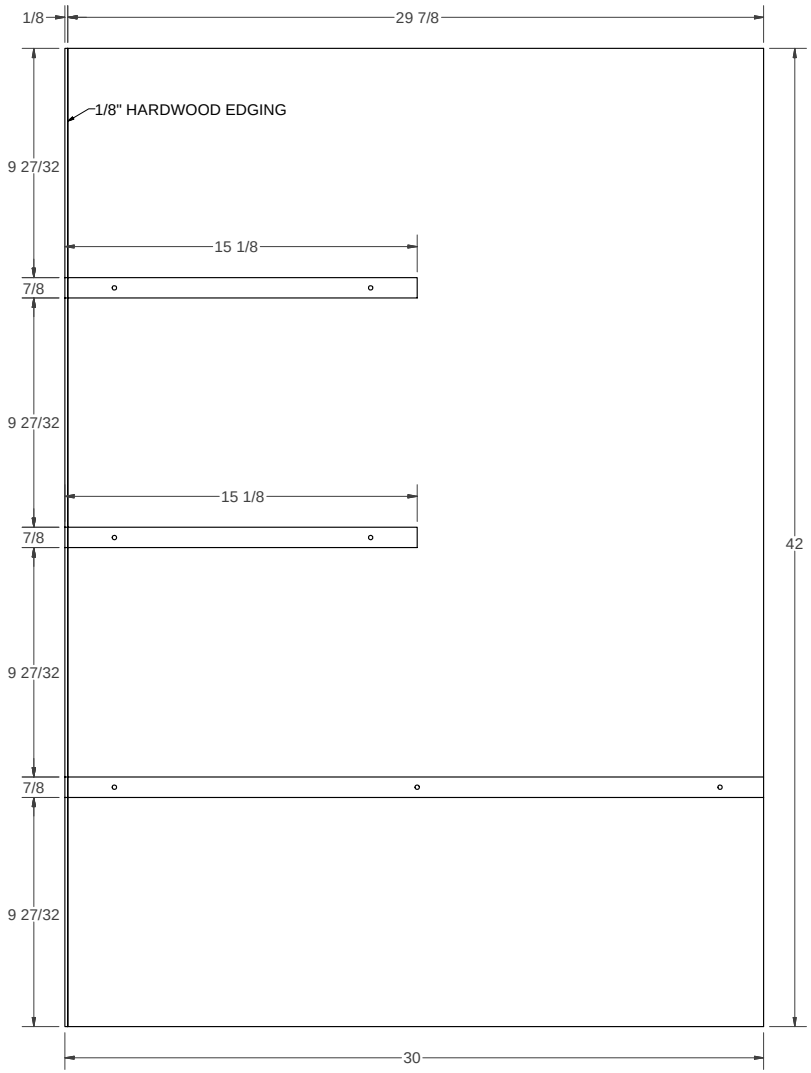
NOTE: CRITICAL DIMENSION IS TO BE FLUSH WITH END OF CABINET AND FLUSH IN FRONT WITH DRAWERS AND DOORS.

WORKBENCH #298	BATHROOM REMODEL	VANITY	DATE:	SHEET: 14/14



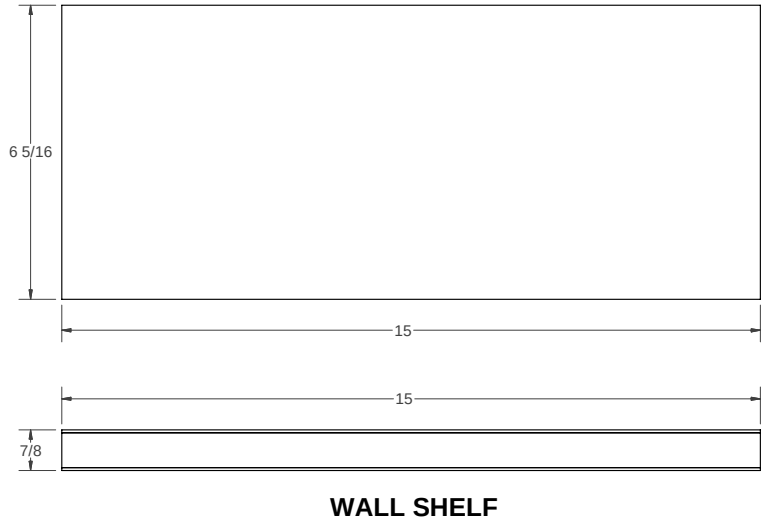
PANEL
(BACK FACE)



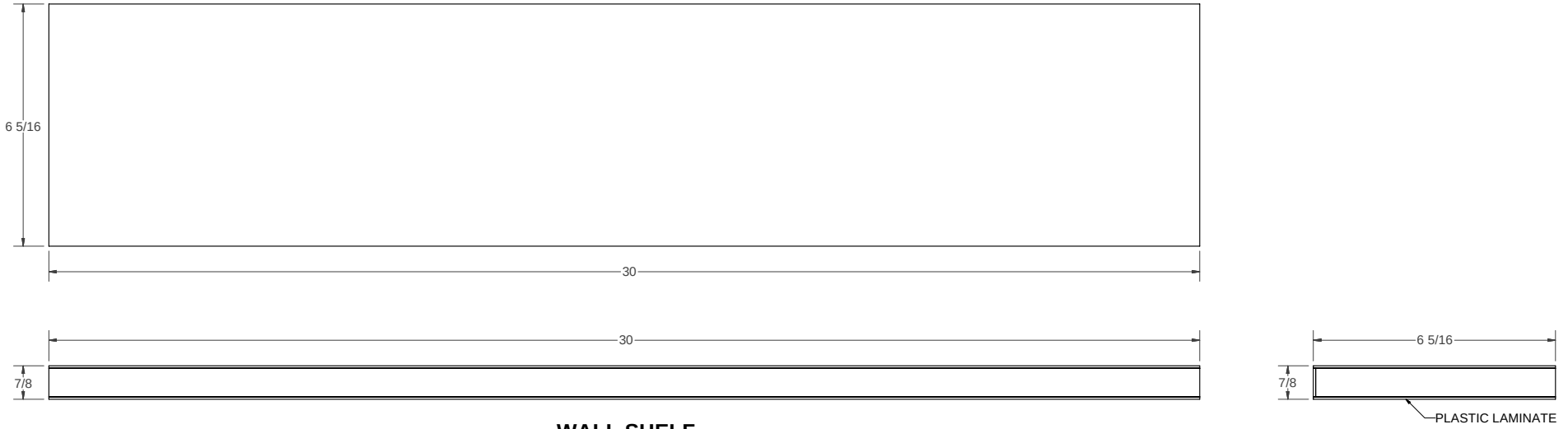


PANEL
(FRONT FACE)

WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE:	SHEET: 1/6



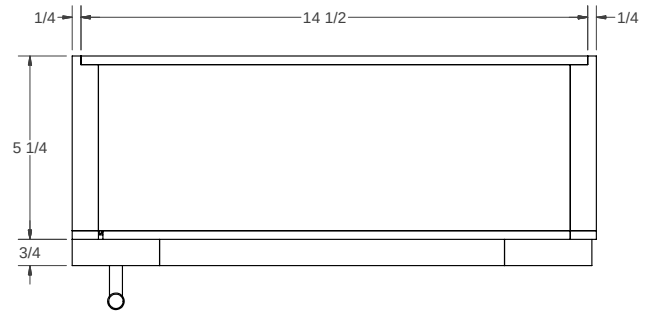
WALL SHELF
(SHORT)

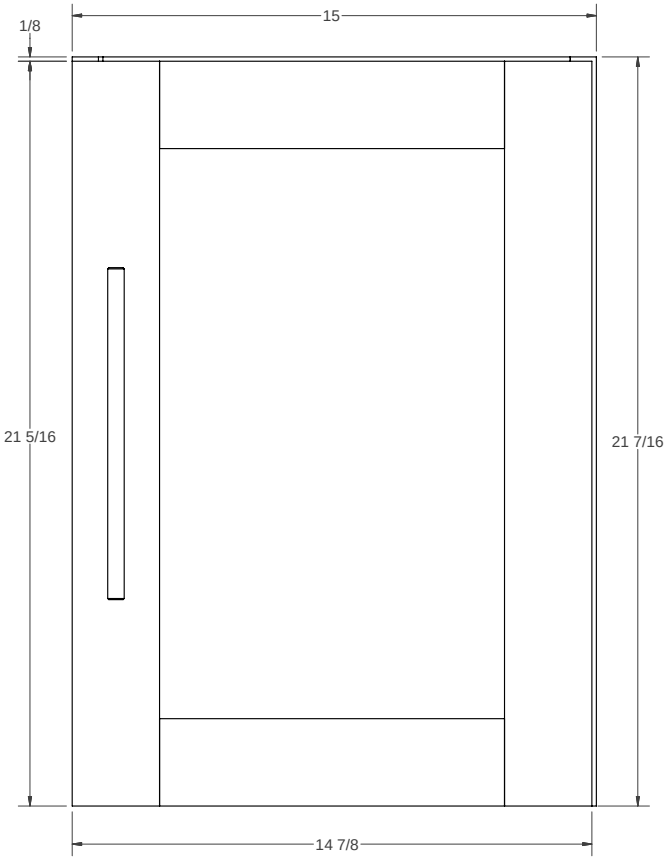


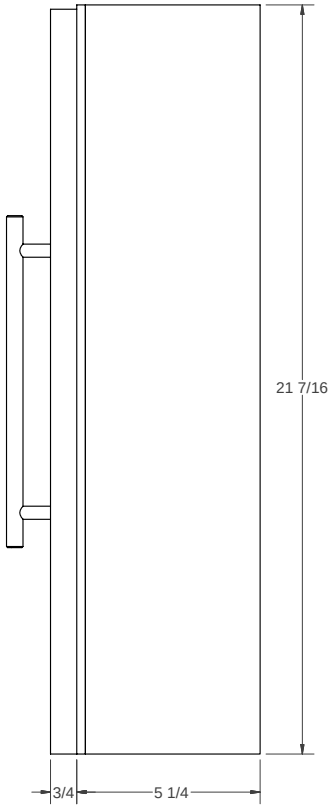
WALL SHELF
(LONG)

NOTE: SHELVES ARE 3/4 MDF COVERED WITH PLASTIC LAMINATE

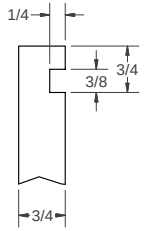
WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE:	SHEET: 2/6

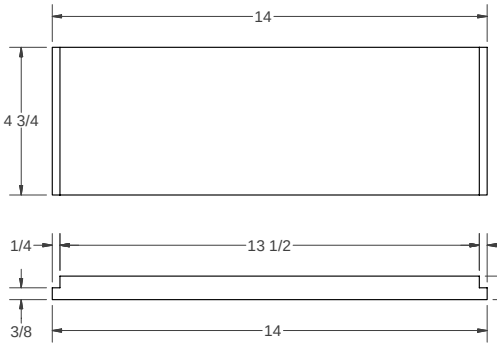


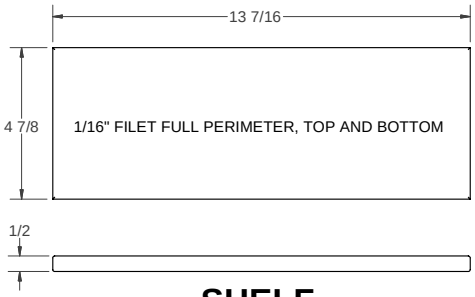




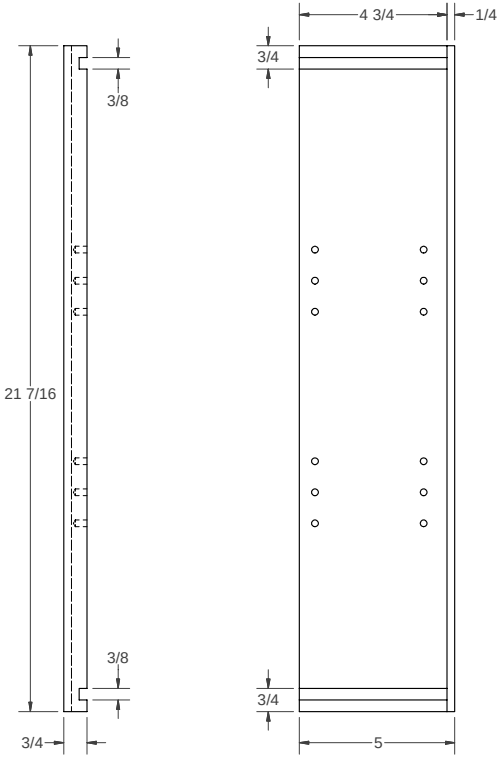
WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE: 5-30-06	SHEET: 3/6

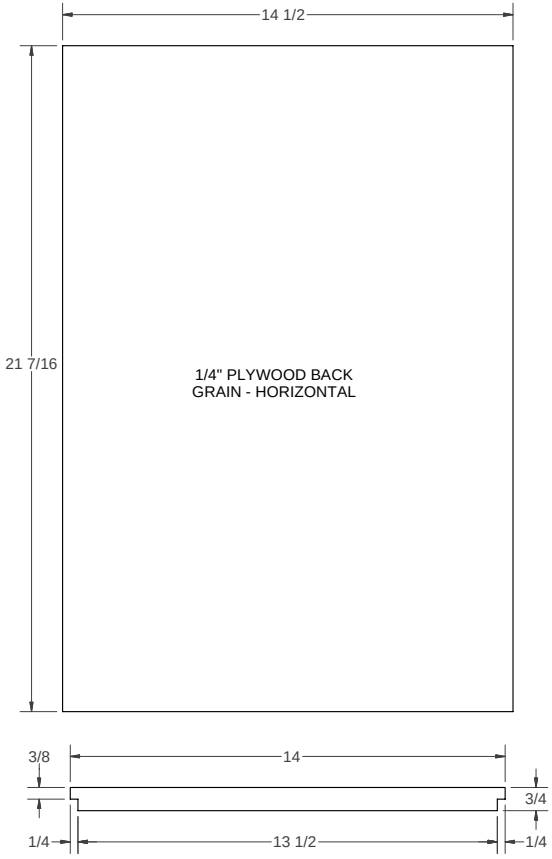


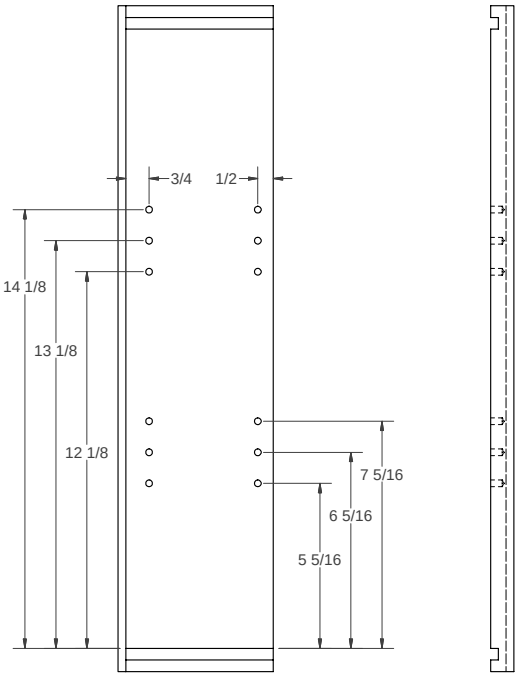




SHELF

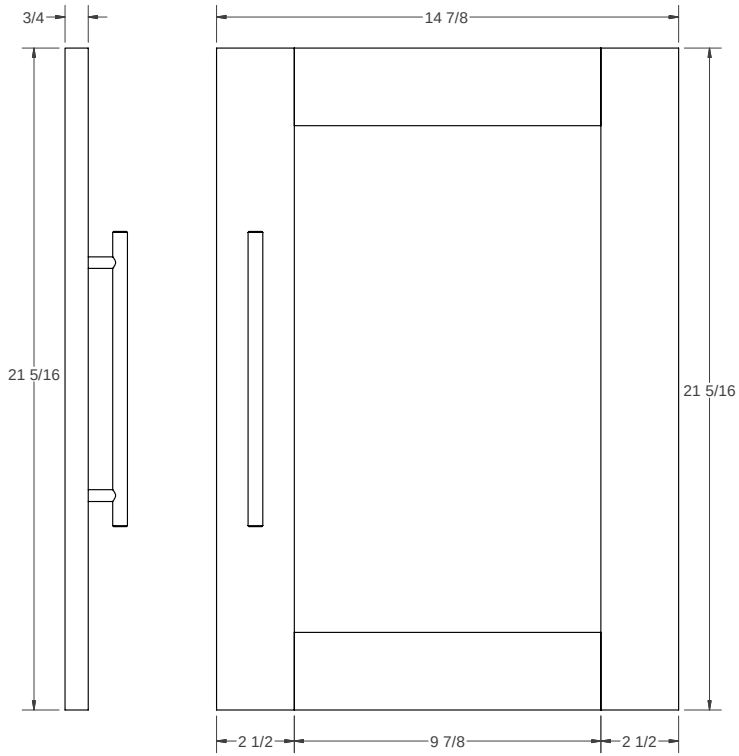




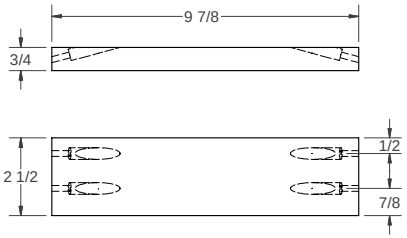


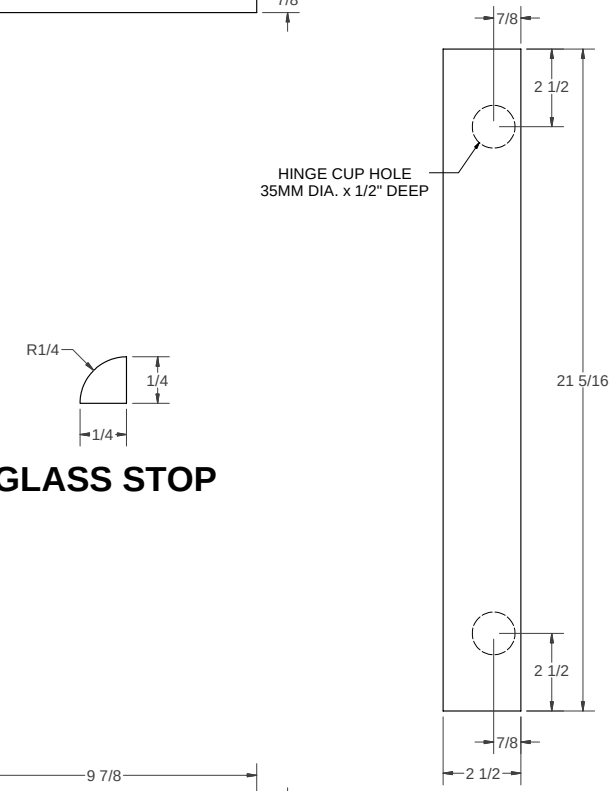
NOTE: ALL CASE EDGING IS 1/4 x 3/4

WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE:	SHEET: 4/6

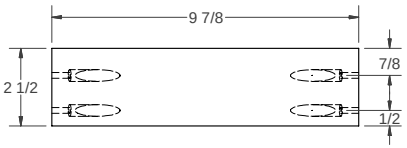


MEDICINE CABINET DOOR



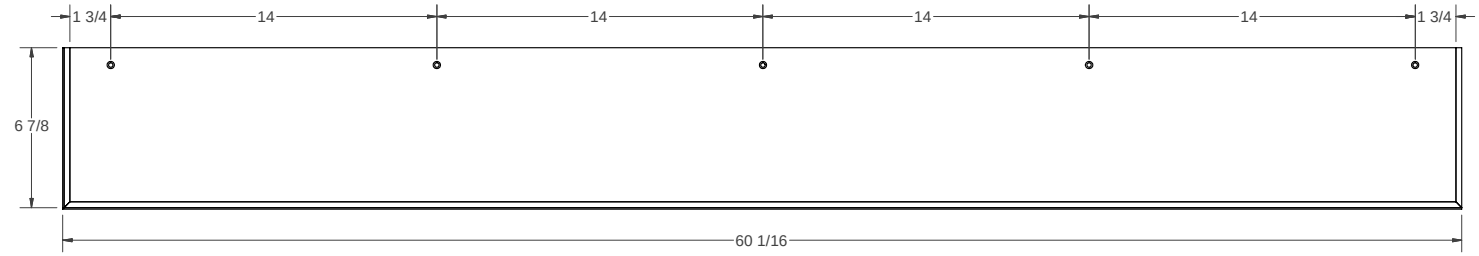


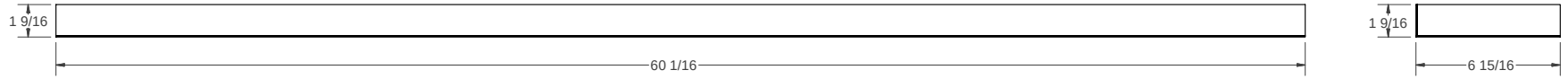
GLASS STOP

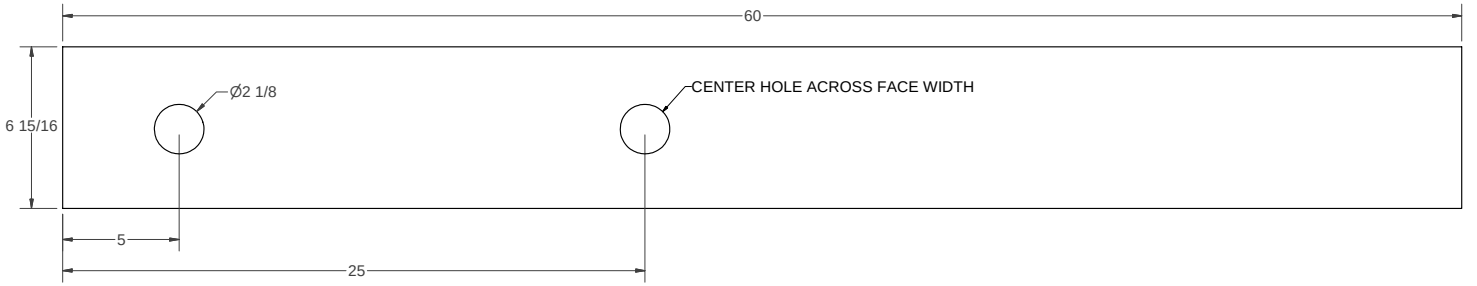


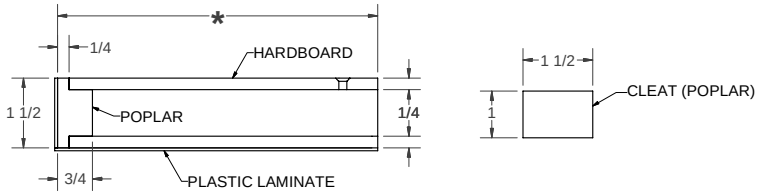
DOOR COMPONENTS

WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE:	SHEET: 5/6









*: APPROX. 6 7/8 BUT CRITICAL TO BE FLUSH WITH FRONT OF MEDICINE CABINET

WORKBENCH #298	BATHROOM REMODEL	WALL SYSTEM	DATE:	SHEET: 6/6

A PERFECT TOPPING:

Wall System

The vanity makes a stunning addition to any bathroom. But what really tops it off is this wall system. It packs a lot of storage and display space into an ordinarily unused area, and sets off the vanity as the focal point of this revitalized bathroom. Built with all the same design elements as the vanity, it incorporates "floating" shelves and a medicine cabinet that are attached to a wall-mounted panel. A large mirror sits beside the wall panel, and a lighted valance caps it all off.

Building the wall system is a straightforward process that starts with the wall panel. It's the anchor point for the display shelves and the medicine cabinet. They get mounted to the panel, and the whole assembly hangs on the wall. The mirror and valance simply mount on the wall, as well *(Wall System Assembly)*.

Prepare the Panel—The first order of business is to cut the wall panel (W) to size *(see the Wall Panel Assembly on page 48)*. As you do this, make sure to orient the grain horizontally. That done, add solid-wood edging (X) to the edge of the panel that abuts the mirror. Then set the wall panel aside until you've completed the shelves.

