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Architectural Moldings for the Itasca Bookcase



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Architectural Moldings for the Itasca Bookcase

Some casework designs, particularly tall pieces, can look stark without a well-conceived treatment of decorative moldings. This bookcase is an excellent example of moldings done right. With roots in urban architecture, the corbels, arches and intricate bricking break up its tall form and lend a grounded sensibility. Here's a good excuse to buy some select pine and get busy.

There's a spot at one end of Lake Itasca in Minnesota where the mighty Mississippi gets its start as a trickle of a creek. Kids of all ages go there to jump the river in a single bound and later boast about their feat to their friends back home.

Our author was reminded of that spot when he entered the lake's namesake, the Itasca Building in downtown Minneapolis. A turn-of-the-century warehouse, it now serves a second life as a condominium complex. This bookcase was a commission designed to blend in well with the historic character of the client's warehouse loft in that building.

The view from the client's apartment windows looks down on several neighboring buildings—warehouses mostly, with the odd manufacturing facility or job shop thrown into the mix. Though their function was utilitarian, their architects had discovered simple ways to add grace to otherwise bland facades. Elements of those facades—corbels, arches and intricate bricking patterns—are incorporated into this

bookcase design. Like the river at Itasca, the bookcase serves as a scaled down version of a grander original.

Starting with the Base Carcass

Tradition was important throughout this project, so we decided to use old-fashioned clear pine to match the massive hewn beams used throughout the warehouse. However, if you plan on

building one or more of these units to fit into another decorating scheme, hardwoods such as oak or cherry will work equally well.

The case is built in two parts—a base and an upper unit. The first step in constructing the base is to cut all the pieces according to the dimensions in the *Material List* on pages 71 and 72.

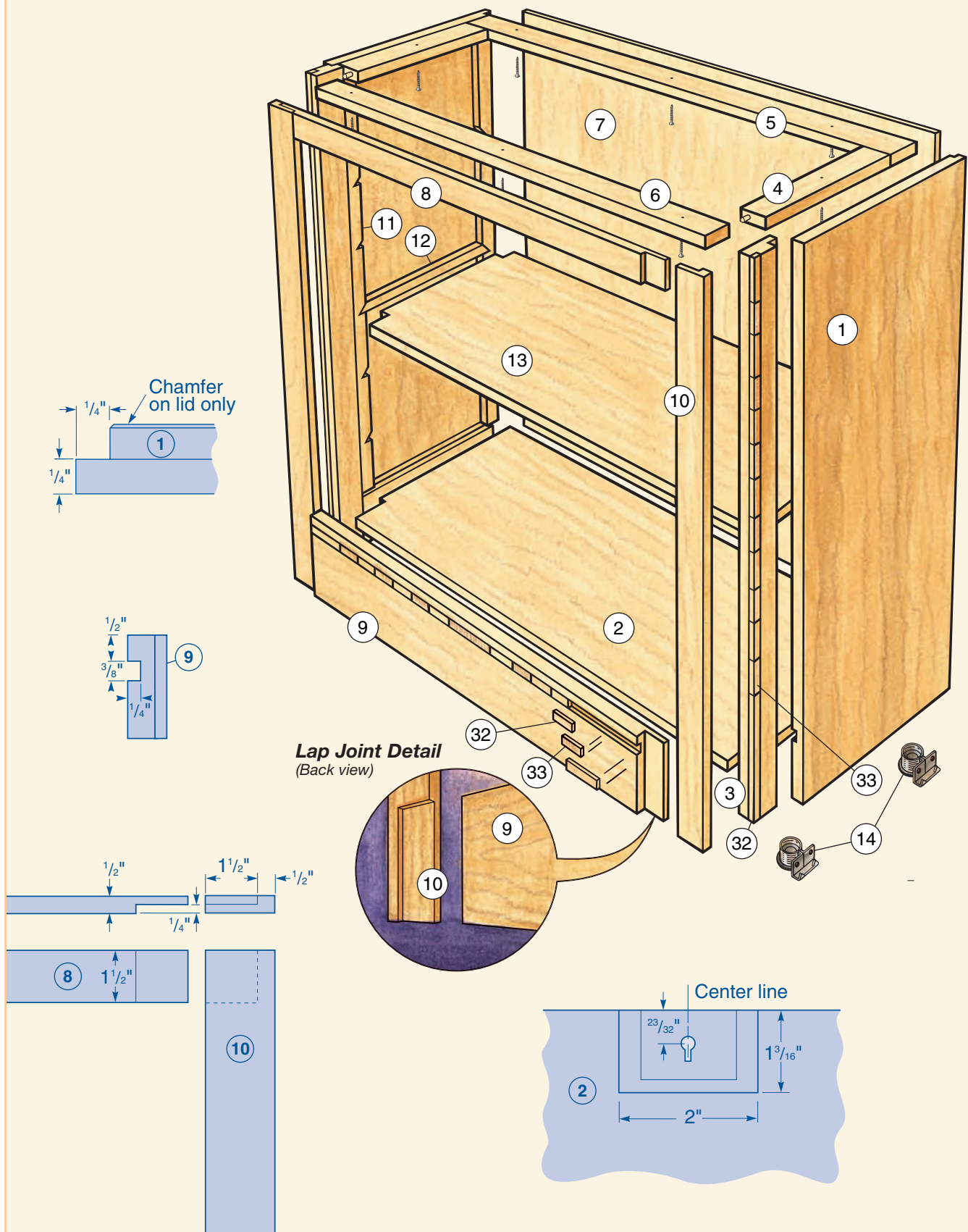
As a furniture maker specializing in eighteenth-century American pieces, our author prefers to hide all mechanical fasteners; consequently this case is designed so that none are visible from the front. One other rule he followed was that any panel over 6" wide was made by gluing up several narrow boards. He did this because pine has a propensity to warp.