Shelves Come Next—Now cut the shelves (Y, Z) to size. They're just made from ¾" MDF that's left over from the countertop.

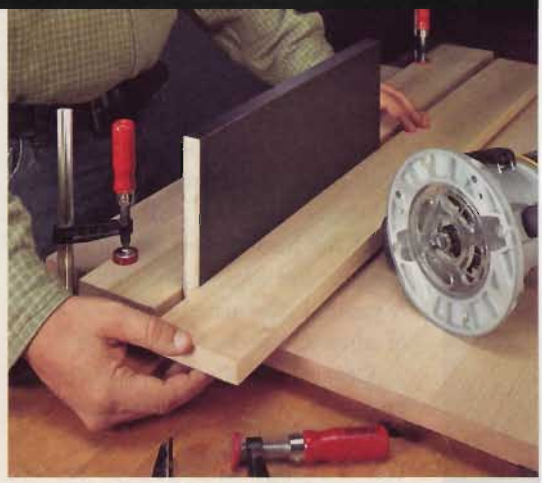
After cutting the shelves, you can cover them with plastic laminate. There's no need, by the way, to put laminate on the back edge or the ends that won't be seen.

Get into the Grooves—To anchor the shelves securely to the wall panel, they're mounted in grooves *(Wall Panel Assembly)*. There are two considerations when cutting these grooves.

First, the width of the grooves needs to match the thickness of the laminate-covered shelves. And that will be wider than you can cut with a dado blade.

Second, the lowest groove runs all the way across the panel, while the grooves for the upper shelves are stopped.

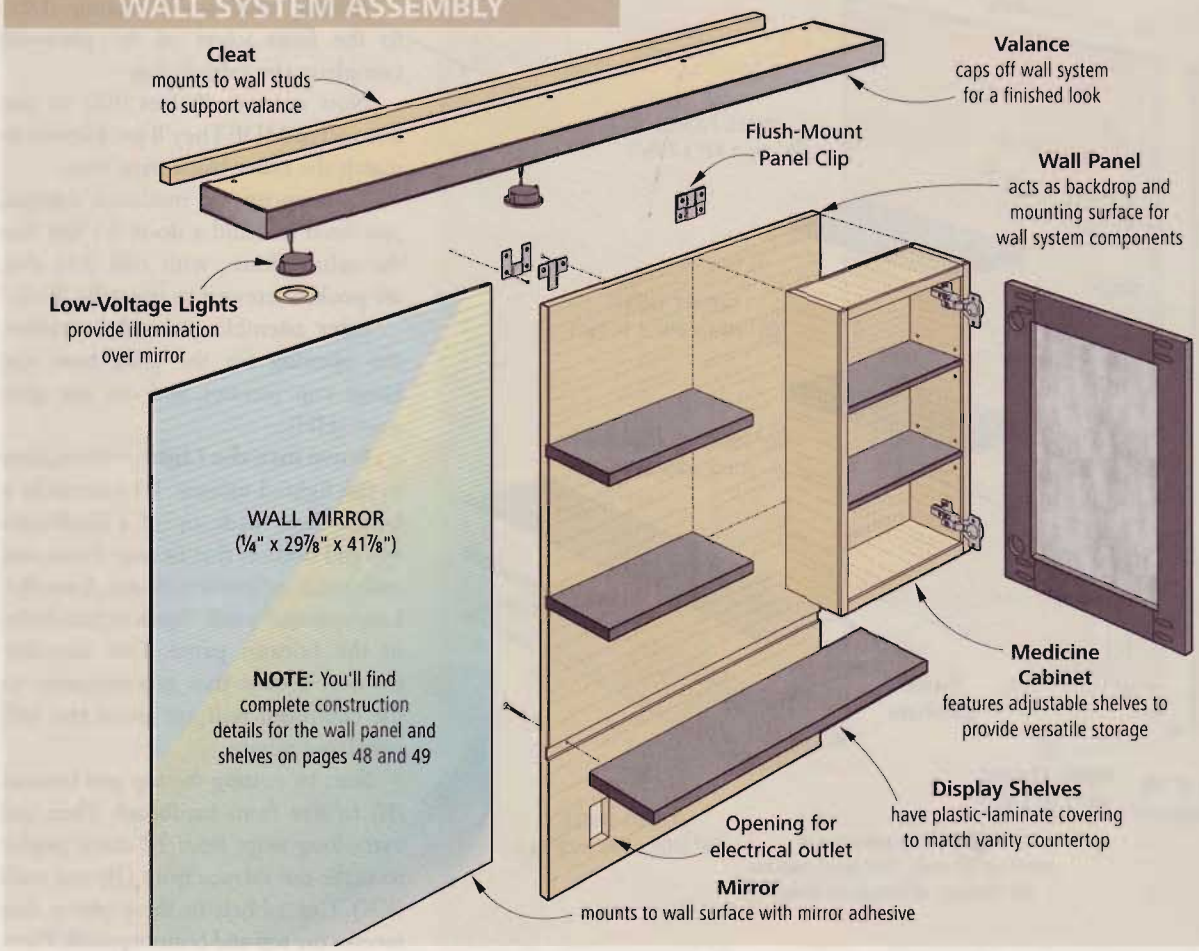
Because of these factors, I routed the grooves using a ½" pattern bit. It has a bearing that rides along the edges of two guide boards. Just clamp one board



on the layout line for a shelf, and then use the shelf as a spacer to position the other guide *(Photo, above)*.

After you rout the grooves, you can drill holes for the screws that mount the shelves, but don't install the shelves until after you've applied finish to the panel.

WALL SYSTEM ASSEMBLY



Wall System: Cabinet & Valance

If you look at the *Medicine Cabinet Assembly* on page 49, the construction of the cabinet should look familiar. It's a shallow plywood box built with the same tongue-and-groove joinery that was used to build the vanity. A ¼" back panel fits into rabbets at the back of this box, and edging goes on the front. A painted glass-panel door and a pair of adjustable shelves finish it off.

Create the Components—The first step in building the medicine cabinet is to cut the sides (AA) to size. When laying them out, be sure to orient the grain *horizontally*, so they'll match up well with the wall panel.

That done, you can cut the top and bottom (BB) to size, as well. These pieces don't show, so grain orientation isn't critical. Just cut them from leftover pieces of the plywood you have.

Now you can cut the tongues and grooves that join the parts together. This is done using the table saw and a ⅜" dado blade, just like the vanity. The joint details are shown in the *Tongue & Groove Detail* on page 44.

Again, by burying part of the blade in an auxiliary fence, you can rabbet the back edge of each side panel to receive the back panel. The cabinet top and bottom aren't rabbeted. The back simply overlaps them and gets attached with nails, just like on the vanity.

Support the Shelves—To make the medicine cabinet easier to organize, the shelves are adjustable. That means you'll need to drill a series of holes for the pins the shelves rest on.

Because this cabinet is small, it's easiest to drill the shelf-pin holes before assembly. To ensure accurate alignment, lay the cabinet sides together side by side, and mark all the pin holes at once. It's a simple technique that ensures consistency from one piece to the next. You'll find more tips like this in this issue's installment of "Bench Basics," beginning on page 66.

After you've drilled the pin holes, you can go ahead and glue up the cabinet sides, top, and bottom. Check to ensure that the assembly is square as you tighten the clamps.

Now you can cut the ¼" plywood back panel (CC) to size. Note that the grain runs horizontally, once again, to match the wall panel.

Adding solid-wood edging (DD) to the front edges of the plywood completes the cabinet case.

Now cut two shelves (EE) to size from scrap MDF. They'll get painted to match the other black parts later.

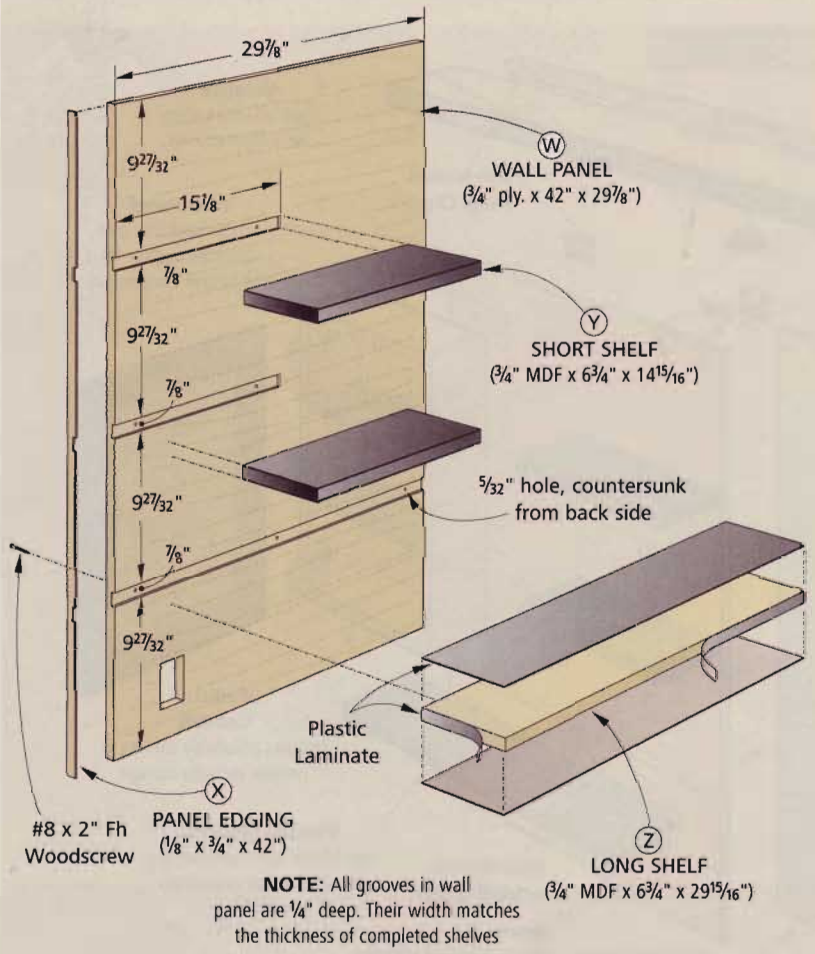
To wrap up the medicine cabinet, you need to build a door. It's just like the vanity doors, with rails (FF) that are pocket-screwed to the stiles (GG).

After assembling the door, rabbet the opening for the glass, bore the hinge cup recesses, and cut the glass stops (HH).

Move into the Light—Next, turn to the lighted valance. It's essentially a hollow box made up of a hardboard top and bottom that fit over fronts and ends made of poplar *(Valance Assembly)*. Low-voltage "puck" lights fit into holes in the bottom panel. This assembly fits over a cleat that gets mounted to the bathroom wall just above the wall panel and mirror.

Start by cutting the top and bottom (II) to size from hardboard. Then cut extra-long strips from ¾"-thick poplar to make the valance front (JJ) and ends (KK). Cut rabbets in these pieces that receive the top and bottom panels. Then

WALL PANEL ASSEMBLY



NOTE: All grooves in wall panel are ¼" deep. Their width matches the thickness of completed shelves

miter the front and ends to length to fit the top and bottom panels.

Next, adhere plastic laminate to the front edge, exposed end, and bottom face of the valance. Finally, drill holes in the bottom panel for the puck lights.

The last piece to make is the valance cleat (LL). It's cut from straight 2x stock.

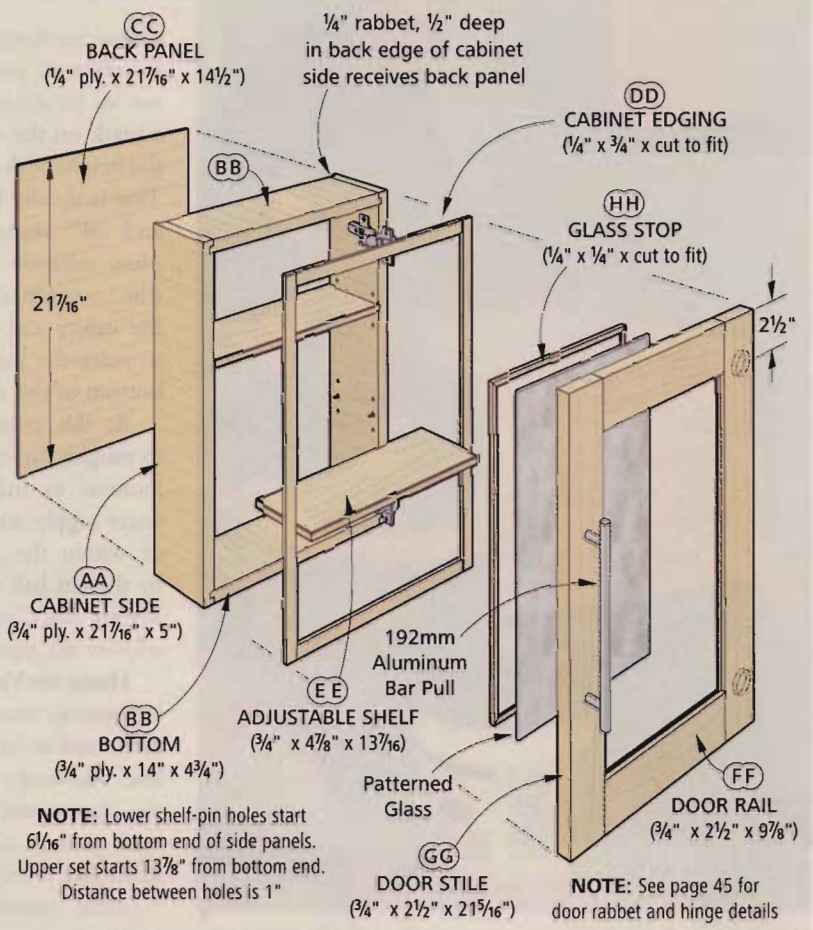
Paint & Finish the Parts—Now it's time to gather up all the components you've built, so you can apply paint and finish to them before final assembly and installation.

The vanity case, drawers, wall panel, and medicine cabinet all get three or four coats of clear exterior oil-base polyurethane finish. This warms up the color of the oak and offers protection against moisture.

The doors and the shelves in the medicine cabinet are finished with Krylon "Semi-Flat Black" spray paint to achieve a matte finish. I also brushed black paint onto the top edges of the vanity ends and the underside of the banding that wraps around the counter.

Once the paint and finish dry, you can get the vanity and wall system ready for installation by mounting the door and drawer hardware.

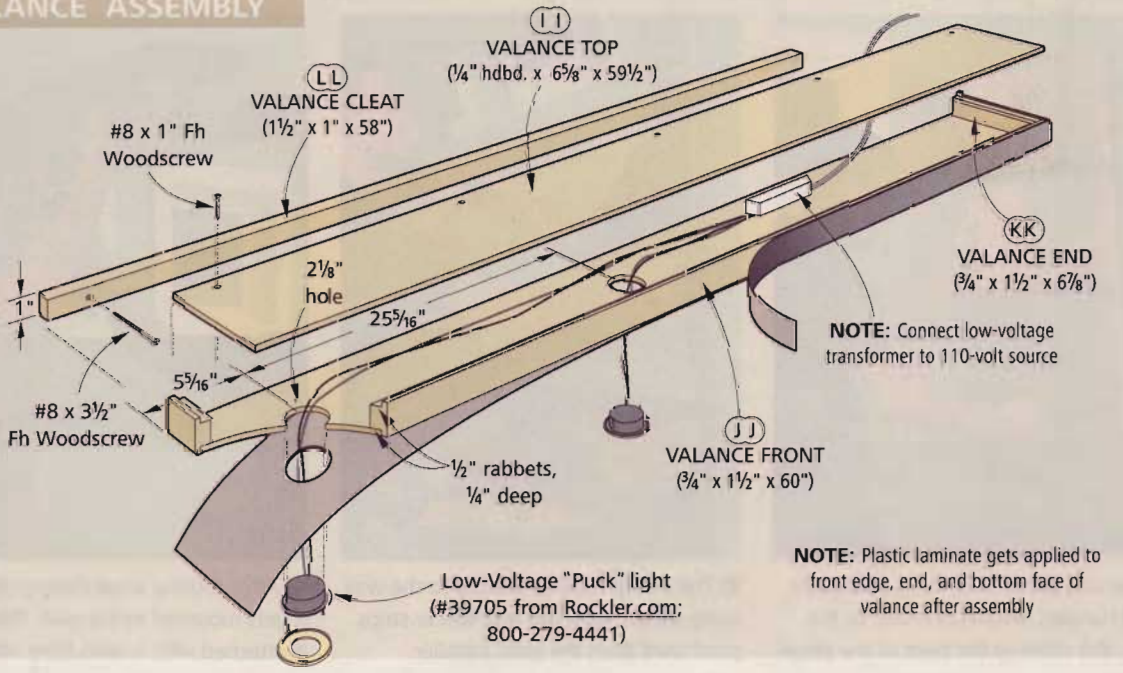
MEDICINE CABINET ASSEMBLY



NOTE: Lower shelf-pin holes start 6⁵⁄₁₆" from bottom end of side panels. Upper set starts 13⅞" from bottom end. Distance between holes is 1"

NOTE: See page 45 for door rabbet and hinge details

VALANCE ASSEMBLY



NOTE: Connect low-voltage transformer to 110-volt source

NOTE: Plastic laminate gets applied to front edge, end, and bottom face of valance after assembly

A Simple Installation

1] Drill through the vanity mounting cleats at the locations of the wall studs, and then drive in 3½" screws. After cutting for the sink, the countertop gets attached to the vanity *(Inset)*.

Before mounting the vanity to your wall, you need to lay out its location. First, make a mark on the wall to show the height of the countertop. This is usually between 32" and 34" above the floor. Now measure down 17½" (the combined height of the vanity and countertop), to mark the location of the bottom of the vanity.

At this point, you need to roughly lay out the vanity location to make sure the water supply and drain pipes sit within the area covered by the left half of the vanity. If they don't, you'll need to relocate the pipes.

Hang the Vanity—Now temporarily attach a 2x4 cleat to the wall at the lower layout line. The vanity will rest on this cleat to make it easier to hold during installation, so make sure the cleat is level.

After cutting openings in the back panel for the plumbing to pass through, attach the vanity *(Fig. 1)*.

Add a Counter—Now you can temporarily set the countertop on the vanity, and lay out the sink cutout using the template that comes with the sink. Remove the countertop, and then cut the opening. If necessary, bore holes for the faucet.

Rest the countertop on the vanity again *(Fig. 1, Inset)*. Then mark and cut the top of the vanity as needed for the sink. After that, attach the countertop from underneath.

Mount the Panel—The wall panel goes in next using flush-mount panel hangers *(Fig. 2)*. If your bathroom has an electrical outlet in this area, use the tip on page 92 to locate and cut the opening.

Mount a Mirror—Now you can adhere the mirror to the wall *(Fig. 3)*.

Valance is Next—Only one step remains in mounting the vanity. That's installing the lighted valance *(Fig. 4)*.

With that done, install the sink, doors, and drawers.

2] The wall panel mounts on two-piece panel hangers. Attach one side to the studs, the other to the back of the panel.

3] The mirror mounts directly to the wall using special adhesive and spacer strips purchased from the glass supplier.

4] After routing wires through the cleat, it gets mounted to the wall. The valance is attached with screws from above.

BUYER'S GUIDE

BATHROOM FIXTURES
Kohler
Water Cove Wading Pool Lavatory (#K-2332)
Purist Widespread Faucet (#K-14408-3)
San Raphael One-Piece Toilet (#K-3467)
MasterShower Hotel Handshower (#K-8520)
800.456.4537
Kohler.com

PROJECT HARDWARE
Lee Valley
192mm Aluminum Bar Handle (#01W97.45)
120mm Aluminum Leg (#00S81.40)
(See Materials Lists for remaining hardware)
800.871.8158
LeeValley.com

GLASS
Architectural Glass Effects
Fine-Grid Glass (#STJ 333)
888.772.5282
ArcGlassEffects.com

FLOOR AND WALL TILE
Walker Zanger
Xilo Beige and Brown Field Tiles
818.252.4005
WalkerZanger.com
Original Style
Indus and Volga Glass Tiles
OriginalStyle.com

MATERIAL LIST

	Part	Qty	Size	Material
VANITY CASE				
A	TOP/BOTTOM	2	¾" x 21½" x 59"	Oak Plywood
B	ENDS	2	¾" x 16" x 21¾"	Oak Plywood
C	CENTER DIVIDER	1	¾" x 15" x 21½"	Oak Plywood
D	HORIZ. DIVIDER	1	¾" x 21½" x 29⅜"	Oak Plywood
E	DRAWER DIVIDER	1	¾" x 7⅜" x 21½"	Oak Plywood
F	HANGING CLEATS	2	¾" x 2" x 58½"	Oak
G	BACK PANEL	1	¼" x 16" x 59½"	Oak Plywood
H	VANITY EDGING	1	¼" x ¾" x cut to fit	Oak
DRAWERS				
I	NARROW FRT./BK.	4	½" x 6½" x 13⅛"	Poplar
J	WIDE FRT./BK.	2	½" x 6½" x 27⅞"	Poplar
K	DRAWER SIDES	6	½" x 6½" x 20"	Poplar
L	NARROW BOTTOM	2	¼" x 12⁹⁄₁₆" x 20"	Oak Plywood
M	WIDE BOTTOM	1	¼" x 27⅜" x 20"	Oak Plywood
N	NRW. FALSE FRT.	2	¾" x 7¹⁵⁄₁₆" x 14¹⁹⁄₃₂"	Oak Plywood
O	WIDE FALSE FRT.	1	¾" x 7¹⁵⁄₁₆" x 29⁹⁄₁₆"	Oak Plywood
P	DRAWER EDGING	1	⅛" x ¾" x cut to fit	Oak
DOORS				
Q	DOOR RAILS	4	¾" x 2½" x 9¹⁵⁄₁₆"	Poplar
R	DOOR STILES	4	¾" x 2½" x 16"	Poplar
S	GLASS STOP	1	¼" x ¾" x cut to fit	Poplar
VANITY COUNTERTOP				
T	TOP SUBSTRATE	1	1½" x 22" x 59¼"	MDF
U	TOP BAND-FRONT	1	¾" x 1⅜" x 60"	Poplar
V	TOP BAND-END	1	¾" x 1⅜" x 22¾"	Poplar

	Part	Qty	Size	Material
WALL PANEL				
W	WALL PANEL	1	¾" x 42" x 29⅞"	Oak Plywood
X	PANEL EDGING	1	⅛" x ¾" x 42"	Oak
Y	SHORT SHELVES	2	¾" x 6¾" x 14¹⁵⁄₁₆"	MDF
Z	LONG SHELF	1	¾" x 6¾" x 29¹⁵⁄₁₆"	MDF
MEDICINE CABINET				
AA	CABINET SIDES	2	¾" x 21⁷⁄₁₆" x 5"	Oak Plywood
BB	TOP/BOTTOM	2	¾" x 14" x 4¾"	Oak Plywood
CC	BACK PANEL	2	¼" x 14½" x 21⁷⁄₁₆"	Oak Plywood
DD	CABINET EDGING	1	¼" x ¾" x cut to fit	Oak
EE	ADJ. SHELVES	1	¾" x 4⅞" x 13⁷⁄₁₆"	Poplar
FF	DOOR RAILS	2	¾" x 2½" x 9⅞"	Poplar
GG	DOOR STILES	2	¾" x 2½" x 21⁵⁄₁₆"	Poplar
HH	GLASS STOP	1	¼" x ¼" x cut to fit	Poplar
LIGHTED VALANCE				
II	VAL. TOP/BOTTOM	2	¼" x 6⅝" x 59½"	Hardboard
JJ	VALANCE FRONT	1	¾" x 1½" x 60"	Poplar
KK	VALANCE ENDS	2	¾" x 1½" x 6⅞"	Poplar
LL	VALANCE CLEAT	1	1½" x 1" x 58"	Pine/Fir

HARDWARE *(see Buyer's Guide for Pulls & Glass)*:
- (40) #8 x 2" Fh Woodscrews
- (50) #6 x 1" Fh Woodscrews
- (24) 1¼" Washer-head Pocket Screws
- (4) Flush-Mount Panel Clips (#00M85.02)*
- (3 pr.) 107° Full-Overlay Hinges (#00B10.01)*
- (3 pr.) 20" Full-Extension Drawer Glides (#02K36.20)*
- (1 pack) Dark Oxide Shelf Pins (#00S10.52)*

*Items available from Lee Valley (LeeValley.com; 800-871-8158)

PERCH WITH A PURPOSE:

Storage Bench

The vanity and wall system fill this bathroom with storage options and style. And this storage bench adds a little more of both. It shares design elements with the vanity, such as a straight-grain plywood case, black glass-panel doors, and a plastic laminate-covered top surface. Of course, this top serves as a seat instead of a countertop. This bench also sits atop a base that mirrors the look of the top and is supported by a unique set of legs *(Buyer's Guide, page 51).*

Construction of the bench begins with cutting the top and bottom (A), end panels (B), and middle divider (C) to size *(Bench Assembly)*.