The base sides (pieces 1) are dadoed to receive the bottom (piece 2). Form this dado on the table saw (see the *Pinup Shop Drawings* for dimensions), and then move right on to forming the two rabbets on the backs of the sides. These rabbets will eventually house the back panel. After they are cut, there's just one more operation to

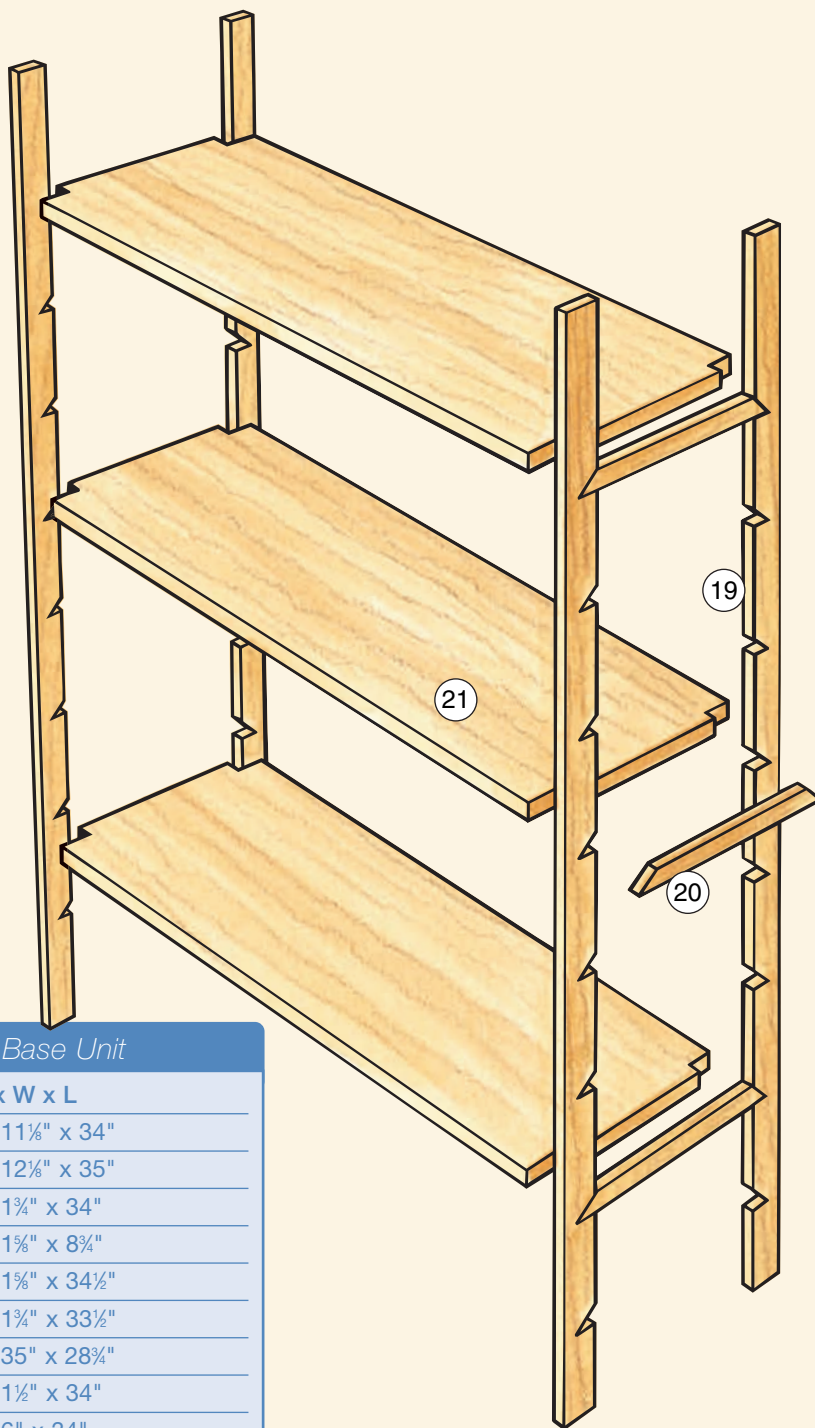
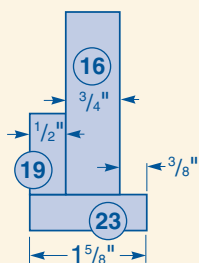
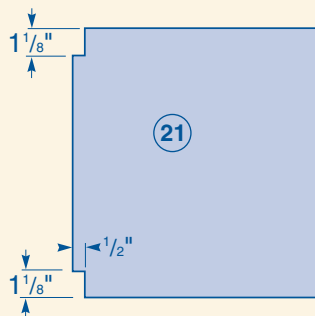
ADJUSTABLE SHELF SUPPORT SYSTEM