Once you've done that, you need to cut dadoes to receive the divider, as well as the tongue-and-groove joints that hold the cabinet together. The procedures and setups for doing this are identical to those used in building the vanity. They're detailed on page 44.

Once you've cut all the joinery, glue and screw the main bench assembly together. Then cut the back panel (D) to size, and attach it. Adding solid-wood edging (E) to the front wraps up this part of the assembly.

Add the Top & Base—Now it's time to build a top and base. They're built just like the vanity countertop: A two-layer MDF substrate, hardwood banding, and plastic laminate.

These similarities mean you can build the bench top and base at the same time. First, cut the top and base substrates (F). Now glue pairs of them together to make two thick substrates.

Next, cut the banding (G, H) to size from solid poplar. Just like the banding on the vanity countertop, this banding is cut slightly narrow to create the same shadow-line effect after assembly.

Once the banding has been attached, you can add the plastic laminate. The bench top gets laminate on the top face, front edge, and both ends. The base only needs laminate on the front edge and ends.

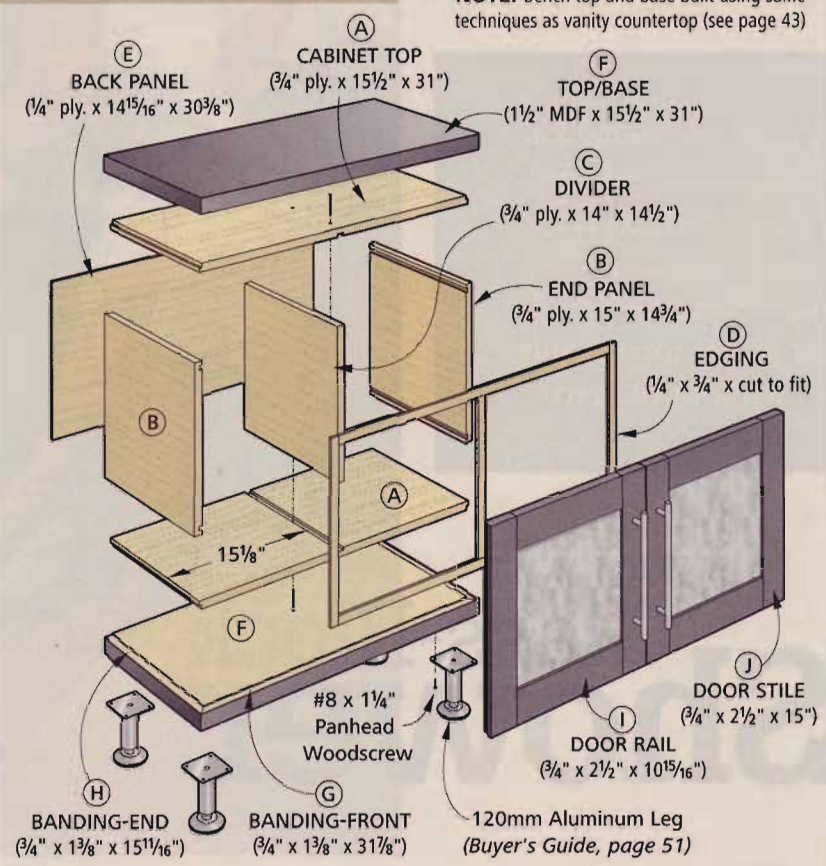
Enclose the Bench—A pair of doors that enclose the bench get built next. They consist of rails (I), stiles (J), and glass stops (K). They're made just like the doors in the vanity *(page 45)*.

Once the doors are done, you can paint and finish all the pieces. Don't forget to paint the "shadow line" area on the base and top. Then screw the top and base in place from inside. Finish up by assembling the bench and adding the legs.

—Written by David Stone, project designed by Kent Welsh, illustrated by Erich Lage

BENCH ASSEMBLY

NOTE: Bench top and base built using same techniques as vanity countertop (see page 43)



MATERIAL LIST

	Part	Qty	Size	Material
STORAGE BENCH				
A	TOP/BOTTOM	2	¾" x 15½" x 31"	Oak Plywood
B	END PANELS	2	¾" x 15" x 14¾"	Oak Plywood
C	DIVIDER	1	¾" x 14" x 14½"	Oak Plywood
D	EDGING	1	¼" x ¾" x cut to fit	Oak
E	BACK PANEL	1	¼" x 14¹⁵⁄₁₆" x 30⅜"	Oak Plywood
BENCH TOP/BASE				
F	TOP/BASE	2	1½" x 14¹⁵⁄₁₆" x 30⅜"	MDF
G	BANDING-FRONT	2	¾" x 1⅜" x 31⅞"	Poplar
H	BANDING-ENDS	4	¾" x 1⅜" x 15¹¹⁄₁₆"	Poplar

	Part	Qty	Size	Material
BENCH DOORS				
I	DOOR RAILS	4	¾" x 2½" x 10¹⁵⁄₁₆"	Poplar
J	DOOR STILES	4	¾" x 2½" x 15"	Poplar
K	GLASS STOP	1	¼" x ¼" x cut to fit	Poplar

HARDWARE *(see Buyer's Guide for Pulls, Legs, & Glass)*:
- (14) #8 x 2" Fh Woodscrews
- (16) 1¼" Washer-head Pocket Screws
- (16) #8 x 1¼" Ph Woodscrews
- (2 pr.) 107° Full-Overlay Hinges (#00B10.01)*

*Items available from Lee Valley (LeeValley.com; 800-871-8158)

WORKBENCH®

STORAGE PLATFORM

Issue 298 Volume 62 Number 6 December 2006

MATERIALS LIST

MATERIAL LIST

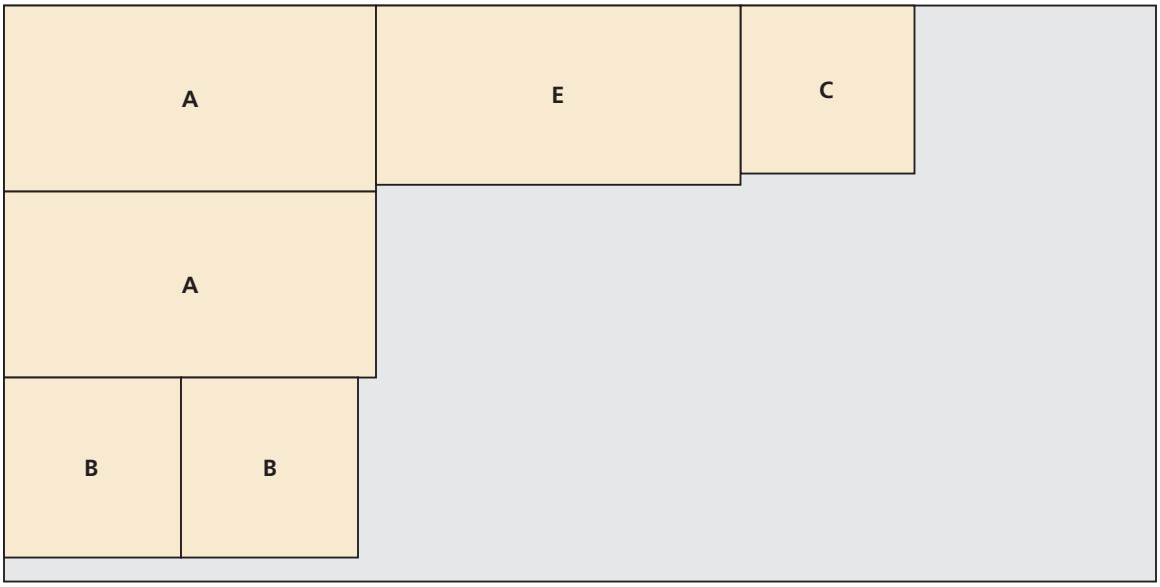
	Part	Qty	Size	Material
STORAGE BENCH				
A	TOP/BOTTOM	2	¾" x 15½" x 31"	Oak Plywood
B	END PANELS	2	¾" x 15" x 14¾"	Oak Plywood
C	DIVIDER	1	¾" x 14" x 14½"	Oak Plywood
D	EDGING	1	¼" x ¾" x cut to fit	Oak
E	BACK PANEL	1	¼" x 14 15/16" x 30⅜"	Oak Plywood
BENCH TOP/BASE				
F	TOP/BASE	2	1½" x 14 15/16" x 30⅜"	MDF
G	BANDING-FRONT	2	¾" x 1⅜" x 31⅞"	Poplar
H	BANDING-ENDS	4	¾" x 1⅜" x 15 11/16"	Poplar

	Part	Qty	Size	Material
BENCH DOORS				
I	DOOR RAILS	4	¾" x 2½" x 10 15/16"	Poplar
J	DOOR STILES	4	¾" x 2½" x 15"	Poplar
K	GLASS STOP	1	¼" x ¼" x cut to fit	Poplar

HARDWARE *(see Buyer's Guide for Pulls, Legs, & Glass)*:
- (14) #8 x 2" Fh Woodscrews
- (16) 1¼" Washer-head Pocket Screws
- (16) #8 x 1¼" Ph Woodscrews
- (2 pr.) 107° Full-Overlay Hinges (#00B10.01)*

*Items available from Lee Valley (LeeValley.com; 800-871-8158)

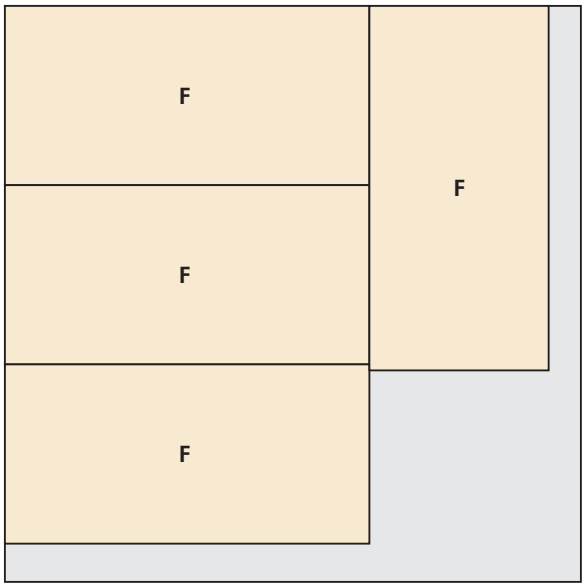
CUTTING DIAGRAM



¾" X 48" X 96" Rift Sawn Red Oak Plywood

Issue 298 Volume 62 Number 6 December 2006

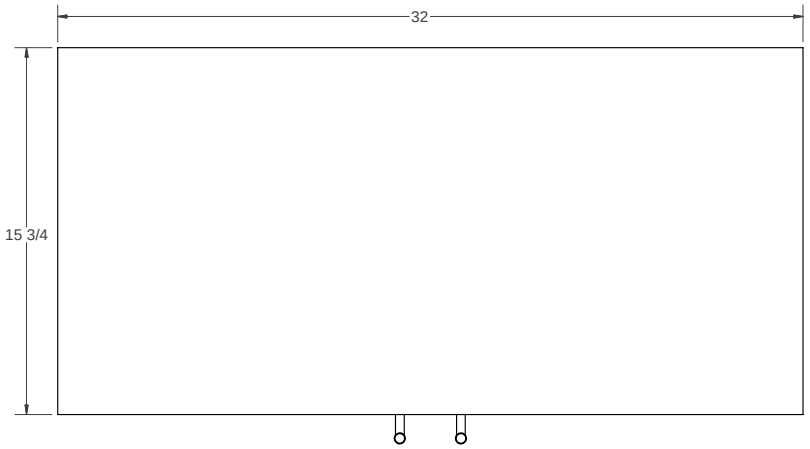
CUTTING DIAGRAM

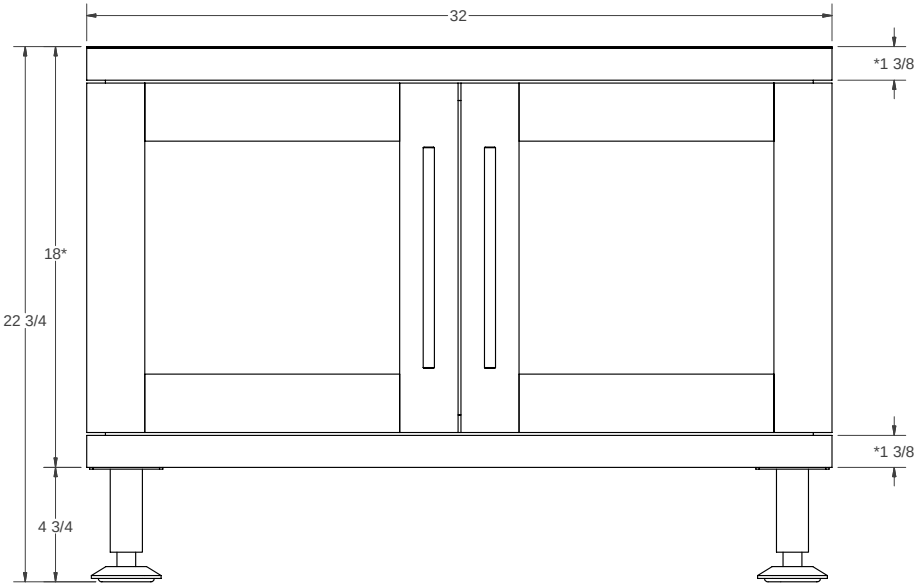


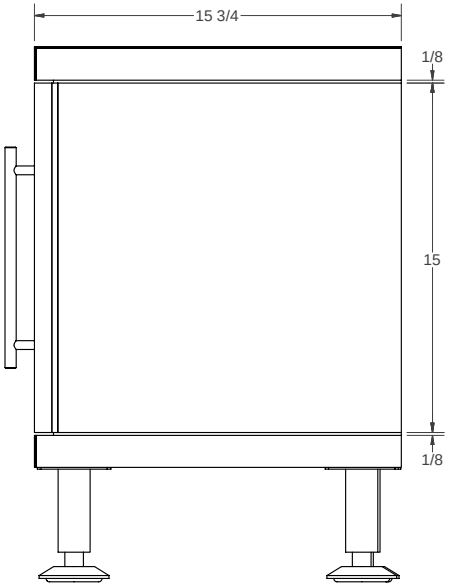
¾" X 48" X 48" MDF

¼" X 2" X 96" Rift Sawn Red Oak

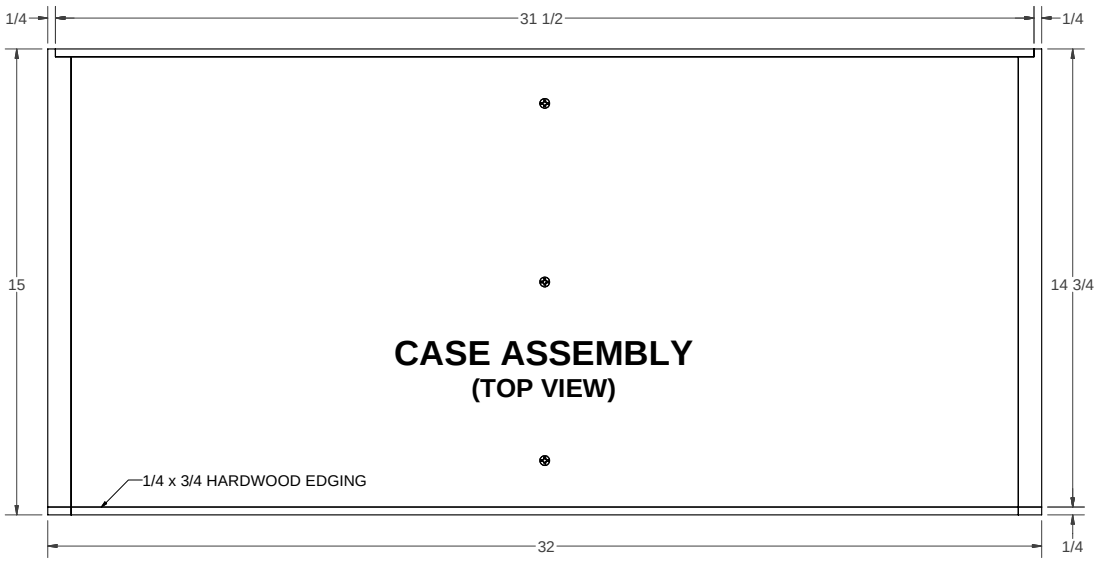
¼" X 10" X 96" Poplar



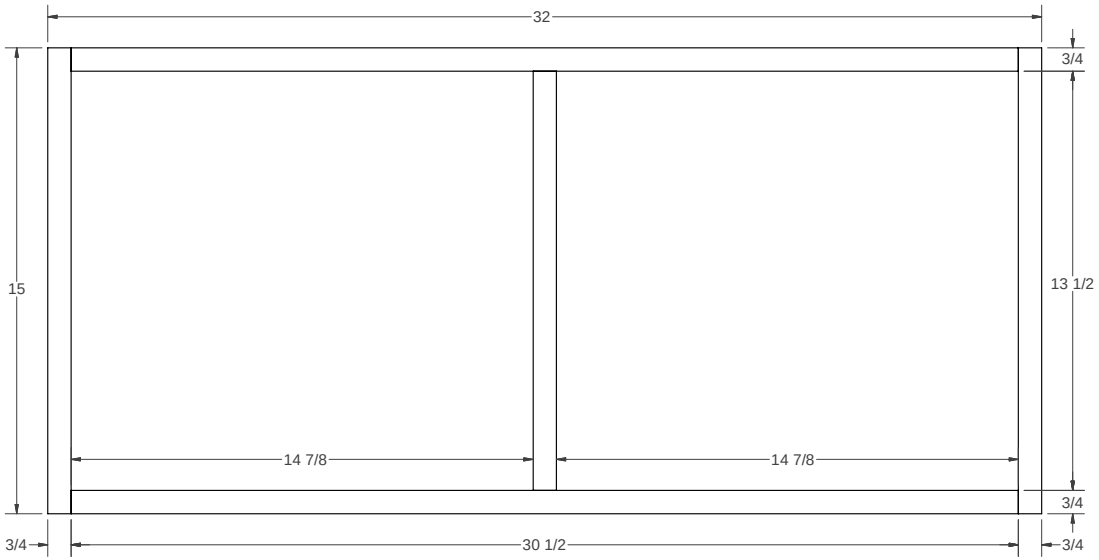




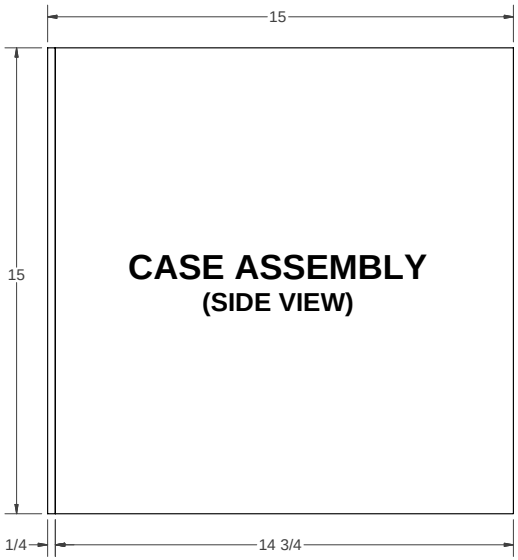
WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE: 5/30/06	SHEET: 1/9



CASE ASSEMBLY
(TOP VIEW)

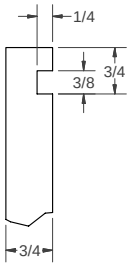


CASE ASSEMBLY
(FRONT VIEW)

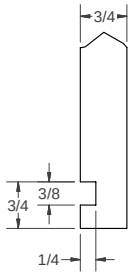


CASE ASSEMBLY
(SIDE VIEW)

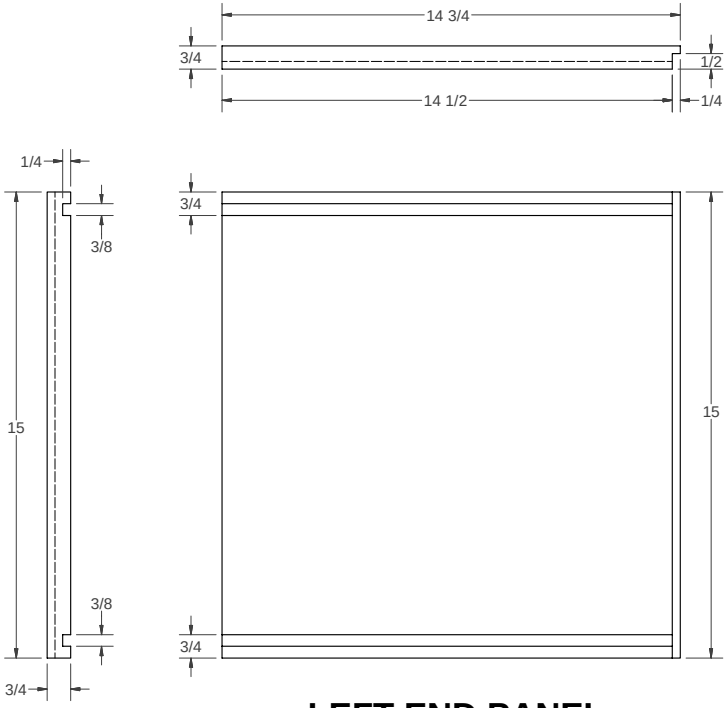
WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 2/9



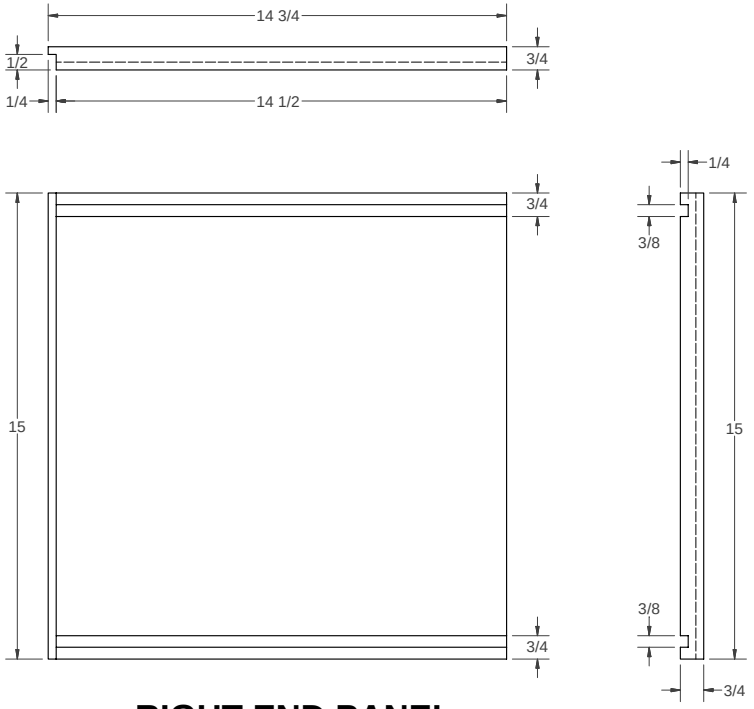
JOINERY DETAIL (TOP)



JOINERY DETAIL (BOTTOM)

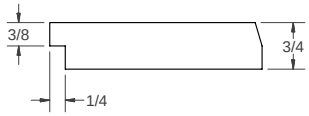


LEFT END PANEL

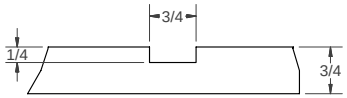


RIGHT END PANEL

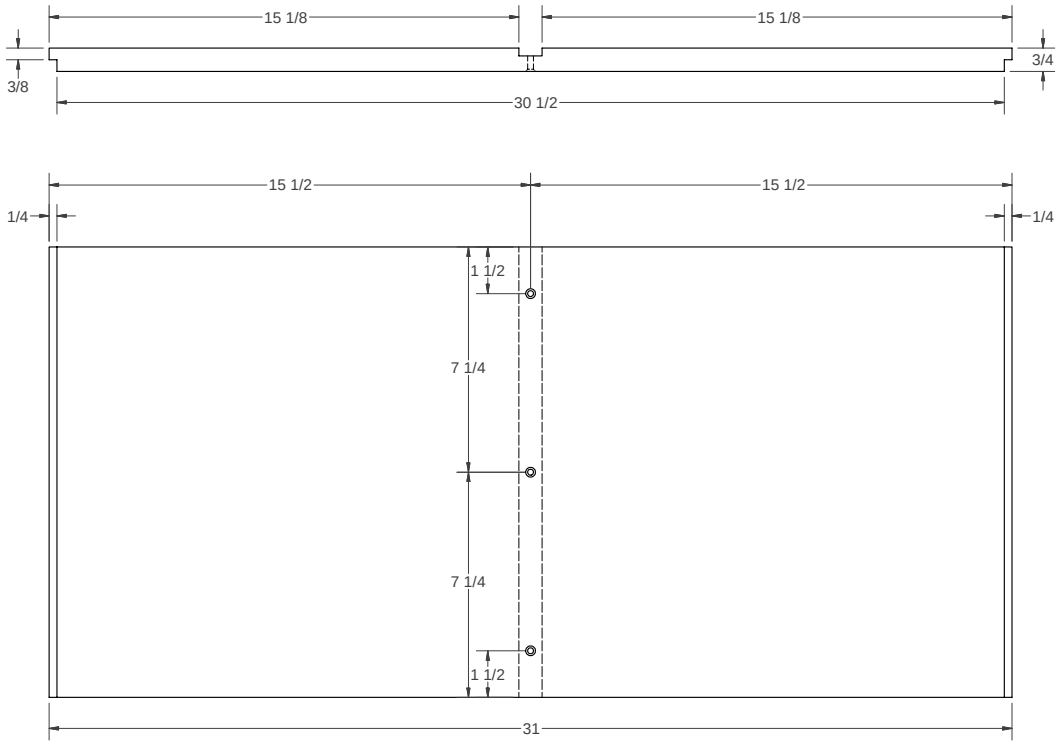
WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 3/9



END JOINERY DETAIL

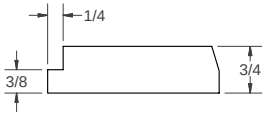


DADO DETAIL

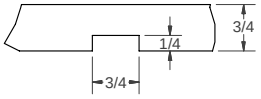


CASE BOTTOM PANEL

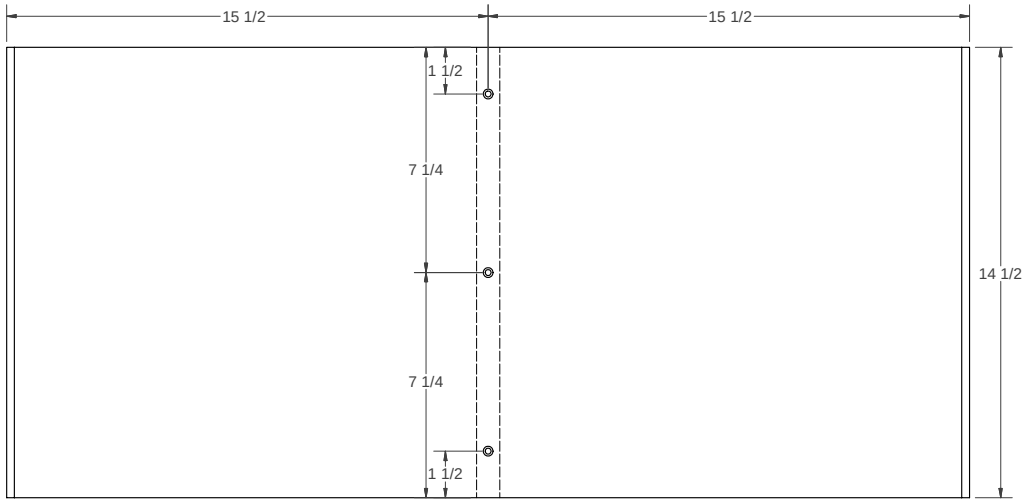
WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 4/9

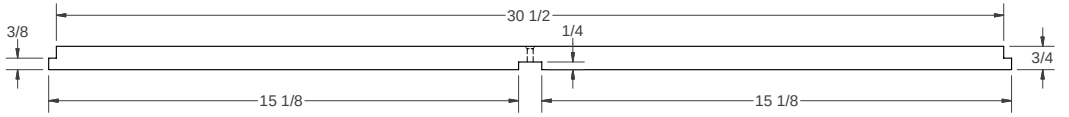


END JOINERY DETAIL



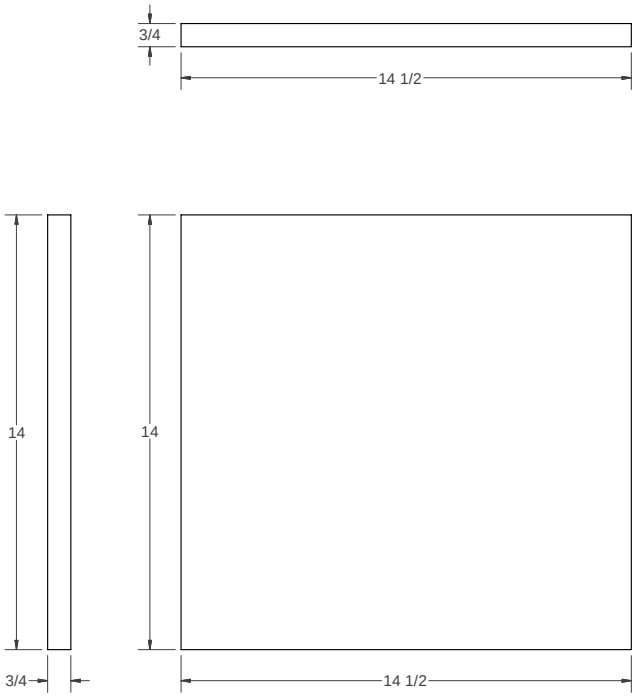
DADO DETAIL



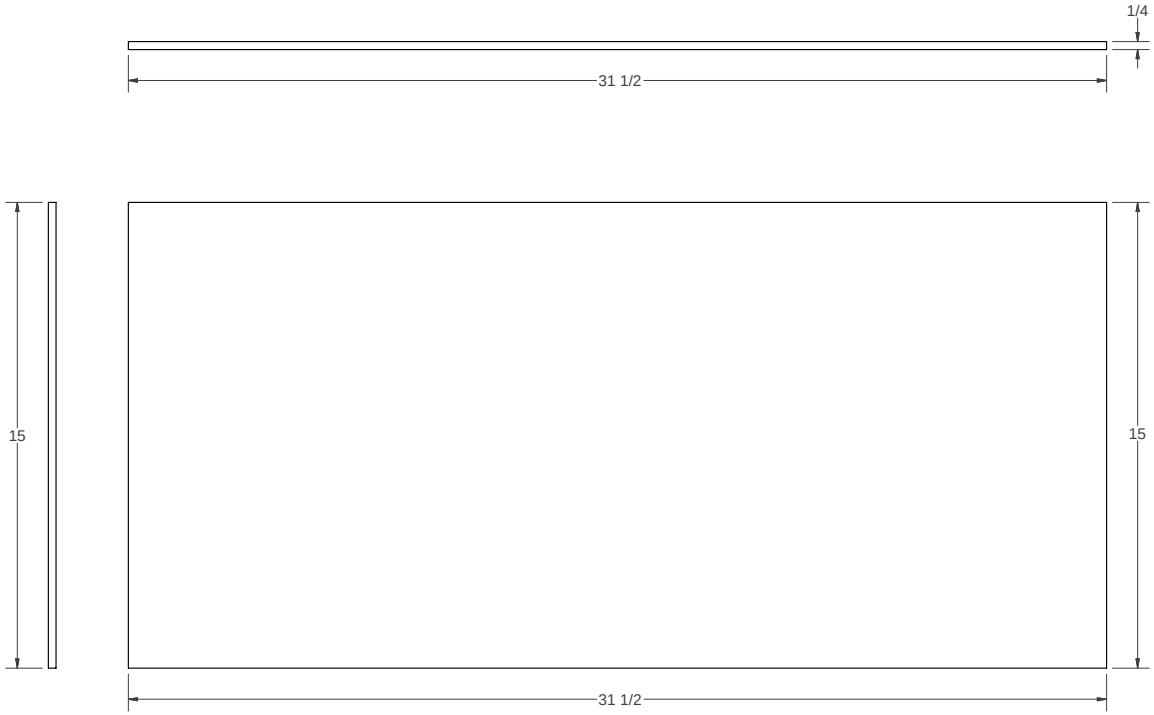


CASE TOP PANEL

WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 5/9



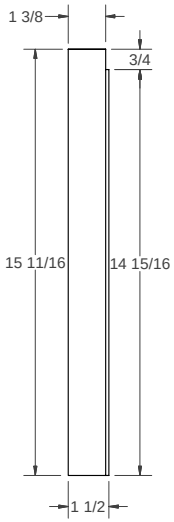
CASE DIVIDER PANEL



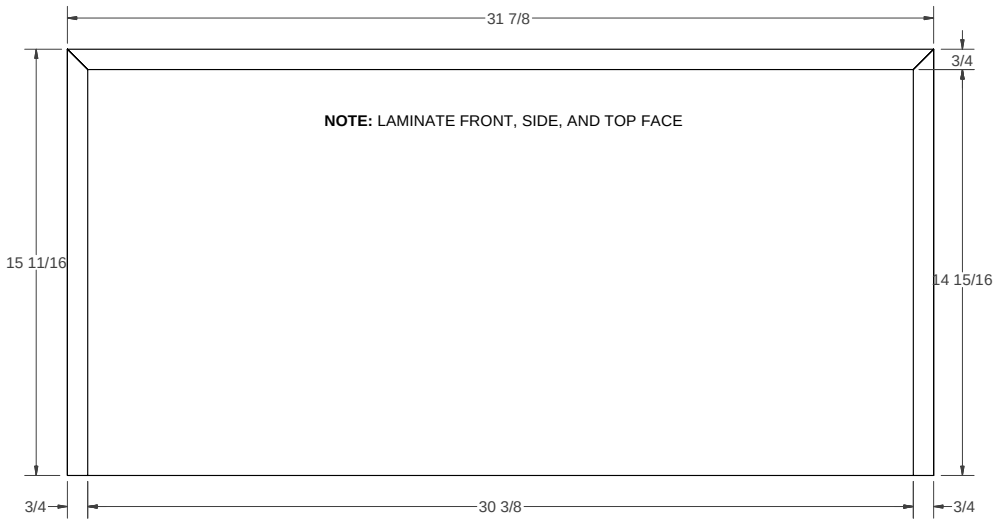
CASE BACK

WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 6/9

TOP PANEL
(FRONT VIEW)

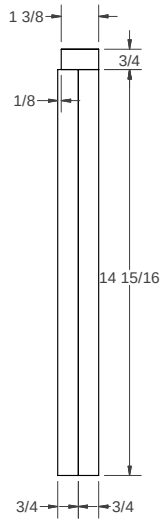


TOP PANEL
(SIDE VIEW)



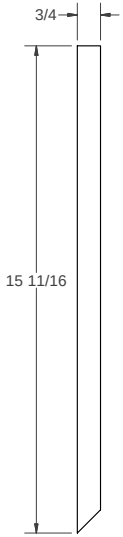
NOTE: LAMINATE FRONT, SIDE, AND TOP FACE

TOP PANEL
(BOTTOM VIEW)



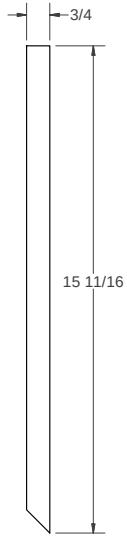
TOP PANEL
(SIDE SECTION VIEW)

WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 7/9

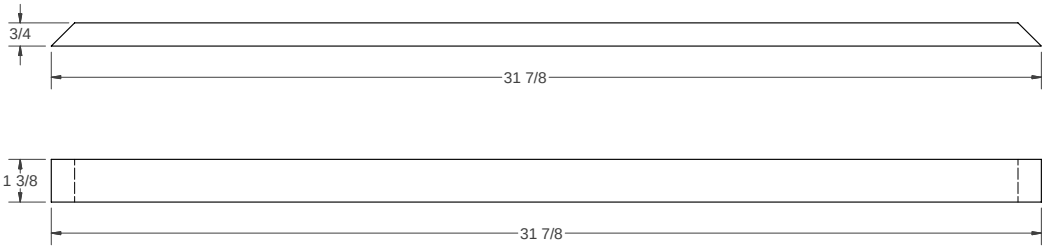


SIDE PANEL EDGING

TOP PANEL
(NEED 2)



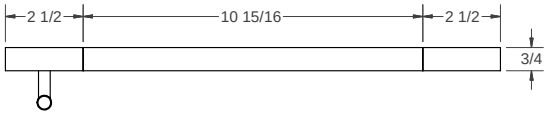
SIDE PANEL EDGING

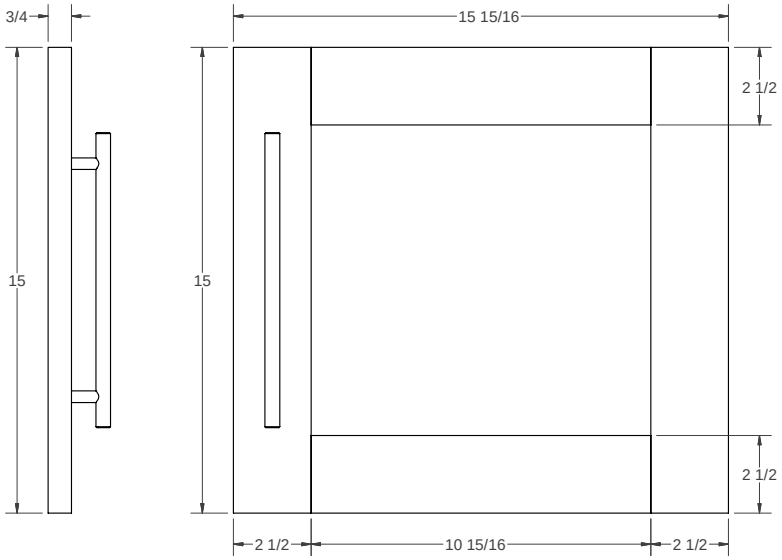


FRONT PANEL EDGING

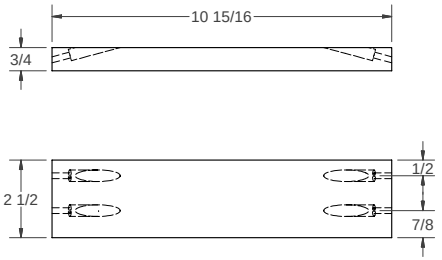
WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 8/9

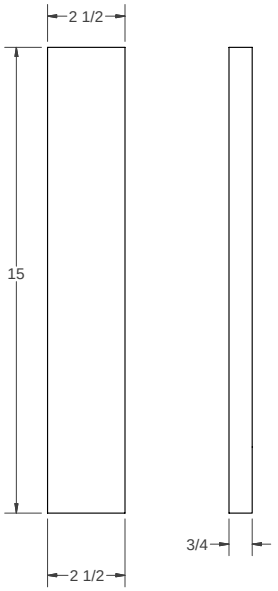
NOTE: AFTER ASSEMBLY, ROUT A 3/8 x 1/2 DEEP RABBET AROUND THE INSIDE EDGE OF THE FRAME (ON THE BACK SIDE) TO RECIEVE GLASS

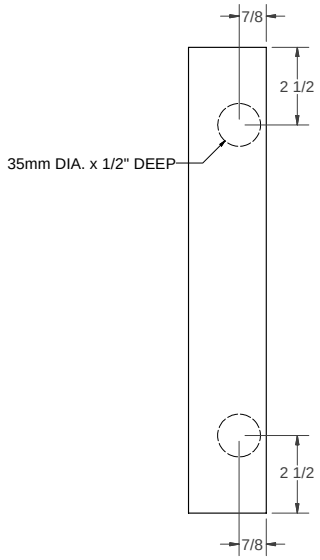


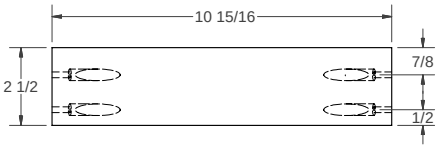


DOOR ASSEMBLY





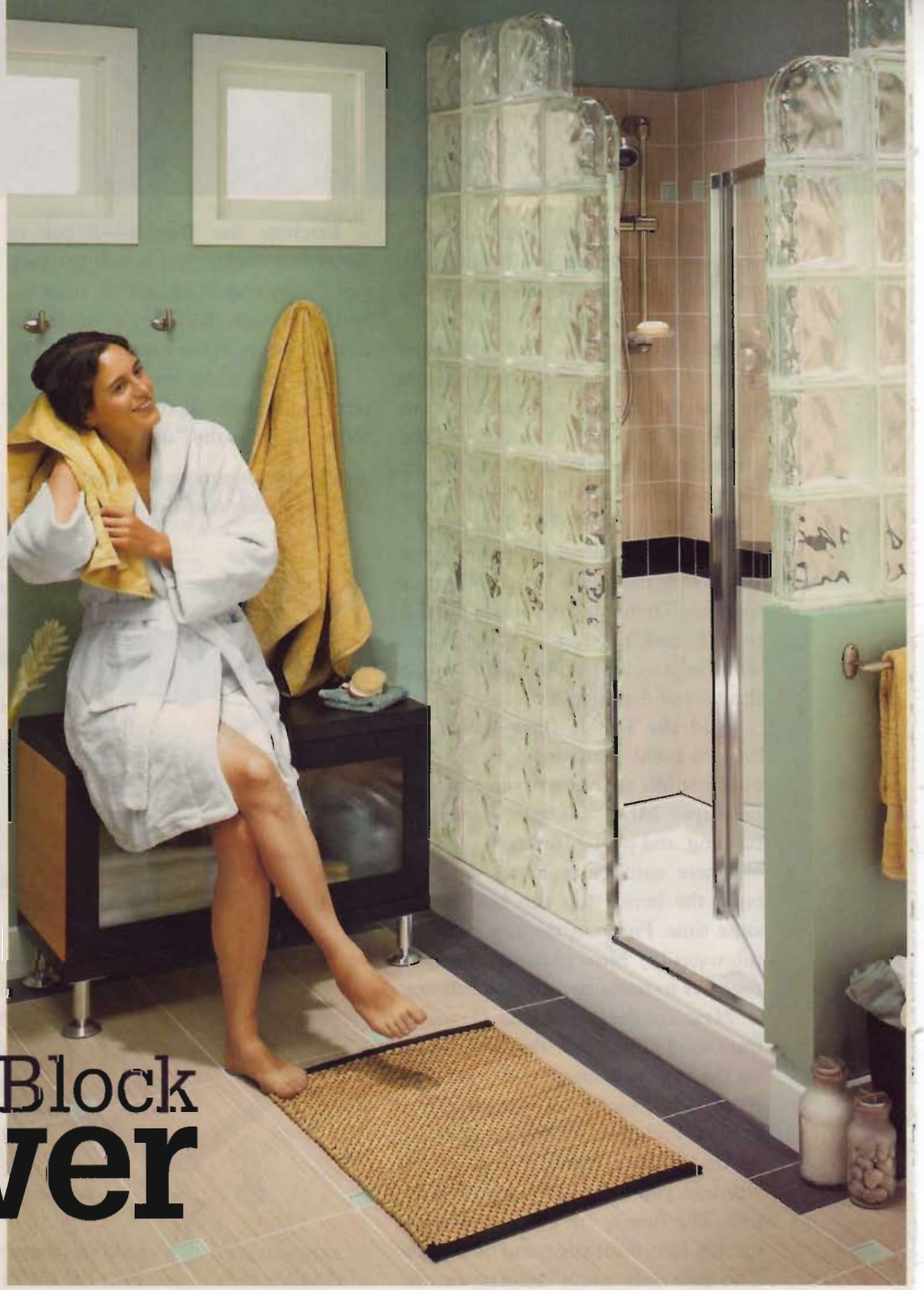




DOOR COMPONENTS

WORKBENCH #298	BATHROOM REMODEL	STORAGE BENCH	DATE:	SHEET: 9/9

A ready-to-install kit makes it easy to add a glass-block shower. Using simple tools and techniques, you'll get professional results — without the pro.



INSTALL A Glass-Block Shower

For our bathroom makeover *(page 40)*, we picked up on a hot new trend in baths — glass-block showers. The glass block is a perfect complement to the contemporary look of our bathroom, but it also fits nicely with a wide range of other styles. In any case, the glass block is ideal for transmitting light into the shower while still providing privacy. Plus, it's easy to wipe clean, and it's scratch-resistant.

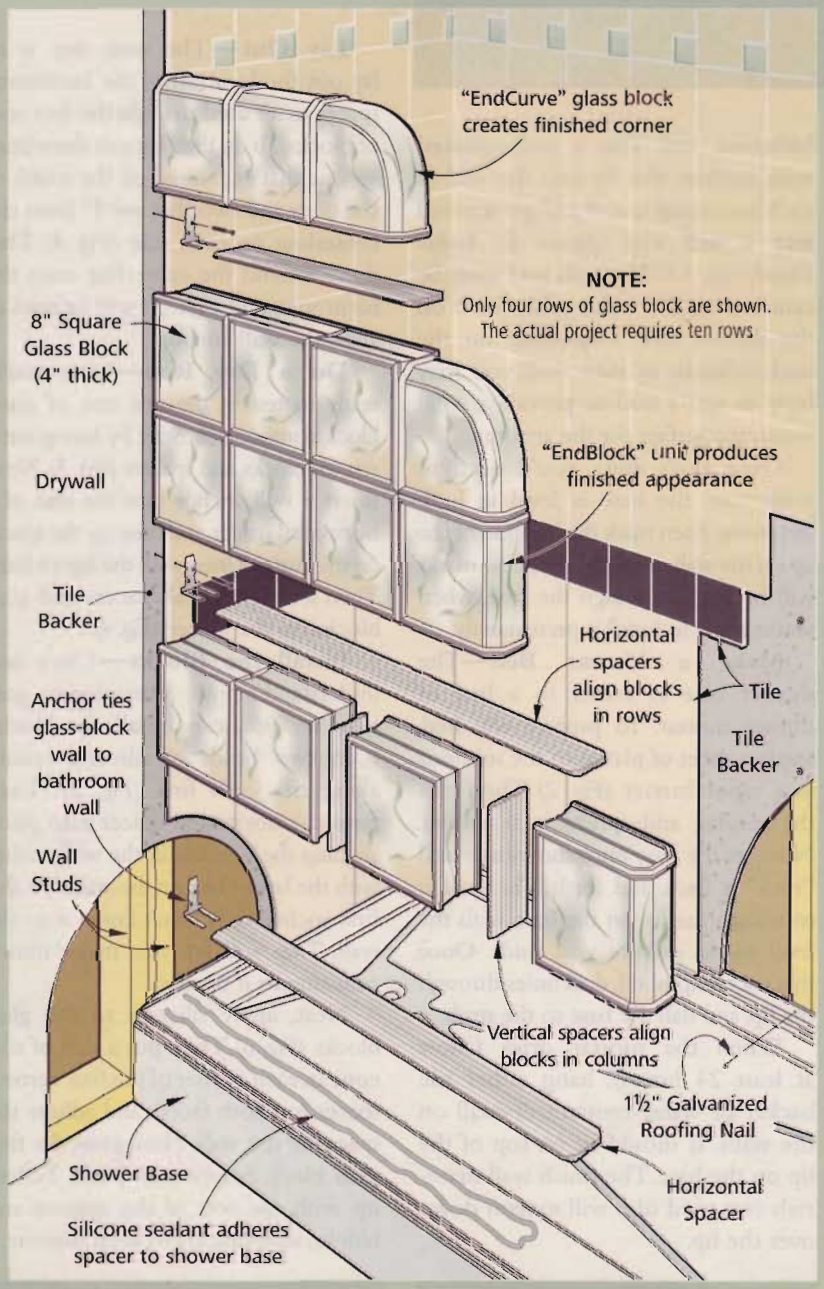
Installing a glass-block shower isn't as complicated as it might first appear. In fact, it's an easy do-it-yourself job that you can accomplish in a couple of weekends.

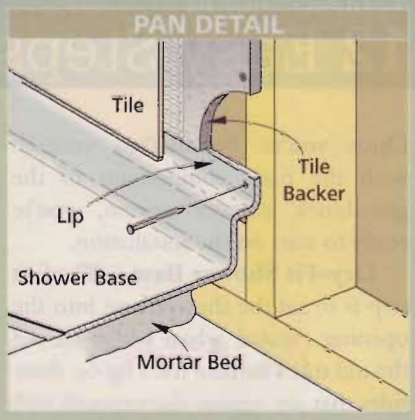
This simple installation is possible thanks to a shower kit manufactured by the Pittsburgh Corning Corporation *(Photo, page 55)*. The "Standard Fit" kit we used is designed to replace a standard 60" tub. Other sizes and styles of kits are also available *(see page 59)*.

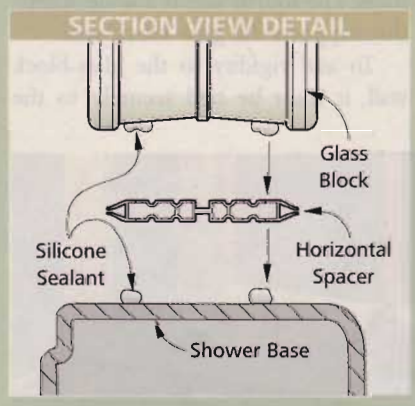
Regardless of which kit you use, the foundation of the system is a heavy-duty acrylic shower base that's set into a grid of thinset mortar *(Pan Detail, page 55)*. This base is designed so the drain aligns with existing plumbing. You can get a "drain-left" or "drain-right" base, depending on how your bath is plumbed.

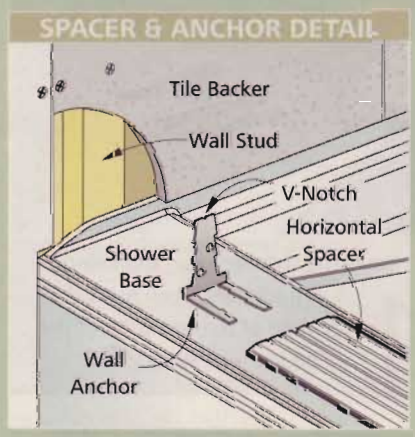
Pittsburgh Corning offers several options for installing the glass block. We chose an extremely DIY-friendly version called the ProVantage system.

In this installation, the glass blocks are stacked up on the wide curb of the shower base. Plastic spacers make it quick and easy to align the blocks, and silicone sealant bonds the spacers and blocks together *(Section View*





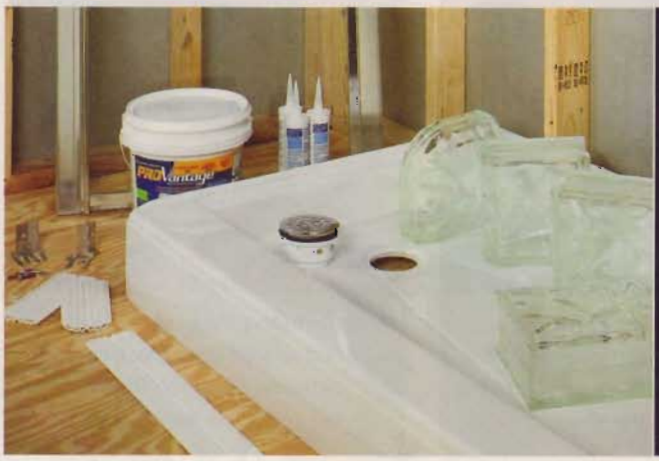




Detail). Anchor hardware secures the glass-block wall to the bathroom wall *(Spacer & Anchor Detail)*. And the joints between the blocks get filled with a specialized grout (included in the kit), which produces a rigid glass wall.

In addition to the main shower wall, we purchased extra glass blocks for a wall at the "dry" end of the shower *(Photo, above)*. These blocks, installed atop a partial wall, use the same system of blocks, spacers, and silicone sealant.

Finally, a glass door (included in the kit) completes the installation.



This "Standard Fit" shower kit includes an acrylic base, glass blocks, shower door, and all of the accessories you need to install your own elegant glass-block shower.

A "GLASS" ACT IN

12 Easy Steps

Once you've familiarized yourself with the basic components of the glass-block shower system, you're ready to start on the installation.

Dry-Fit Shower Base—The first step is to set the shower base into the opening created when you removed the old tub. The base has a lip on three sides that sits against the exposed wall studs. The fourth side is a wide "curb" that supports the glass-block wall.

To add rigidity to the glass-block wall, it must be tied securely to the bathroom wall. This is accomplished with anchors that fit into the end of each horizontal spacer and get screwed into a wall stud (*Spacer & Anchor Detail, page 55*). The wall stud must be centered on the width of the curb on the shower base. Depending on the stud locations in your wall, you may have to add a stud to provide a solid mounting surface for the anchors.

Once that's done, you'll need to make sure the base is level in both directions. Then mark the location of the lip on the wall studs *(Fig. 1)*. These marks will be used to realign the base when you're ready to install it permanently.

Make a Mortar Bed—The shower base is seated in a bed of thinset mortar. To prepare the bed, staple a sheet of plastic to the subfloor as a vapor barrier *(Fig. 2)*. Then mix the mortar, and spread it as shown. Now set the base onto the mortar and "rock" it back and forth. The goal is to realign the lip on the base with the level marks on the wall studs. Once that's accomplished, drill holes through the lip, and nail the base to the studs.

When the mortar dries (allow at least 24 hours), hang either tile backer or water-resistant drywall on the walls. It should sit on top of the lip on the base. The finish wall materials (we used tile) will extend down over the lip.

Lay Out—The next step is to lay out the location of the horizontal spacer that's used to align the first row of blocks. To do that, lay out three lines — one that's centered on the width of the curb and two that are 1" from the centerline on each side *(Fig. 3)*. That done, extend the centerline onto the bathroom wall. Here, it will be used to align the wall anchors.

Do a Dry Run—Now you're ready to test-fit the first row of glass-block components. Start by laying out a row of blocks and spacers *(Fig. 3)*. Next, insert a wall anchor into the end of a horizontal spacer, and then lay the spacer on the curb, aligned with the layout lines. Then set the vertical spacers and glass blocks on the spacer *(Fig. 4)*.

Install the Blocks—Once you understand how everything goes together, you can install the blocks. Run two beads of silicone sealant along the curb first *(Fig. 5)*. Then press the horizontal spacer into place, aligning the V-notch in the wall anchor with the layout line on the wall. For this first anchor only, don't fasten it to the wall. This will let you make minor adjustments if needed.

Next, apply silicone to the glass blocks *(Fig. 6)*. Then put a dab of silicone in each corner of the first vertical spacer (on both faces), and adhere the spacer to the wall. Now press the first glass block firmly into place. Follow up with the rest of the spacers and blocks, adhering them with silicone.

1 Level the shower base, shimming it as necessary. Then mark the location of the top edge of the lip on the wall studs.

2 To install the base permanently, apply a grid of thinset mortar atop a sheet of plastic. Note the drain hole in the sheet.

3 After installing the base, lay out the first row of glass-block components on the curb. Then extend the centerline onto the wall.

4 Now dry-fit the first row, starting with a horizontal spacer (anchor installed), and then followed by vertical spacers and glass blocks.

Once the first row of blocks is in place, check it for level, and carefully shim it if it's not *(Fig. 7)*. Also make sure the row of blocks is straight *(Fig. 8)*. If necessary, tap them into alignment.

Stack 'Em Up—Now simply repeat the process for each subsequent row of glass-block components. With these, the anchor gets screwed into the wall *(Fig. 9)*. As you work your way up, continue checking the wall to be sure it's straight, level, and plumb *(Fig. 10)*.

Grout the Joints—After letting the sealant cure for 24 hours, you can grout the joints. Mix the grout to a peanut-butter consistency. Then, starting at the top, use a grout float to pack the grout between the blocks *(Fig. 11)*. **Note:** Don't grout the gaps where the blocks meet the wall and shower base. You'll use silicone there to form a water-tight seal *(Fig. 12)*.

One thing to be aware of is that the grout hardens quickly (usually within 5 minutes). So remove the excess grout with the float, and then wipe the glass blocks clean *(Inset, Fig. 11)*.

5 To adhere the first horizontal spacer, run ¼" beads of silicone sealant along the two outer layout lines on the curb.

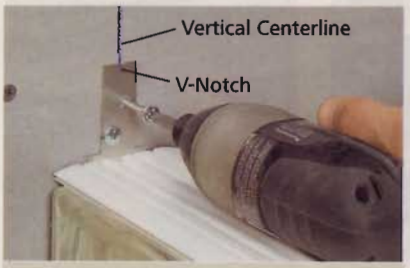
6 After pressing the spacer into place, run two beads of silicone along the bottom of the blocks. Then fit the blocks onto the spacer.

7 Once the first row is installed, check it for level. If needed, insert one of the provided shims between the base and the spacer.

8 Make sure the blocks sit in a straight line and the faces are flush. If necessary, tap the blocks into alignment with a rubber mallet.

10 As you stack up each row of glass blocks, continue to check that the wall is straight, level, and plumb.

11 Use a grout float to pack grout into the joints. Remove the excess with the float and a damp sponge *(Inset)*.



9 Align the V-notch in all the anchors with the vertical centerline. Screw all the anchors (except for the first one) into the wall stud.

12 Apply silicone between the blocks, the bathroom wall, and the shower base. Then smooth the bead *(Inset)*.

THE FINAL DETAIL:

Install a Glass Door

The hinged door jamb fits over a mounting rail that's secured with screws and plastic anchors.

All that's left to complete the shower is to install the glass door that comes with the kit. It's designed to swing *into* the shower, so water won't drip on the floor when you open the door. Depending on your installation, you'll need to get a door with either a right- or left-hand hinge. (Our door was hinged on the right, so it swings against the end wall of the shower.)

There's nothing complicated about the door assembly. On one side, the door is hinged to a jamb that fits over a mounting rail attached to the glass-block wall *(Photo, left and Illustration, page 59)*. On the other side, a door jamb with a magnetic catch fits over a second mounting rail *(Jamb Detail, page 59)*. A threshold attached to the curb forms a watertight seal at the bottom.

Start with the Threshold—The threshold goes on first. Simply cut it to fit the door opening. Then run a bead of silicone sealant along the bottom, center the threshold on the width of the curb, and press it into place.

Mount the Rails—The next step is to mount the rails. Because you can't drill into the glass block, the rails are attached with screws that go into plastic wall anchors embedded in the grout joints *(Mounting Rail Detail)*.

An easy way to locate the mounting holes for these anchors is to temporarily attach the rails to the glass block. Just set the bottom end of each rail on the threshold. Use a level to make sure the rail is plumb, and then clamp (or tape) it in place. That done, mark and drill the mounting holes *(Figs. 1 and 2)*. Using those holes as guides, drill holes for the anchors with a masonry bit *(Fig. 3)*. Then insert the anchors *(Fig. 4)*, and mount the rails.

Install the Door—At this point, you're ready to mount the door. Start by installing the hinged door jamb and fastening it to the rail with screws *(Fig. 5)*. The pre-drilled mounting holes make this a quick job. Note that these holes are slightly oversized, which will make it easy to adjust the fit of the door. But first, screw the magnetic-catch jamb to its mounting rail.

Now check to see how the door closes. If needed, loosen the mounting screws for the hinge, adjust the door, and then retighten the screws.

With the door installed, seal the gaps between the mounting rails and glass blocks with silicone *(Fig. 6)*.

—Written by Kate Busenbarrick, illustrated by Matt Scott

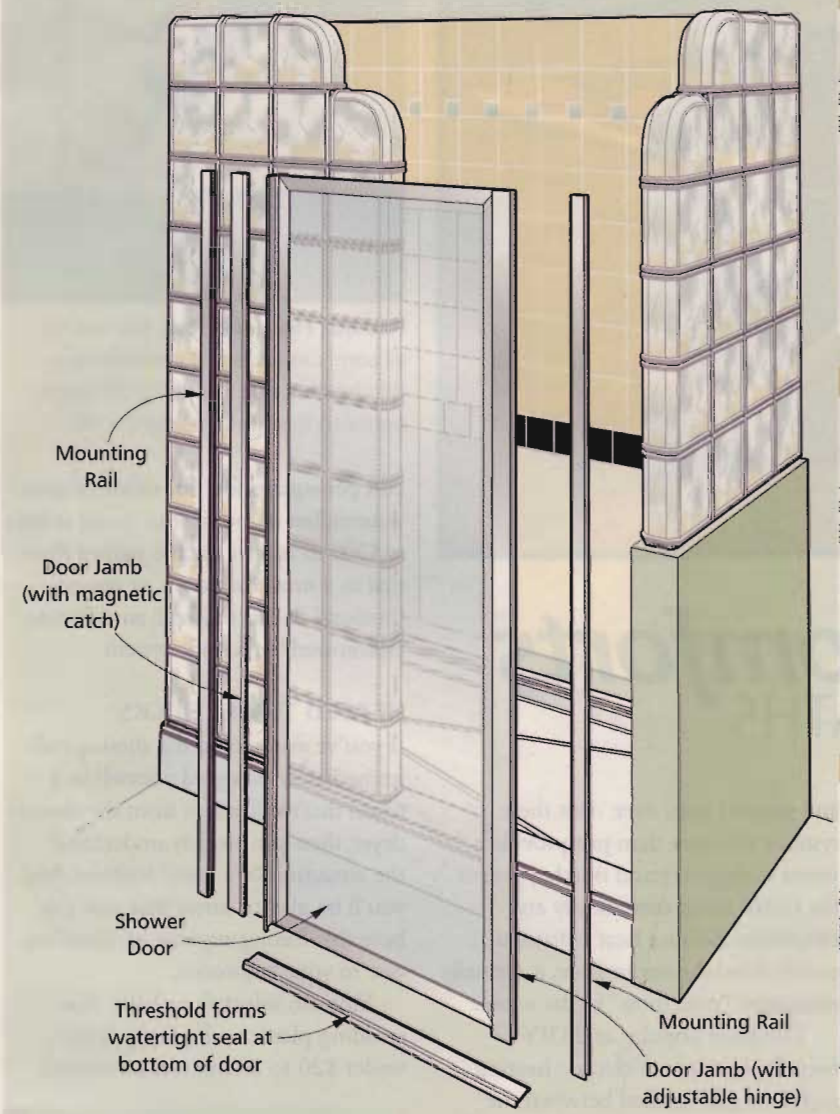
1 After clamping the rails in place, mark mounting holes so they align with the grout lines.

2 Remove the rails, and drill the mounting holes where marked with a 3/16" twist bit.

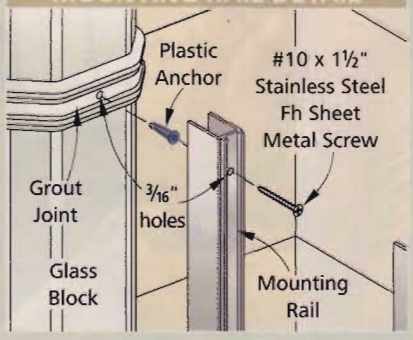
3 Reclamp the rail, and use the holes as a guide for locating the holes for the anchors.

4 After drilling holes in the grout joints with a masonry bit, insert the plastic anchors.

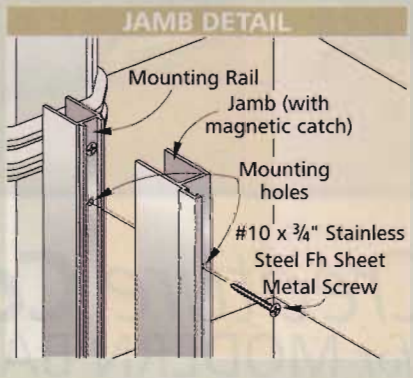
DOOR ASSEMBLY



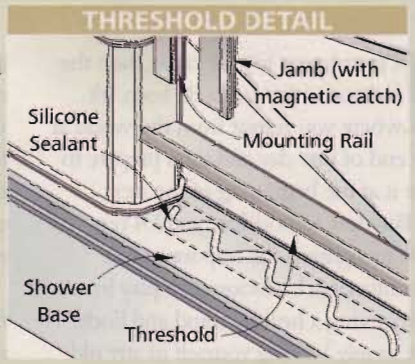
MOUNTING RAIL DETAIL



JAMB DETAIL



THRESHOLD DETAIL



5 Slip the hinged door jamb over the mounting rail, and secure it with screws.

6 Seal the joints between the mounting rails and the glass block with silicone.

BUYER'S GUIDE

Pittsburgh Corning has several glass-block shower systems and installation methods to choose from.

Installation Methods — Our article details their ProVantage installation system. Two other systems include a Glass-Block Panel system and a Mortar Installation system.

Shower-Base Styles — We used a "Standard Fit" base. Other options include a square base, an angled base, or a walk-in base without a door.

Glass-Block Patterns — "Standard Fit" glass-block shower kits offer two glass-block styles: Decora Pattern (featured in this article) and IceScapes

For more info, go to: PittsburghCorning.com

BONUS PLAN:
STORAGE PLATFORM

The final project in this bath makeover is the storage platform, shown in the photo, above. It takes advantage of the open space below the wall-mounted vanity, and makes a perfect place to keep spare towels or reading materials. With its black painted finish and aluminum legs, the matches the style of the other bathroom projects exactly

Plus, the platform takes on a hint of its own style, thanks to the way it's built, with wood slats surrounded by a frame *(Platform Assembly)*.

Construction Details—Building the storage platform is straightforward. It's made from solid poplar, and starts out as a frame that's joined using just glue and pocket screws. Slats that fit inside the frame are rabbeted on each end to allow them to sit on a corresponding rabbet on the inside perimeter of the frame.

Downloadable Drawings—To get an even closer look at the construction details for this project, you can download two pages of builder's drawings that show every detail.

Time To Build—To build the platform, start by cutting the frame front and back (L), frame ends (M), and slats (N) to size.

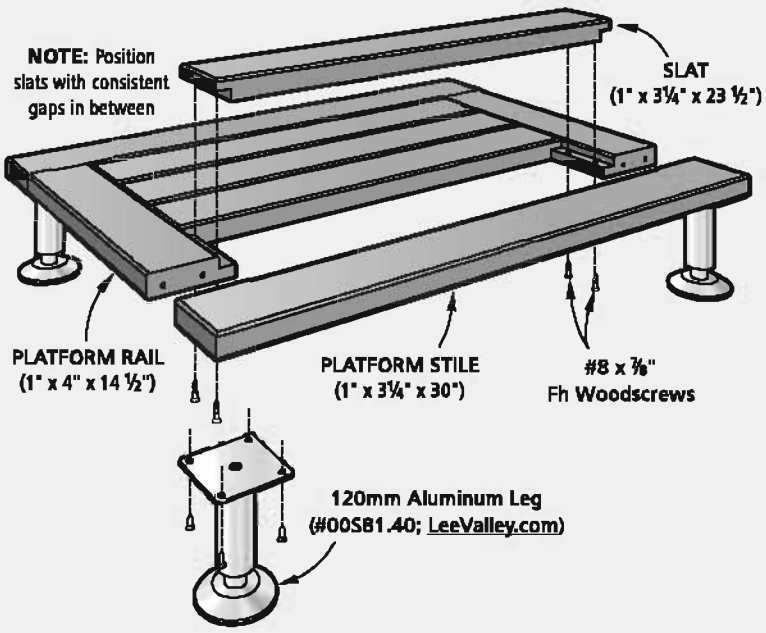
Next, use a dado blade to rabbet the inside edge of each frame end *(Slat Mounting Detail)*. You can also rabbet the ends of each slat now, too.

Next, drill holes through the rabbet in the frame for screws that will attach the slat. Also bore holes for the pocket screws *(Pocket Joint Detail)*.

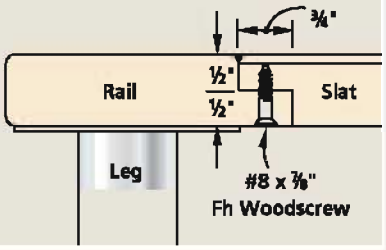
That done, go ahead and assemble the frame. Then you can rout a ⅛" roundover on all exposed edges (both inside and out) of the frame. Then rout the upper edges and ends of each slat.

Before mounting the slats, go ahead and give everything a couple coats of paint (we used "Semi-Flat Black" spray from Krylon). Then mount the slats and the legs.

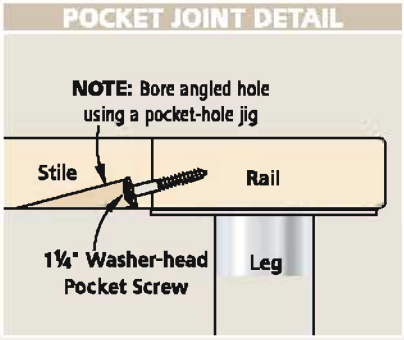
CONSTRUCTION VIEW

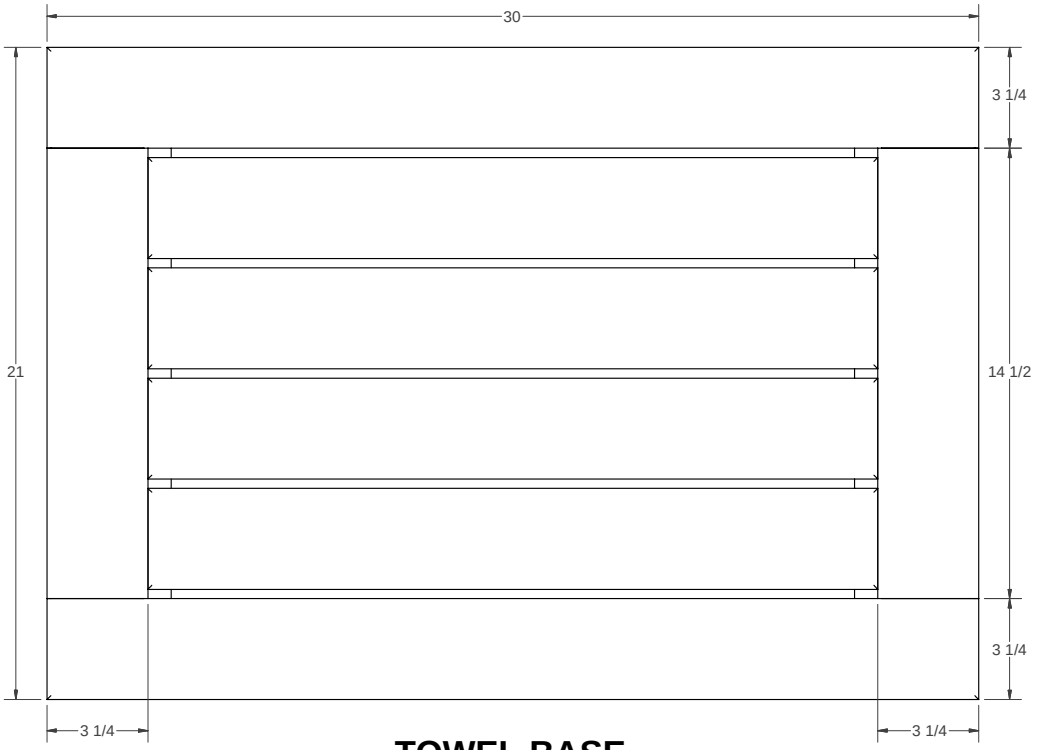


SLAT MOUNTING DETAIL

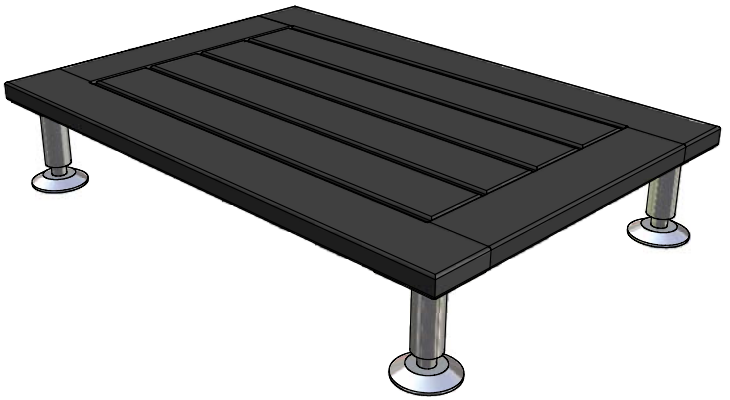


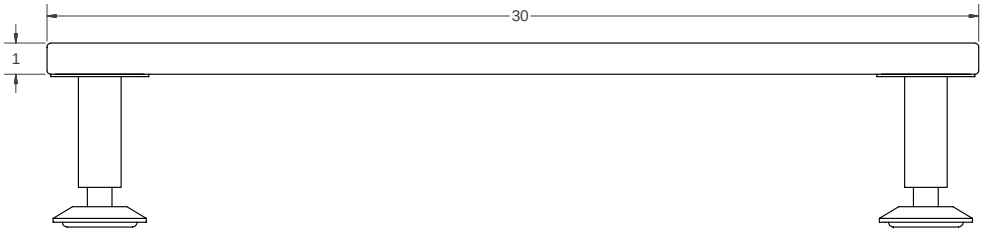
POCKET JOINT DETAIL



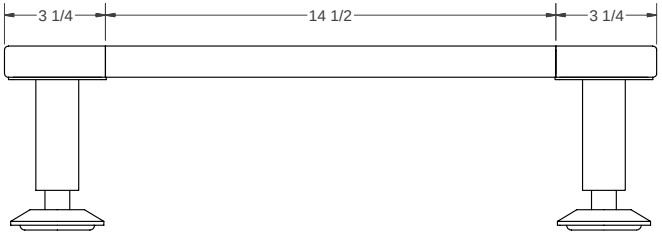


TOWEL BASE
(TOP VIEW)



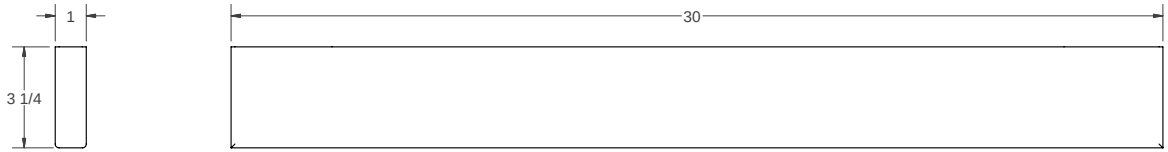


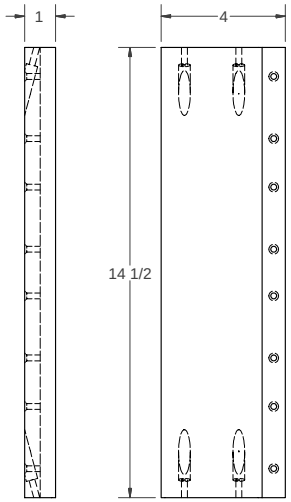
TOWEL BASE
(FRONT VIEW)

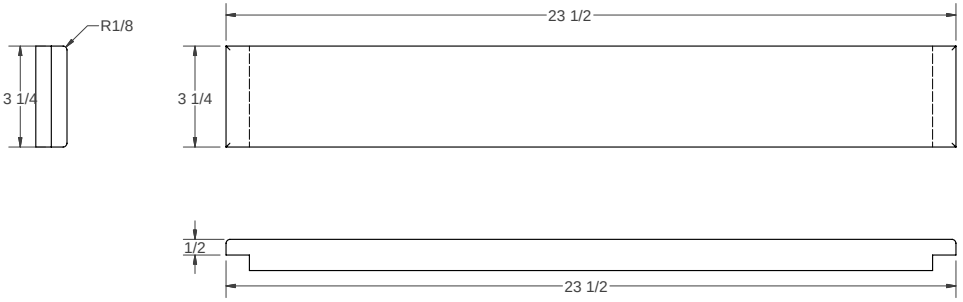


TOWEL BASE
(SIDE VIEW)

WORKBENCH #298	BATHROOM REMODEL	STORAGE PLATFORM	DATE:	SHEET: 1/2







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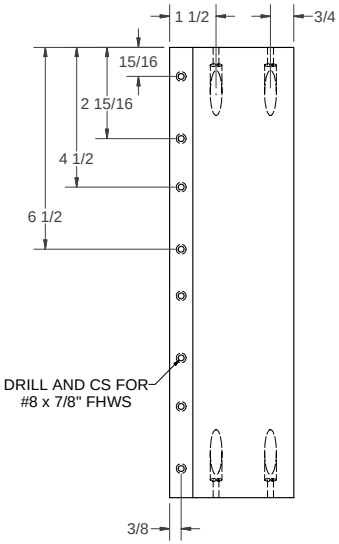
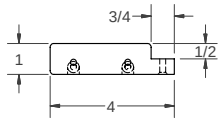
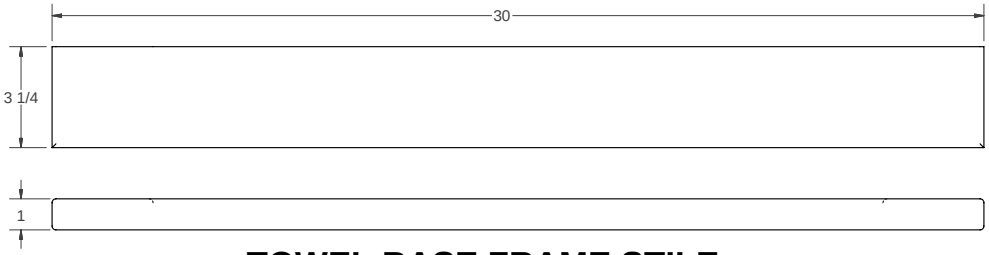
(NEED 4)





TOWEL BASE
FRAME RAIL



TOWEL BASE FRAME STILE

WORKBENCH #298	BATHROOM REMODEL	STORAGE PLATFORM	DATE:	SHEET: 2/2

Creature Comforts for MODERN BATHS

If your home is your castle, then the bathroom is your castle keep. It's where you retreat from the world at the end of one day and then prepare to face it at the beginning of the next.

Builders, remodelers, and DIYers have recognized the important role a comfortable bathroom can play in maintaining a healthy mind and body. But simply locking yourself in any old water closet won't necessarily have rejuvenating effects. Indeed, if a bathroom is to serve as a personal sanctum, it must be appointed with soothing amenities that breathe new vigor into weary bones. What follow are four of the most popular luxuries that transform an ordinary bathroom into a personal oasis.

RADIANT FLOOR HEATING

It's no wonder mornings get a bad rap. If stepping from a warm shower onto a cold tile floor isn't enough to make this the very worst time of day, then I don't know what is.

Fortunately, radiant floor heating systems are more popular, affordable, and simpler than ever. But these systems do more than just provide a warm surface to stand on; they warm the entire room consistently and efficiently. Because heat radiates up evenly from the entire floor, it virtually eliminates "cold spots" in the room.

The most popular, and DIY-friendly, systems are electric heating mats that get installed between the tile and the subfloor *(Photo, above)*. The only complicating factor of these mats is the electrical requirements. You may need to hire an electrician to hard-wire the mat and install the thermostat.

For large or irregular-shaped rooms, hydrostatic systems are another alternative. These systems use warm water flowing through flexible tubing to heat the floor. Installing these systems is generally more involved but often still within the capabilities of a DIYer. However, it may require a plumber to connect the system to an existing water heater or to install a designated boiler.

The wide range of possible installations makes it difficult to estimate a cost per-square-foot for either of these systems, but it's possible to spend as little as $300 to add an electric radiant floor mat to a small bathroom, or several thousand dollars to install an elaborate, customized hydrostatic system.

Radiant Floor Heating. Tile can be as comfy as carpet by embedding a thin heating mat in the thinset mortar between the subfloor and the tile.

HEATED TOWEL RACKS

If you've ever exited the shower and immediately wrapped yourself in a towel that's still warm from the clothes dryer, then you already understand the attraction of a towel warmer. And you'll be glad to know that you can have this feeling anytime by installing one in your bathroom.

You can select from basic, free-standing plastic units that sell for under $20 to technological marvels

Heated Towel Racks. The same technology that warms the massive windows in skyscrapers is now available to heat your bath towel for toasty comfort.

Fog-Free Mirror. Beat back the morning fog with an affordable, easy-to-install, mirror heater. Standard sizes are available to fit most mirrors.

that use high-tech heat sources, such as "warm glass," and can top $3,000 *(Photo, page 60)*. In between is a full range of reasonably priced units that will warm (and dry) a towel consistently and quickly.

The most popular towel warmers in the U.S. are electrical and are hard-wired. There are less expensive models that can plug into a standard wall outlet, but these typically don't heat as well as the hard-wired models.

Other towel warmers can be plumbed into an existing hot water or oil-heating system, but these are more common outside of the U.S.

FOG-FREE MIRRORS

Nothing can burn through the morning fog quite like a long, hot shower. Unfortunately, the resulting steam promptly deposits that fog on your bathroom mirror.

Wipe it away with a towel or swirl it away with your hand, and it just comes right back. Better to install a fog-free mirror and avoid the problem altogether.

Actually, what you'd be installing is a heating mat that can mount behind most ordinary mirrors. Depending on the manufacturer, the mat is attached to the wall with either staples or adhesive, and then the mirror is mounted directly over the top of it. The heating mat can be wired into an existing light switch or to its own dedicated switch.

The heating mats are sold in standard sizes to accommodate a range of mirrors. Prices range from about $100 to $200, depending on size.

SPA SHOWERS

If getting clean is your only objective, then any old showerhead will do. But to power up for a long day or wind down at the end of one, nothing beats a vertical spa.

A "rainfall" showerhead above you and numerous jets in front, behind, and, in some cases, beside you, completely surround you in soothing water.

There are three ways to create your own shower spa: Design it à la carte by selecting from a huge variety of fittings (very complicated), buy a kit with the most popular fittings packaged together (less complicated), or even select a shower insert with all the plumbing and fittings built right in (idiot-proof).

The sky is the limit in terms of how much you can spend. But for the more modest budget, simply replace your standard showerhead with a "rainfall" or "watering can" type fitting for less than $50. The gentle stream from these shower heads will completely change how you feel about showering.

— Written by Bill Link

FOR MORE INFO:

RADIANT FLOOR HEATING

Warmly Yours
800.875.5285
WarmlyYours.com

NuHeat
1-800-778-9276
NuHeat.com

SunTouch
800-432-8932
SunTouch.net

Northwest Manufacturing
800-932-3029
Heat-Link.com

Radiant Floor Company
866-927-6863
RadiantCompany.com

TOWEL WARMERS

Thermique
312-326-4710
ThermiqueTechnologies.com

WarmRails
877-927-6724
WarmRails.com

Mr. Steam Towel Warmers
800-767-8326 (East Coast)
800-727-8326 (West Coast)
MrSteam.com

Wesaunard
540-582-6677
Wesaunard.com

Jeeves Heated Towel Rails
404-350-9738
JeevesNA.com

SHOWER SPA

Moen
800-289-6636
Moen.com

Jacuzzi
800-288-4002
Jacuzzi.com

Hansgrohe
800-488-8119
Hansgrohe-USA.com

Alsons
800-421-0001
Alsons.com

FOG-FREE MIRRORS

Fog Free Reflections
877-438-3643
ABIProducts.com

Clear Mirror
877-242-5327
ClearMirror.com

Vertical Spa. Total immersion in your shower is possible by combining various fittings and shower heads with elaborate manifold and valve systems behind the wall.

Tools
designed for women

More and more women are tooling up for DIY home improvement projects these days, and tool companies are anxious to earn their business.

Women are the hottest thing in home improvement right now. Just take a look at the *Fact* bubbles over the next few pages, and you'll see what a major role women play in the vast DIY industry. But whether women have stepped up their DIY activity in recent years, or are simply being acknowledged for the important part they've always played, there's no arguing that women represent a segment of the market that cannot be ignored. And perhaps the greatest impact of "do-it-herselfers" has been on the tool industry.

Case in point is a veritable cottage industry of companies like GirlGear, Tomboy Tools, Barbara K, and others purporting to offer tools that are uniquely suited to women.

Even the old-guard tool manufacturers, while not as overt in their efforts, have rethought the design, packaging, and marketing of their tools to have greater appeal to women.

THE SOFTER SIDE OF TOOLS

TOMBOY TOOLS The "Traveler" kit received passing marks for fit and quality. The only exception was the "too small" hacksaw. TomboyTools.com

Interestingly enough, despite trying to reach precisely the same audience, these companies frequently offer very different, even contradictory, messages. It seems tool companies, like men, may only be guessing at what women want.

Based on my anything-but-scientific research, those guesses can be catalogued into what I call *The Five F's of Selling Tools to Women.*

Fashion—This theory turns on the color pink. You either love pink tools or you detest them. And taking a stand one way or the other is a central marketing message from Little Pink Toolkit Company, GirlGear Industries, and Tomboy Tools.

Little Pink and GirlGear are proud of pink and offer products in shades that leave little doubt where they stand on the question. Little Pink even went so far as to package their solitary toolkit in a bag that bears a striking resemblance to a purse.

Tomboy, on the other hand, largely rejects pink tools as condescending, regardless of their apparent quality. In the early days of their website, Tomboy Tools proudly displayed the dictum, "No pink tools." And while that message has largely disappeared from the site, a company spokesperson confirmed that this point of view is still an important part of their philosophy.

FACT: 78% of women surveyed own at least one power tool. 24% reported having an extensive collection of both hand and power tools. 33% own a few basic hand and power tools.*

FACT: Single women accounted for 26% of all home purchases in 2004.*

Ironically, at the time of this writing, the most prominently displayed tool for sale on the Tomboy Tools site was a pink hammer. But this is an important exception to the "no pink" rule that we'll discuss in a later "F."

Function—Established tool companies, such as Skil, Black & Decker, and Ryobi, shun fashion in favor of function. None of these companies are likely to proclaim that their tools are designed specifically for women: to do so could discourage men from buying the tool. But these companies do acknowledge that the design, packaging, and marketing of their tools has become more female-friendly than ever before.

A couple of the best examples of this are Skil's iXO drill/driver and Black & Decker's ProjectMate *(Photos, below).*

The iXO has enough drilling and driving power for many small projects without the weight and complexity of conventional drills. And the ProjectMate combines a drill/driver, sander, and scraper in a single tool, making it more useful and economical than individual power tools.

Fusion—The blending of fashion and function defines this philosophy. And in all fairness, each company mentioned up to this point has made an effort at this.

Even the decidedly pink tools from Little Pink Tool Company and GirlGear are of decent quality. And Tomboy Tools didn't scrimp on the conspicuously "un-pink" tools in their toolkit. They even

LITTLE PINK TOOLKIT Tools in a purse didn't sit well with our group. LittlePinkToolkit.com

SKIL iXO This palm-sized, cordless drill/driver was a group favorite for its compact size, simple operation, adequate power, and large assortment of accessories. Skil.com

BLACK & DECKER The ProjectMate "multi-tasks," which made it very popular with our focus group. BlackandDecker.com

packaged the tools smartly in task-specific kits, like a drywall kit and a plumbing kit.

The company that has gone to the greatest lengths to leverage both fashion and function is Barbara K.

Right off the bat, this company sidestepped the entire "pink/not-pink" debate by using colors that are feminine without being divisive. But some thought obviously went into selecting the tools for this brand. And in the case of the Power-Lite cordless drill *(Photo, below)*, they came up with at least one genuinely unique and valuable tool for women. This drill features an adapter that allows you to remove the battery from the tool, connect a short cord, and then carry the battery in a pouch on your belt. This design allows you to work for longer stretches without exhausting your arm.

Beyond that, Barbara K's hand tools are good, if not remarkable. Similar to Tomboy toolkits, they are packaged in use-specific kits, such as the "hang-it-up kit" and the "dorm survival kit."

Feelings—Tapping a woman's emotions to make a sale is not a new marketing strategy. And many of the latter-day "tool companies for women" are walking a fine line with this tactic by pledging a portion of the sales from particular items to breast cancer research. The Little Pink Toolkit Company (note the pink, ribbon-shaped zipper pulls on the tool "purse"), GirlGear, and even Tomboy Tools have employed this strategy. This, in fact, is that important exception to Tomboy Tools' "no pink tools" rule I mentioned earlier.

Just how much of the proceeds from each sale are donated varies from 3 percent to 40 percent. And women's opinions of this tactic varied, as well. Some of the women we spoke to wanted to keep tool purchases separate from their charitable contributions. Others said they would feel good knowing that even a little bit of their money went to a cause they support.

Friends—Tupperware pioneered the idea of "product parties" almost 40 years ago. Since then, countless other companies have sought to duplicate this lucrative sales channel of women selling to their friends and neighbors by hosting parties. Among those companies is Tomboy Tools, which asks women to be "consultants" and host tool parties. Beyond the parties, Tomboy Tools also maintains an online community where women can exchange ideas, encouragement, and expertise.

Similar virtual communities can be found on the websites of BeJane (which, although not a tool company, does sell some tools and make specific recommendations on others) and Barbara K.

Focus Group—The five F's notwithstanding, there is still the question of which, if any, of these tools are any good. To answer that, I relied on a sixth "F"—a focus group.

FACT: 91% of women surveyed say they are responsible for the majority of home improvement decisions in their household.*

FACT: 88% of female DIYers undertake home improvement projects by themselves, primarily as a means of stretching their budget.*

BARBARA K TOOLS The Power-Lite Drill was a hit. The hand tool kit received complaints for the flimsy tape measure and lack of organization that's built into the nylon "tool bucket." BarbaraK.com

GIRLGEAR A toolbelt with smaller pockets and less weight appealed to most of the women in the group. Only one woman thought it might restrict which tools would fit in the pouches. Some women did wish for the same belt in a different color. PinkToolbelts.com

The group consisted of about a dozen women, ranging in age from early twenties to forty-something, with various levels of experience working with tools.

I asked the group to evaluate the "tools for women" and compare them to similar tools that were randomly selected from store shelves to determine if either version offered any real advantages.

The results were far from unanimous, but the tools from Barbara K and Tomboy Tools did receive several favorable comments for their size and perceived quality.

On the other hand, several women felt they could find tools that were just as good by simply buying them one at a time from a home center. Likewise, drills from Black & Decker, Ryobi, and Skil found just as much acceptance with the group as the Barbara K Power-Lite drill.

The most divisive topics were pink tools and the breast cancer connection. One woman went so far as to say the pink tools "make me sick." Others thought the color was fine, and the quality was reasonable. As for breast cancer research, only a few women said they'd be more likely to buy tools because part of the money went to a good cause.

In the end, all of these tools received mixed reviews from our group. No particular set of "tools for women" stood out as being especially well-suited to women when compared to ordinary tools. And some tools were even singled out for criticism, such as the Barbara K tape measure, which has no lock, and the hex-key set from the Little Pink Toolkit, which was too wide to fit most hands.

But the one thing that every woman in the group agreed on is that they want tools that are designed for a *job*, not a *gender*. And as long as a tool can do what it's designed to do, the color, the cause, and all the rest is just so much hyperbole.

—Written by Bill Link

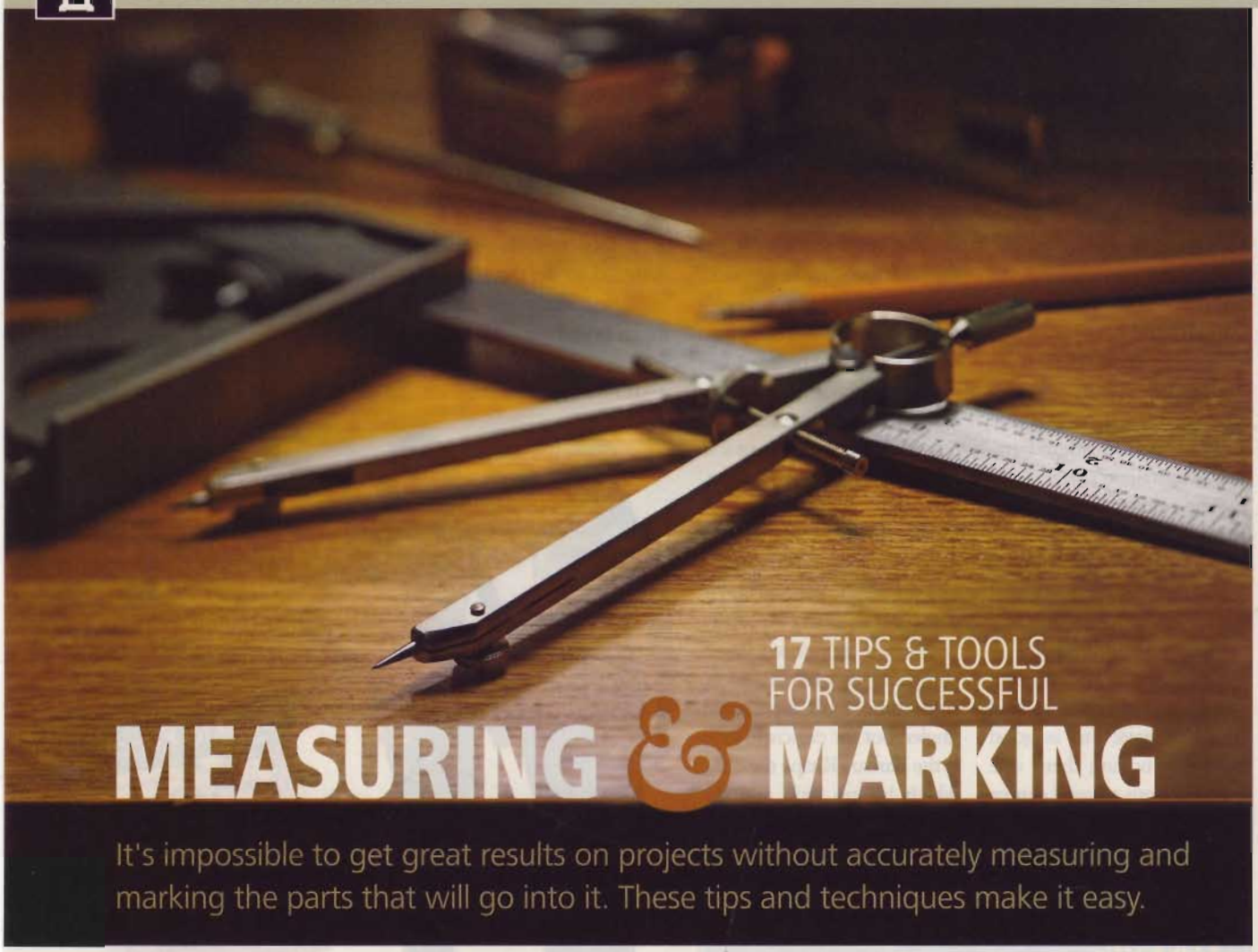
RESOURCES
From online communities, to tool parties, to DIY manuals written especially for "her," empowerment and support are integral parts of the feminine tool market.

FACT: 72% of women surveyed feel prepared to be solely responsible for their home, including maintenance, repair, and improvement.*

* Source: Lowe's Annual Survey of Female Homeowners

DULUTH TRADING Beyond just hand and power tools, women also now have better choices in workwear that is designed to fit them and withstand the rigors of home improvement jobs. DuluthTrading.com

AO SAFETY TOOLS Smaller sizes, fashionable colors, and multiple choices make it easy for women to include safety gear in their arsenal of DIY tools, as well. AOSafety.com



17 TIPS & TOOLS FOR SUCCESSFUL MEASURING & MARKING

It's impossible to get great results on projects without accurately measuring and marking the parts that will go into it. These tips and techniques make it easy.

One of the best-known (and most over-used) phrases in the woodworking world is "measure twice, cut once." While this is certainly good advice, measuring twice won't necessarily ensure accuracy. That's because if you measure inaccurately twice, or mark your workpiece incorrectly after you measure, you'll still end up with inaccurate results.

Measuring and marking project parts correctly takes more than doing it twice. First, you've got to have the right measuring tools and marking devices. But that doesn't mean paying for expensive "precision instruments" that you'll be afraid to take out and use. For most woodworking projects, all you need are a few essentials, listed in the *Measuring Tool Kit*, below.

These tools are a good place to start, but they won't be of much value unless you know the tips and tricks that enable you to use them accurately. And that's what you'll find on the next few pages.

First there's a handful of tips that make measuring easier, and even a few techniques that will help you size and lay out parts without having to do much measuring at all.

Of course, measuring accurately does you no good if you don't know how or where to mark your project parts correctly. So I'll share some tips for making the right types of marks, whether you're laying out a cutline or screw hole, or just trying to keep your project parts organized for assembly.

With these tips, you may still want to measure twice, but just to improve your memory, not your accuracy.

MEASURING TOOL KIT

Rules/Tapes: 6" or 12" steel rule, 16-ft. tape measure, 25-ft. tape measure
Squares: Combination square *(left)*, framing square
Angle Finders: Protractor (plastic drafting style), sliding bevel gauge, angle gauge
Marking: Mechanical pencil with soft lead, #2 pencil, carpenter's pencil, large eraser, chalk, compass, scratch awl

MASTER **MEASURING**

One of the first steps in building any project is measuring the parts that need to be cut. Here are several tricks you can use to make sure the process is as accurate as possible.

1] Stick with One Tape—The readings on tape measures and rules tend to be inconsistent from brand to brand or size to size. That means if you measure identical parts with different tapes, the parts may end up different sizes. Or if you measure an opening with one tape, but the part that fits into it with another, that part may be too big or too small.

To avoid this, use the same measuring tools from start to finish on a project. If you have to use a tape measure and a steel rule, compare them before you start to make sure they match. That way, your measurements will be consistent, and all the parts will fit together properly.

2] Let It Slide—A common misconception with tape measures is that the hook on the end slides because of sloppy manufacturing. But the hook is designed to slide. If it didn't, either an inside measurement or an outside measurement would be off by the thickness of the hook.

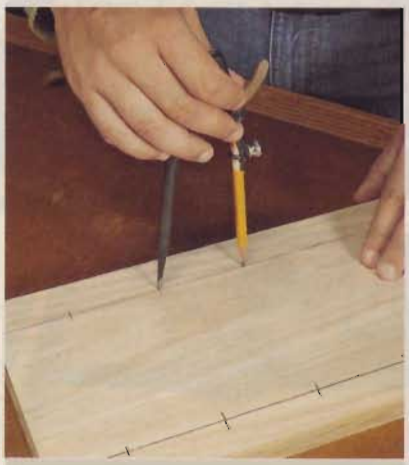
Laying a tape measure on edge places the marks against the workpiece for more accurate readings. Holding a tape or a ruler at an angle across the workpiece makes it easy to find center or divide the piece into equal segments. Here, the tape is angled until the 6" mark meets the edge, so the 3" mark is the center.

3] Give Your Tape an Edge—Lay a tape measure down on your workpiece, and the cupped shape of the blade puts the tape's markings above the surface. That might not seem like a big deal, but it allows for a margin of error. By simply holding the edge of the tape against the workpiece as you measure *(Photo, above)*, you can eliminate this error easily.

4] Divide without Measuring—To find the center of a workpiece, or to divide it into equal segments, hold a tape or rule at an angle across it. Align the zero with one edge, and any number that's easy to divide with the other edge *(Photo, above)*.

5] Make Spacing Simple—When you need to make equally spaced marks, such as for shelf pins, set a compass to the desired distance. With it, you can make marks that are the same every time without measuring *(Photo, far left)*.

6] Trace out a Template—Any time you need to make multiple identical parts, especially those with curves or intricate shapes, you can save a lot of measuring (and potential for error) by making one part, and then using it as a template to lay out the others *(Photo, near left)*.



Make consistently spaced marks easily by setting a compass to the measurement you need.

Eliminate measurement error when laying out identical parts by making a template and then tracing it.

7] Cut to Fit, Not to Size—Almost all woodworkers have experienced the frustration of cutting a part to the dimensions stated in a plan, only to find the piece doesn't fit. Whether it results from a dimensional error, or because your project dimensions vary slightly from the plans, the result can be wasted work and wasted wood.

To avoid this, measure and cut project parts to fit when possible, rather than cutting them to a specified size.

8] Work Around Errors—If you ever do find that you've made a measurement error when working on a project, don't assume that the whole project is ruined. Some errors can be worked around. Just examine the project to determine what other measurements will be affected by the error, and see if you can modify them. Oftentimes, you'll find that you can.

If you can't work around the errors, re-measure the incorrectly made parts. Chances are you'll be able to use them to make other smaller parts.

9] A Calculated Approach—Of course, adding and subtracting fractions as you analyze measurements can be difficult and introduce one more opportunity for error. Thankfully, for about $20 you can get a calculator that allows you to work with feet, inches, and fractions easily *(see Fraction Helper, left)*.

10] Take Two Steps Inside—The most common way to measure the inside dimensions of a cabinet or box is to butt the tape's hook against one side, then bend the tape at the opposite side *(Photo, below)*. But the stiff tape never reaches fully into the corner, meaning you have to estimate the exact length.

To get the length exactly right, stop short of the bend in the tape, and make a mark aligned with a whole inch. Then, measure back from the opposite side to that mark, and add the two together *(Inset Photo)*.

11] Use a Story Stick—You can also take the tape measure out of the equation completely by using a "story stick." It's made up of two 1"-wide strips of ¼" hardboard. They can be made any length. A 45° bevel on the outside end of each strip creates a fine point that yields better accuracy.

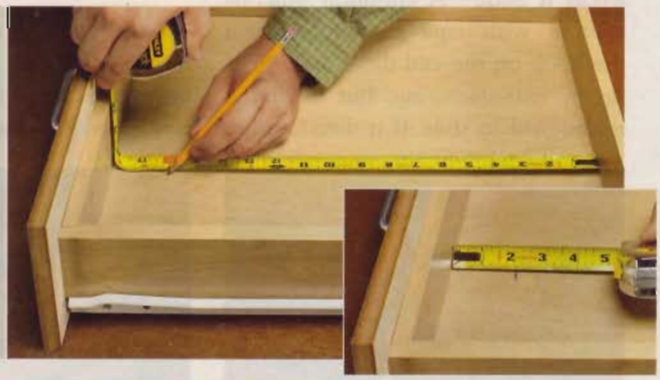
To use the story stick, lay the strips in the opening you need to measure. Butt the ends against the sides, and then clip the strips together *(Photo, bottom)*. Then you can just measure the overall length of the story stick to determine the inside measurement exactly.

FRACTION **HELPER**

MATH HELP FOR THE DIYer

Whether you're analyzing dimensions in a project plan or simply adding up a series of measurements you've made, calculating fractions is tough.

The ProjectCalc Plus from Calculated Industries (Calculated.com) simplifies the process by allowing you to input measurements in feet, inches, and fractions (as small as 1/64"). Results are displayed the same way.



Make precise inside measurements by laying the tape in place and marking the workpiece near one end. Then measure from from that end back to the mark.

Butt the ends of a story stick against the sides of the opening, and then fasten them together with a binder clip. Now remove the story stick, and measure its overall length.

MAKE YOUR **MARK**

Even the most accurate measurement isn't worth much if you can't transfer it to your workpiece accurately. That makes knowing how to mark just as critical as knowing how to measure.

Of no less importance are the marks that identify and orient your workpieces. Here are some tips for making all those marks successfully.

12] Use the Right Tool—When laying out joinery for a piece of furniture, you need a fine mark that will let you cut exactly at your layout line. For these, a mechanical pencil works great. But for an outdoor or construction project, you may not need the same degree of accuracy. Use the fatter tip of a carpenter's pencil here for making a visible mark.

On dark woods like walnut, pencil marks can be difficult to see. So use an awl to scratch a fine line instead.

Marks that identify project parts or help you keep them oriented correctly need only to be easily visible. For those, chalk or a soft-lead pencil are the marking tools of choice.

13] "V" is for Victory—The key to a great-looking panel is getting good grain match across the boards. Once you've matched them, use chalk to mark a "carpenter's V" across the panel *(Photo, below left)*. That makes it simple to reposition the boards in proper order.

For the best accuracy, hook a framing square over the workpiece. Mark similar parts simultaneously when you can.

14] Mark Square Reliably—When using a framing square, many woodworkers align the outside edge of one leg with the edge of the workpiece, and then mark along the outside of the other leg. But holding the square in place this way can be a challenge.

Instead, hook one leg of the square over the edge of your workpiece. Then mark along the inside edge of the other leg *(Photo, above)*.

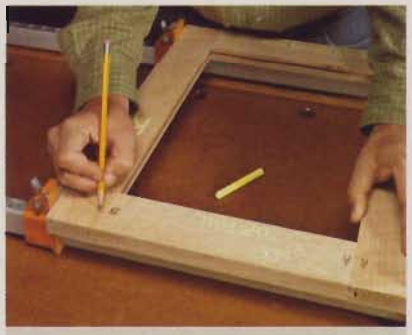
15] Group Matching Parts—Each time you measure, you introduce a chance for error. So when multiple parts require the exact same marks (such as when cutting dadoes, for example) mark them all at once *(Photo, above)*.

16] Locate Cutlines Correctly—There's no way to cut workpieces accurately if you can't easily align the saw blade with your cutline. So be sure to mark it where the saw blade will enter the workpiece.

If you're cutting a board with a miter saw, for example, your mark should be on the top face of the board *(Photo, below middle)*. But if you'll be cutting that board with a table saw, the mark should be at the bottom of the leading edge *(Photo, below right)*.

17] Label Parts and Joints—Few things are worse than putting a lot of work into making project parts and then accidentally positioning them improperly at assembly. To prevent this, label each piece clearly. And identify mating pieces during dry assembly to make sure you assemble them correctly *(Photo, below)*.

—Written by David Stone



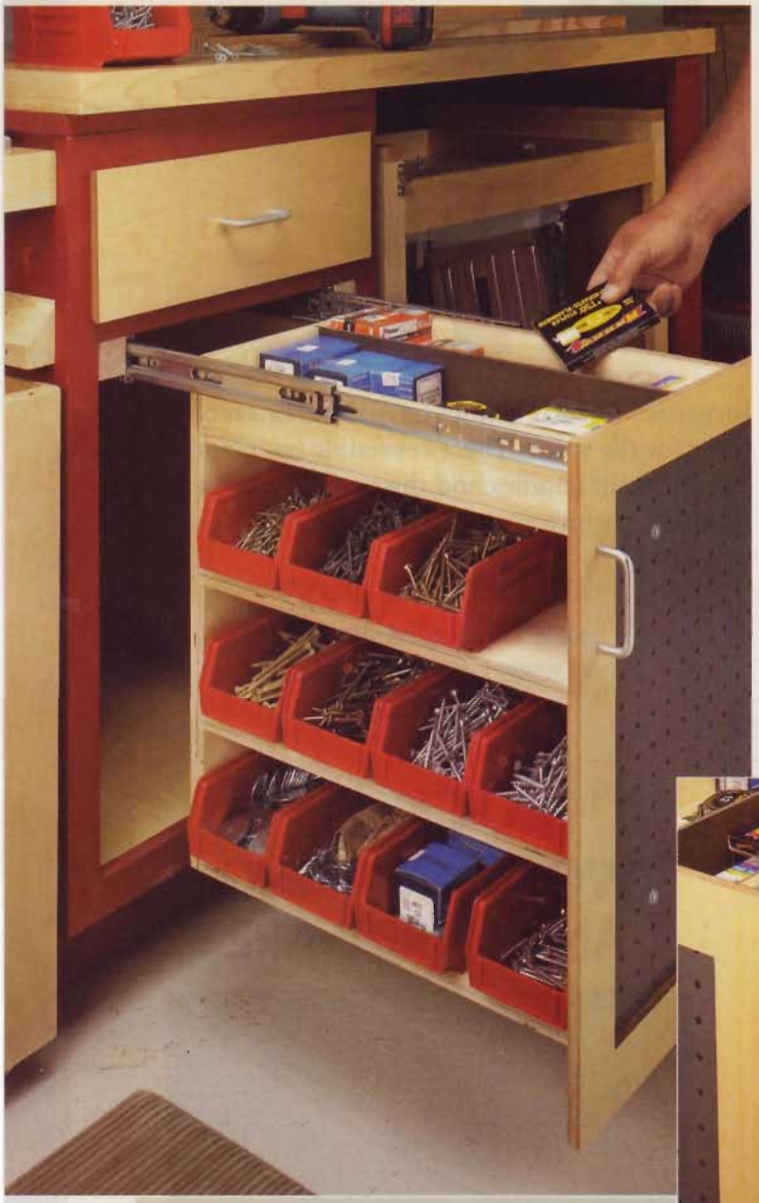
Labels that identify the part, its orientation, and the mating joints will make final assembly of this frame easy.

Drawing a large "V" across boards in a panel when test-fitting them makes it easy to reassemble them correctly.

On a miter saw, the blade enters the face of the workpiece. So mark your cutline there for easy blade alignment.

At the table saw, the cutline needs to be marked low on the leading edge, which is where the blade enters.

Pull-Out Storage Rack



This pull-out storage rack installs in an existing cabinet to hold plastic bins. Full-extension slides allow easy access to bins on both sides.

This pull-out hardware "pantry" makes maximum use of cabinet space to keep the contents of small-part bins organized, handy, and free of workshop dust.

When Randy Hall of Marshalltown, Iowa, built the space-saving home shop featured in the October 2006 issue of *Workbench*, he carried the idea of compact storage a step further by building this pull-out storage rack into one of the lower cabinets. It holds two dozen plastic storage bins and has a tray on top for storing boxed fasteners and other supplies. Mounted on full-extension slides, the rack pulls out for easy access. Sliding the rack back into the cabinet keeps dust from settling into the bins and tray.

The rack consists of an open-sided case that's made of ¾" plywood *(Construction View)*. Front and back panels are joined by plywood shelves that fit into dadoes for sturdy construction. Grooves in the shelves hold vertical dividers that split each shelf, so bins can be stored on each side. A couple more plywood pieces form the sides of the tray on top and provide mounting surfaces for the slides. And the original cabinet door is used as a false front, so the cabinet that holds the rack looks just like the others.

Size It Up — The first step in building the rack is to decide what size plastic bins will work for you, and have them on hand before you start building. That's because the bins themselves will dictate some of the dimensions for the rack.

Then remove the door from the cabinet, and take a look at the opening. To slide in and out of this opening easily, the rack will need comfortable clearance. Size it 1" shorter than the height of the opening, and 4" narrower

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than the width *(Sizing Detail)*. The extra margin on the sides allows the bins to extend past the shelves to make it easy to see what's in them.

As for the depth of the rack, it should be at least 1" shallower than the inside depth of the cabinet. How much shorter depends upon the width of the bins you chose. (Add a couple inches to the combined width of the bins to account for the thickness of the front and back panels, and to make it easy to take the bins in and out.) For example, this rack is sized to fit an 18"-wide standard (24"-deep) base cabinet, and it holds bins that are 4⅛" wide. So we made it 18¾" deep and mounted it to 22" drawer slides.

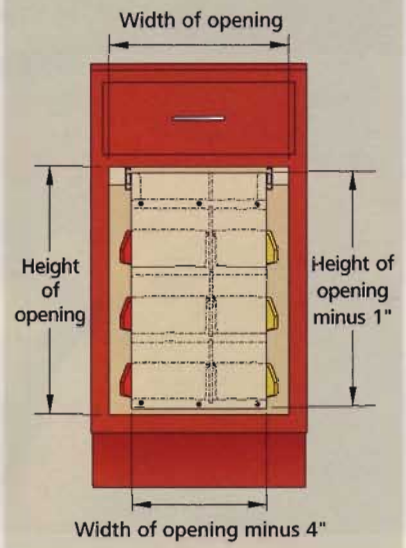
Construction — With these initial measurements, you can cut parts for the rack, starting with the plywood front and back (A). Next cut dadoes in these panels for the shelves *(Front/Back Panel Detail)*, and cut grooves that will receive the dividers.

That done, cut the shelves (B) to size. (Shelf length is just 1" shorter than the overall length of the rack.) Add grooves for the dividers, and then cut the dividers (C) to fit from ¼" hardboard.

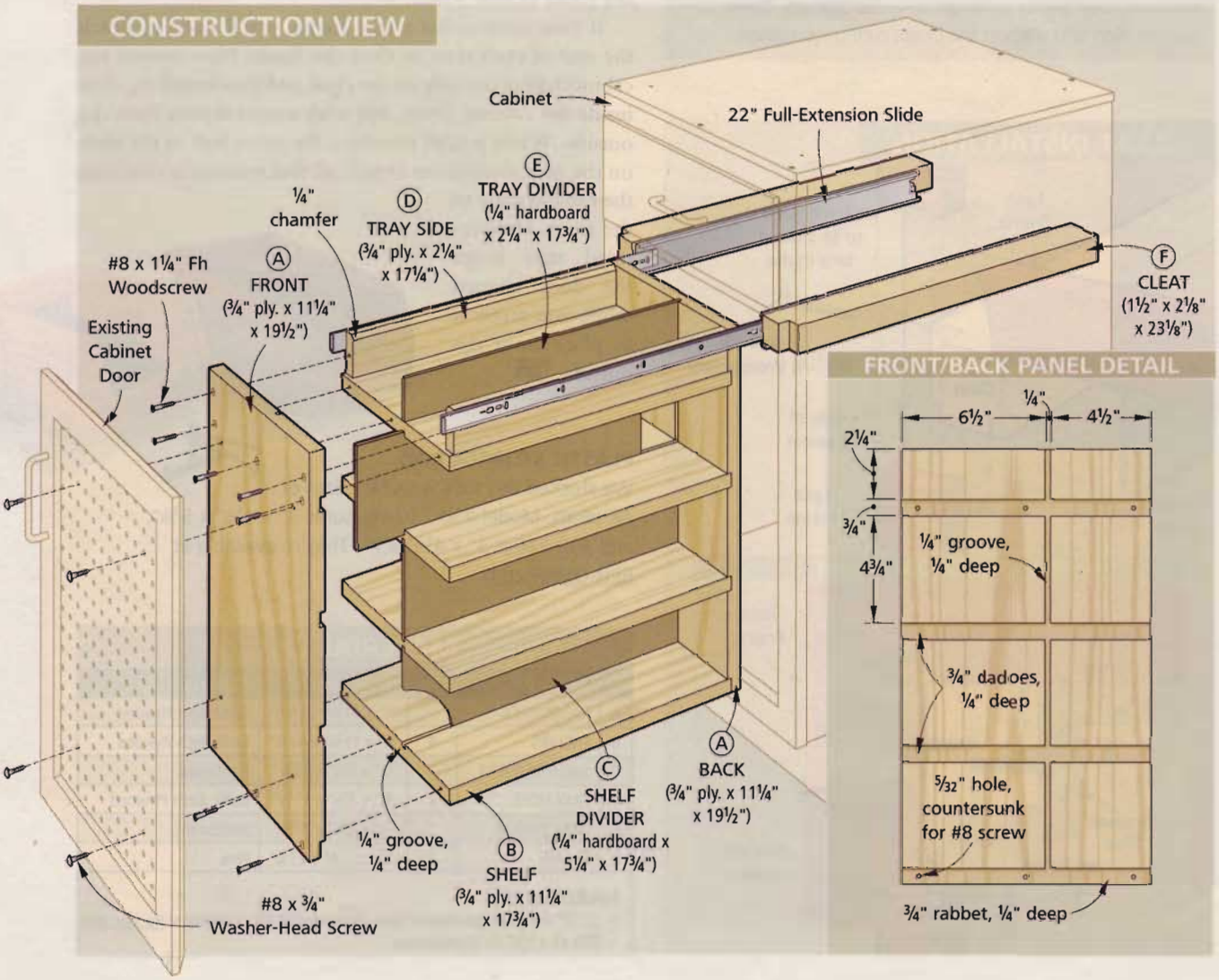
Assembly is simply a matter of fitting together all the parts so that the dadoes in the front and back capture the shelves and dividers between them. Secure the assembly with screws.

Finally, cut the tray sides (D) to fit from ¾" plywood, and glue and screw them in place. Then add a hardboard tray divider (E). *(Continued on next page.)*

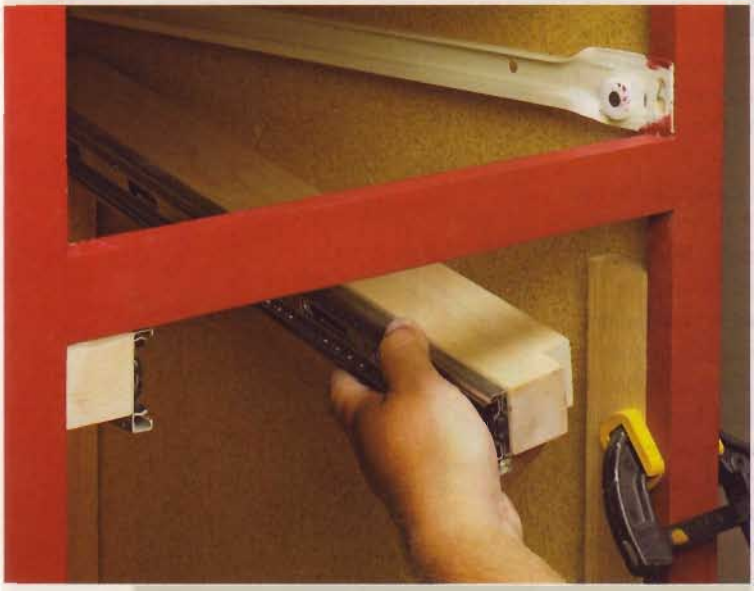
SIZING DETAIL



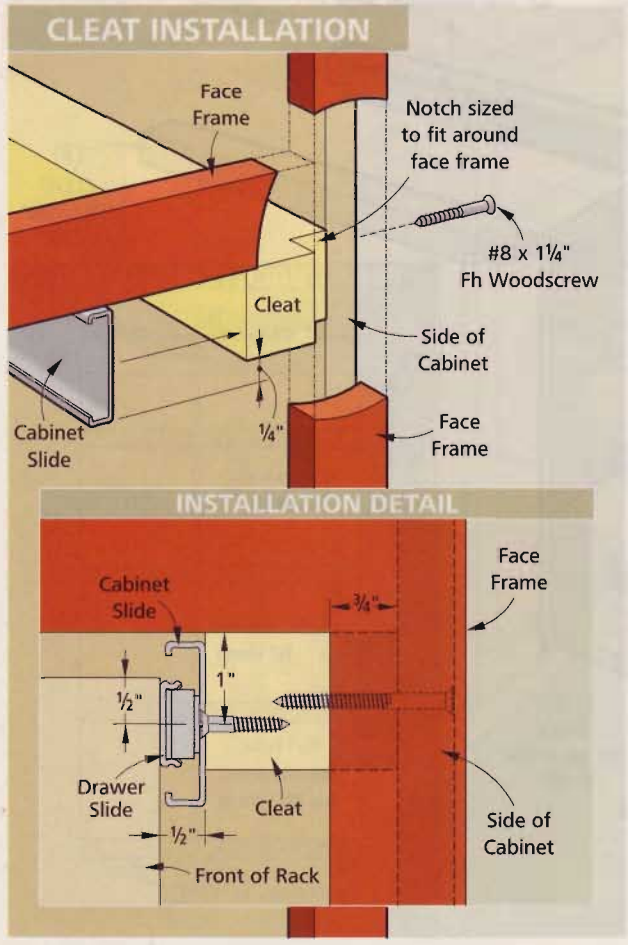
CONSTRUCTION VIEW



FRONT/BACK PANEL DETAIL



To ensure that cleat-mounted cabinet slides are parallel and level, cut scrap pieces to length to use as spacers. These spacers align and support the cleats during installation.



INSTALLING THE RACK

With the rack built, it's time to install it in the cabinet. That's done with full-extension slides supported by sturdy cleats that bridge the gap between the rack and the cabinet.

Rack It Up — The slides that hold the rack in the cabinet need to be heavy-duty (ours are rated at 100 lbs). You'd be surprised at the weight of the hardware this rack will hold, so be sure to get slides with a sufficient load rating. In the same respect, you'll need to screw the cabinet to the wall, if it isn't already, to prevent it from tipping when the rack is fully extended.

Ordinarily, the cabinet part of a slide is attached directly to the side of a cabinet. But, in this case, the rack is narrower than the cabinet opening, so mounting cleats (F) are needed to support the slides *(Cleat Installation)*. To determine how wide to make these cleats, first measure the inside width of the cabinet. Subtract the width of the rack, then another 1" to account for the combined thickness of the slides. Divide this figure in half, and then cut the cleats to that width.

If your cabinet has a face frame, you'll need to notch the end of each cleat to clear the frame. Now mount the cabinet half of the slide on the cleat, and then install the cleat inside the cabinet *(Photo, left)* with screws driven from the outside. When you've mounted the other half of the slide on the rack *(Installation Detail)*, all that remains is attaching the cabinet door to the front. Double-sided tape keeps the door aligned while you screw it in place from the outside.

PLASTIC STORAGE BINS

We stocked this rack with two sizes of AkroBins. Model #30-210 measures 3" x 4⅛" x 5⅜", and #30-220 is 3" x 4⅛" x 7". They're available at Bins-Online.com

MATERIAL LIST

	Part	Qty	Size	Material
A	FRONT/BACK	2	¾" x 11¼" x 19½"	Baltic Birch Plywood
B	SHELVES	4	¾" x 11¼" x 17¾"	Baltic Birch Plywood
C	SHELF DIVIDERS	3	¼" x 5¼" x 17¾"	Hardboard
D	TRAY SIDES	2	¾" x 2¼" x 17¼"	Baltic Birch Plywood
E	TRAY DIVIDER	1	¼" x 2¼" x 17¾"	Hardboard
F	CLEATS	2	1½" x 2⅛" x 23⅛"	Pine

HARDWARE:

- (2) 22" Full-Extension Drawer Slides (Accuride #3832C, available at Rockler.com)
- (16) #8 x 1¼" Fh Woodscrews

NEW MUST-HAVE HAND SAWS

Today's hand saws are designed to cut faster, easier, and cleaner than ever — making them an indispensable part of the DIYer's toolbox.

Savvy home woodworkers and DIYers have always known that a hand saw is one of the most important tools in their toolbox. Even if you have stationary and portable power saws, a good old hand saw is often the best — and sometimes the only — tool for the job.

Never has that been truer than it is today. That's because manufacturers have recently developed hand saws that cut faster, easier, and cleaner than ever before. These saws allow you to cut a range of materials that you never would have attempted with a traditional hand saw, which makes them ideal for all kinds of jobs around the house. Plus, new blade designs make these saws just as adept at precise, controlled cuts, such as notching a deck board *(Photo, above)*, as they are at rough cuts.

Although these tools incorporate new cutting technologies, they still fall into the two traditional categories of hand saws—Western-style saws and Japanese-style pull saws *(Photos, right)*. Both types of saws have been adapted for use on a wide range of home improvement tasks.

Over the next few pages, we'll highlight some of these tasks for which a hand saw is an indispensable tool. And we'll explain the cutting-edge technologies that have made all of these changes possible.

WESTERN-STYLE (top): Triple-ground teeth allow new Western-style saws to cut on both the push *and* pull strokes for notably faster cuts.

JAPANESE-STYLE (bottom): This style of saw cuts on the pull stroke. New pull saws feature larger blades and comfortable handles.

Western-Style Saws

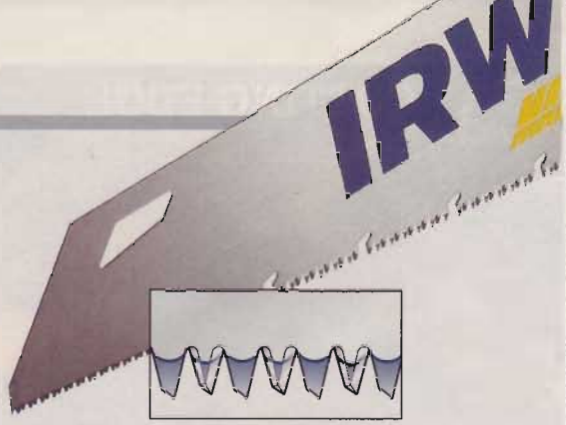
When you think about a hand saw, what you probably imagine is a Western-style push saw. Traditionally, these saws had teeth that angled toward the front (toe) of the blade, which made them cut on the push stroke.

Tale of the Teeth—Today's new Western-style saws differ in that they have teeth that are aligned almost straight up and down. And each tooth is ground to produce three cutting edges: One on the leading edge, one on the trailing edge, and a third at the tip of the tooth *(Illustration, right)*.

With this straight-tooth configuration and the triple-grind on each tooth, the saw cuts on both the push *and* the pull stroke, which makes for a faster, more efficient cut. In short, the new Western-style saws are a better choice than their predecessors for a number of home improvement projects *(Photos, below)*.

Tough Teeth—Another improvement to the Western-style saw is that it stays sharp longer. This is because the saw's teeth are now induction-hardened, which means an electrical current gets passed through the teeth to increase their hardness. Although the teeth won't dull as quickly, the drawback is that you can no longer sharpen the blade. When the teeth get dull, you'll need to replace the saw.

Short Saws—One final advantage of the new saws is their shorter length (usually 15"). This lets them fit easily in a toolbox.



Today's Western-style saw has teeth that align straight up and down and a triple-grind that allow it to cut on both the push stroke *and* the pull stroke.

To cut a gap-free miter with a hand saw, use one mitered piece as a guide for cutting the mating piece.

A hand saw gives you the ability to flush-trim framing materials to length after they're assembled.

After rough-cutting a stair stringer with a circular saw, a hand saw makes quick work of squaring up the corners.

3 WESTERN-STYLE SAW INNOVATIONS

Innovations have solved some other problems with hand saws, as well. Sawing can be hard on the hands, so several saws now have ergonomic handles. It's also difficult to start cuts cleanly, but the fine teeth on Irwin's saw fix that. Finally, to prevent rust, Stanley covered its saws with a protective coating *(Photos, right)*.

For a comfortable grip, this wood handle is covered with a soft rubber overmold.

Irwin's saws feature fine front teeth for starting cuts and large gullets for chip relief.

The protective coating on Stanley's FatMax saw is great for pressure-treated lumber.

Japanese-Style Saws

Many woodworkers have discovered the two big advantages of a Japanese-style pull saw. First, the saw has sharp teeth that face toward the back (heel) of the blade, so it cuts on the pull stroke *(Illustration, right)*. This not only requires less effort on the user's part, but it also gives you better control as you cut.

Second, the blade is under tension as you pull. As a result, the blade on a pull saw has a thinner body than a Western-style saw, which can flex and bind as you push it. Thanks to this thin body, a pull saw leaves a thinner kerf in wood, which makes for a cleaner cut.

New-Wave Pull Saws—The first Japanese pull saws seen in the U.S. were intended for fine woodworking. But visit a home center today, and you'll see that these saws have evolved into multipurpose tools that are ideal for all kinds of home improvement jobs. The newest pull saws come in all sorts of sizes and shapes, including large saws for "general carpenty" *(Photo, right)*.

Many of the pull saws also have coarser teeth. This makes them great for DIY tasks around the house such as cutting styrofoam or PVC pipe *(Photos, below)*. But the pull action of the saw still gives you the fine touch and precision you need to trim a fragile cedar shake to size without damaging it *(Photo, right)*.

A pull saw's teeth face the back of the blade for cutting on the pull stroke. Today's pull saws have large, aggressive teeth for cutting in all types of materials.

Thick styrofoam tends to shred under most saws, but the cutting action of a pull saw lets you slice it like butter.

PVC pipe can crack or spin when cut with a power saw. A general-purpose pull saw yields a clean, smooth cut.

Pull saws produce a precise, controlled cut that's great for trimming fragile materials like cedar shakes.

2 PULL SAW INNOVATIONS

Traditional Japanese pull saws had a straight handle designed for working on a low benchtop. But the newest pull saws have a "pistol-grip" handle that's more comfortable for those accustomed to working with Western-style saws *(near right)*.

Another option available in saws from SharkSaw and Marples is interchangeable blades. This allows you to switch blades (rather than saws) as your job changes, or easily replace damaged blades *(far right)*.

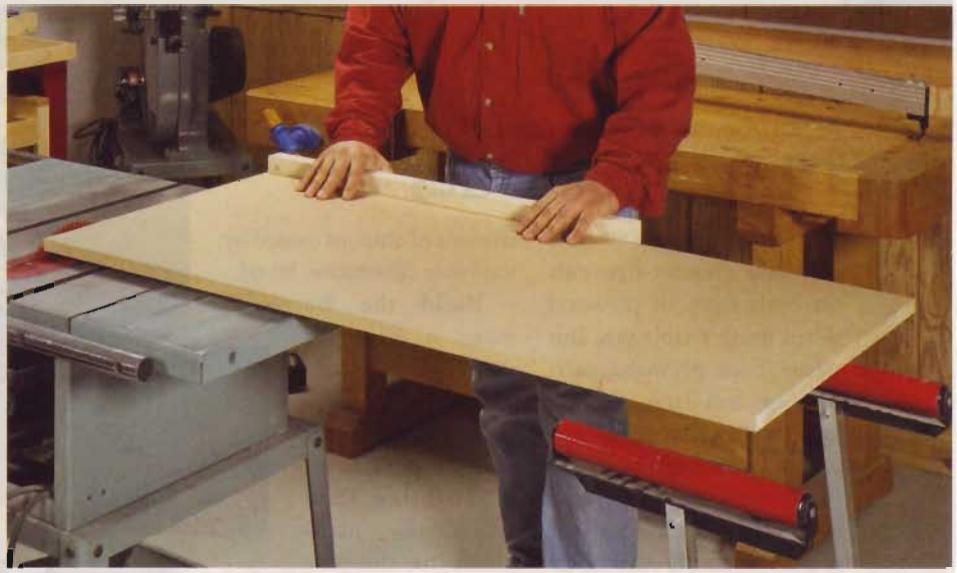
The smooth cutting action of a pull saw is now complemented with a pistol-grip handle that's comfortable to hold.

This pull saw from SharkSaw lets you change blades when you want to switch from crosscutting to flush-cutting.

QUICK & EASY

Crosscut Sled

Cutting wide panels safely and accurately on the table saw calls for a crosscut sled. Here's a simple one that has just three parts and can be built in 15 minutes.



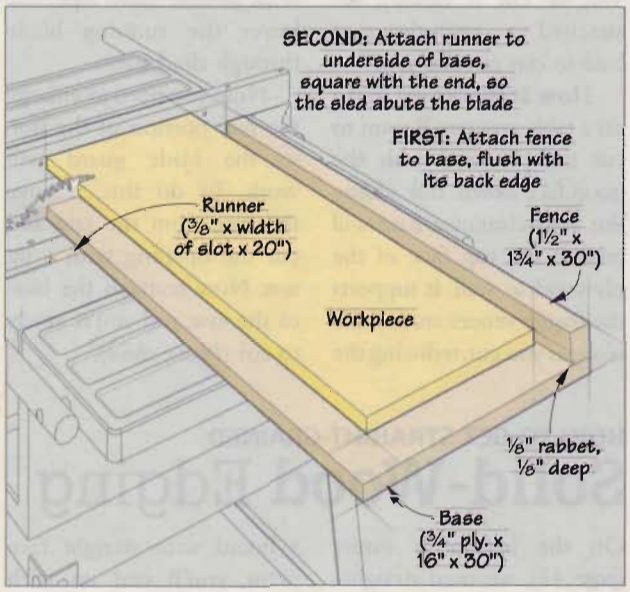
A sled is an invaluable accessory for crosscutting wide panels safely and accurately on the table saw. Here's one that's effective and easy to build.

Sled Anatomy—The sled consists of a large base to hold the panel, a fence that supports the back edge, and a runner that guides the sled in the miter-gauge slot *(right)*.

Sled Construction—To build the sled, cut the base to size from ¾" plywood. Then cut the fence to size, and cut a rabbet in the lower front edge for dust relief. Now align the fence with the back edge of the base, and glue and clamp it in place.

To make the runner, simply plane hardwood stock to thickness, rip it to rough width, and sand it so it slides smoothly in the miter-gauge slot. Then screw it to the base, square with the end.

You now have a sled capable of cutting wide panels to length. If the panel is also long, you'll want to add side support *(Photo, above)*.



SCORE PLYWOOD FIRST TO

Eliminate Chipout

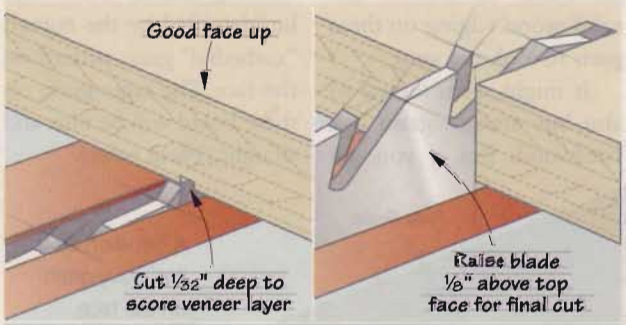
To prevent chipout when cutting plywood on a table saw, the best practice is to cut it with the "good" side facing up.

But several of the plywood parts in our bathroom makeover *(page 40)* get installed with *both* sides visible. That makes it worth taking one extra step to protect both faces of the plywood from chipping out and splintering.

A Scoring Pass—The extra step is making a shallow "scoring" pass with the blade raised just enough to cut through the veneer layer *(Illustration, right)*.

Full Cut—After that pass, raise the blade to make a full-thickness cut, and then make another pass.

This two-pass method will ensure a finished plywood part with two chipout-free faces.



When cutting plywood on the table saw, the top side should remain splinter-free. But if *both* sides need to be free of chipout, the best approach is to make a scoring pass first to cleanly slice the bottom face, and then make the final cut.

AUXILIARY SAW BASE PRODUCES

Chip-Free Cuts

The tip on page 89 will give you chipout-free cuts on both faces of plywood when using a table saw. But what about plywood parts that are too large for the table saw and have to be cut with a circular saw?

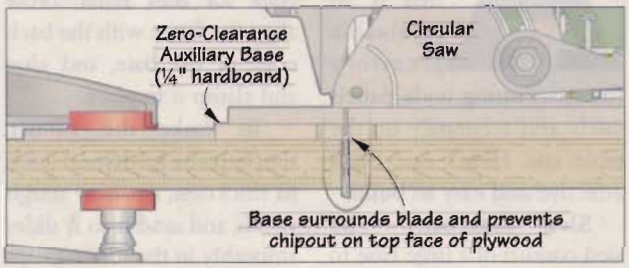
The decorative wall panel in this issue's bath makeover required exactly that *(page 46)*. To cut it cleanly, we attached a zero-clearance base to our circular saw.

How It Works—Unlike on a table saw, you'll want to cut the plywood with the good face down. But adding this zero-clearance base will protect the top face of the plywood, as well. It supports the fragile veneer around the blade as you cut, reducing the amount of chipout caused by the blade *(Illustration, below)*.

Build the Base—To make a base for your circular saw, start by cutting a piece of hardboard roughly the size of the saw's shoe. Then attach the hardboard to the saw with double-sided tape, and lower the running blade through the base.

Now you need to enlarge the rear portion of the slot, so the blade guard will work. To do this, remove the base from the saw, and cut the opening with a jig saw. Now reattach the base to the saw, and you're ready to cut *(Photo, above)*.

This zero-clearance insert surrounds the blade at the front to prevent the top face of plywood from chipping. The wide notch at the back allows the blade guard to function properly.



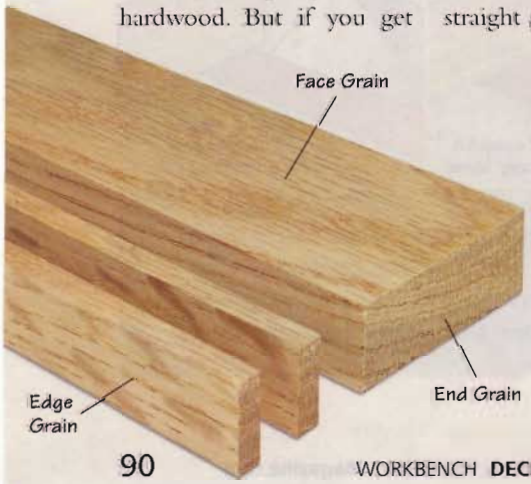
HOW TO GET STRAIGHT-GRAINED

Solid-Wood Edging

On the bathroom vanity *(page 42)*, we used straight-grain riftsawn oak plywood for many of the parts. Naturally, we wanted the solid-wood edging on these parts to look the same.

It might seem logical to also buy straight-grain oak hardwood. But if you get a board with straight face grain, you'll end up with "wild" edge grain.

A better solution is to get flatsawn boards, which can be identified by the curved "cathedral" grain pattern on the face. The edge grain on these board will be nice and straight *(Photo, below)*.



A flatsawn board has wavy grain on the face, but its straight-grain edges are ideal for edging riftsawn plywood parts.

CUT PLYWOOD RIGHT FOR

"Flowing" Grain

The bathroom vanity *(page 42)* features two banks of drawers that sit side by side. For a nice-looking project, the grain should "flow" from one drawer front to the next *(Photos, below)*.

To do this, lay out and cut the drawer fronts in order from the same plywood panel. This is as simple as ripping a long piece to width and cutting each drawer front to length from the longer blank.

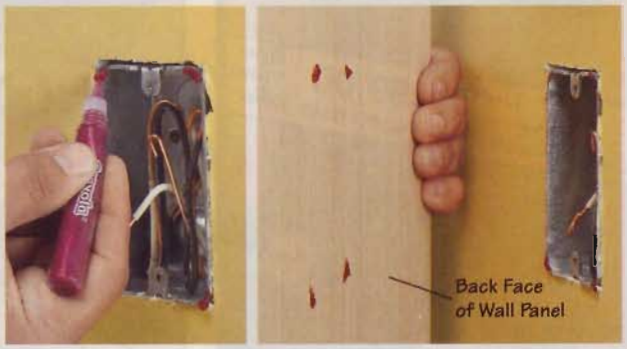
"Flowing" grain makes drawer fronts look great. To get this look, just cut the fronts in sequence from the same panel.

SHORT ON CLAMPS?
Try Tape

It takes a lot of clamps to glue all the edging to the plywood panels in our bath makeover *(page 40)*. But if you don't have enough clamps, don't worry. Just use a couple of clamps to position each strip, and then use electrical tape to provide the holding power.

To do this, just affix one end of the tape to the edging, pull the other end tight, and then stick it to the face of the plywood. Electrical tape is fairly elastic, so you can stretch it tightly across the workpiece to "clamp" the edging in place.

GLUE MARKS THE SPOT FOR
Electrical Outlets



The wall panel in our bathroom makeover has an electrical outlet sticking through it. Trying to measure, mark, and cut this opening accurately before the panel goes in place is hard to do.

A more precise way to locate the outlet is to mark the corners of the outlet box. (I found colored glue at a craft store that worked great for this.) Now set the panel in position, and press it against the box. The glue sticks to the back of the panel, providing accurate layout marks for cutting the opening.

BENCH DOG PROMAX

Cast-Iron Router Table

Don't think of this as an accessory to your router, but rather as a high-end stationary tool that simply requires the addition of your favorite router to make it complete.

Cast-iron top, 28" fence, dual dust-collection ports, adjustable miter track, and compartmentalized storage. It sounds like a list of qualities you'd expect to find on a high-end stationary tool, doesn't it? You might be surprised to know that these are standard features of Bench Dog's new ProMAX Complete router table.

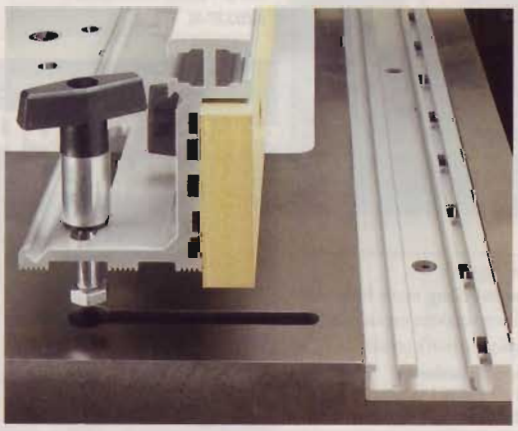
Clearly, this is a router table for the serious woodworker. Of course, it comes with a price tag that also rivals full-sized shop equipment ($880). But when we took a close look at the ProMAX, we found impressive construction and a long list of features that make it easier to swallow that premium price tag.

The ProMAX Complete mates Bench Dog's ProTop and ProFence *(Fig. A)* with an all-new cabinet that's compartmentalized to make the most of the storage space *(Figs. B and C)*.

I mounted a Triton 3¼ HP plunge router in the ProMAX for testing purposes. The cast-iron top did a great job of dampening the vibration of this big router, even while turning the biggest bits in my collection. And while the dust collection didn't keep the inside of the cabinet spotless, it did save a lot of cleanup time.

For more information on Bench Dog's ProMAX router table and all the available accessories, visit BenchDog.com or call 800-786-8902.

Roll your router table into position, and then level it using the optional Cab-Loc system *(left)*.



A] Bench Dog's cast-iron top accepts their adjustable fence and includes their unique miter/accessory track that can be adjusted for a snug fit.

B] Hangers in the lower compartment of the cabinet support the insert and router.

C] Simple slide-out trays made of MDF can be fitted with bit holders or drilled to accommodate a large array of bits.

Timber Frames To Go

At this school you learn timber-framing skills by building a structure of your own.

Massive beams joined with pegged mortises and tenons give timber-frame structures the look of fine furniture on a magnified scale. That may explain why so many woodworkers are fascinated by timber frames, and why some of them spend their vacations in schools learning how to build them.

One school that takes a unique, hands-on approach to teaching timber framing is North House Folk School in Grand Marais, Minnesota.

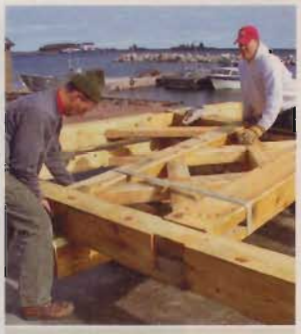
Build Your Skills—In addition to learning timber-frame history and design, students at this school spend a large amount of class time crafting the intricate joints that define a timber frame.

This is done with traditional hand tools, such as chisels and mallets, and with timber-framing power tools. And it all takes place as students cooperatively build a small structure and then raise it before the class ends.

Frames to Go—But if you'd like to leave with more than just fond memories and new skills as reward for your effort, you need to check out a "build your own timber frame" class at North House. When these classes end, you get to take a timber-frame structure home with you.

Photos courtesy of North House Folk School

This timber-framed bell tower was built by students in a workshop at North House Folk School. Then it was transported to St. Olaf College in Minnesota and erected on-site.



Students assemble a gable wall *above*. A timber frame gets raised *below*.

After cutting the intricate stepped mortises that will lock this massive timber in place, a student adds the finishing touches by rounding the sharp edges with a router.

Your experience begins before you ever reach the school. First, you select the type and size of timber frame you want to build. (The school offers several options.) Then just pay the fee that covers both the cost of the class and all the materials for your frame.

When you arrive at the school, your timbers await you, as do a cadre of expert instructors. Whether you're an amateur or an expert, they'll guide you through the techniques and tools you'll need to build your frame.

The difference is that your time goes into working on your own structure. And when the class ends, you just load your completed (or partially completed) frame on a trailer, and then haul it home and raise it.

Learn more about these classes by visiting the school at NorthHouse.org. For general timber-framing information, visit the Timber Framer's Guild of North America at TFGuild.org.