The Itasca Bookcase features an adjustable shelf support system reminiscent of 18th-century primitive furniture design. Made from project scraps, it's a great alternative to modern metal shelf hardware, particularly for simple pieces like this bookcase.

Base Carcass Exploded View



Upper Shelf Components



MATERIAL LIST – Base Unit

	T x W x L
1 Sides (2)	3/4" x 11 1/8" x 34"
2 Bottom (1)	3/4" x 12 1/8" x 35"
3 Subframes (2)	3/4" x 1 3/4" x 34"
4 Side Assembly Cleats (2)	3/4" x 1 5/8" x 8 3/4"
5 Back Assembly Cleat (1)	3/4" x 1 5/8" x 34 1/2"
6 Front Assembly Cleat (1)	3/4" x 1 3/4" x 33 1/2"
7 Back (1)	1/4" x 35" x 28 3/4"
8 Face Frame Top Rail (1)	1/2" x 1 1/2" x 34"
9 Face Frame Bottom Rail (1)	3/4" x 6" x 34"
10 Face Frame Stiles (2)	1/2" x 2" x 34"
11 Shelf Standards (4)	1/2" x 1 1/8" x 27 1/4"
12 Shelf Supports (2)	3/4" x 1/2" x 9 5/8"
13 Shelf (1)	3/4" x 11" x 34 1/2"
14 Cabinet Levelers (4)	1" Adjustment, 200 lb. Rating

Upper Carcass Exploded View

perform on the bottom before it can be installed: Following the dimensions on the *Pinup Shop Drawings*, use the band saw to cut a notch that houses the two subframes (pieces 3). These subframes each receive two rabbets (see *Pinup Shop Drawings*) that can be milled at this time using the same dado setup in your table saw.

The assembly cleats (pieces 4, 5 and 6) are already cut to size, so start putting your base unit together by doweling and gluing this subassembly together, as shown in the *Pinup Shop Drawings*. Remember that the front cleat is centered on the side cleats so there's only room for one dowel at each front corner. Clamp the cleats together until just snug. Overtightening is a common mistake, one that usually results in a weaker joint because most of the glue gets squeezed out. Check for squareness and lay the cleats aside.

While they're drying, glue and clamp the two subframes (pieces 3) to the sides. When these pieces dry, you're ready to assemble the bottom carcass. Start by gluing the bottom into the side dadoes, keeping a damp cloth handy to wipe off excess glue. Now glue the cleat subassembly flush with the tops of the sides and clamp the base together. Since the back (piece 7) is cut to size, dry-fit it in place. This will help square up the assembly, but don't nail it in place quite yet.

Making the Face Frame and Shelves

Following traditional procedures, the face frame is built as a separate subassembly, then applied in one step to the carcass. The top and bottom rails (pieces 8 and 9) are attached to the two frame stiles (pieces 10) with hidden lap joints (see the *Pinup Shop Drawings* for dimensions). The laps

MATERIAL LIST – Upper Unit

	T x W x L
15 Bottom Panel (1)	1" x 14" x 36"
16 Sides (2)	3/4" x 11 ³ / ₈ " x 40 ¹ / ₄ "
17 Top (1)	3/4" x 14 ¹ / ₂ " x 36"
18 Back (1)	1/4" x 34 ¹ / ₂ " x 41"
19 Shelf Standards (4)	1/2" x 1 ¹ / ₈ " x 39 ¹ / ₂ "
20 Shelf Supports (6)	3/4" x 1/2" x 10 ³ / ₈ "
21 Shelves (2 or 3)	3/4" x 11 ¹ / ₈ " x 33 ³ / ₄ "
22 Upper Face Frame Rail (1)	3/4" x 4 ³ / ₄ " x 36"
23 Upper Face Frame Stiles (2)	1/2" x 1 ⁵ / ₈ " x 40 ³ / ₈ "
24 Top Braces (2)	3/4" x 1 ¹ / ₈ " x 33 ³ / ₄ "

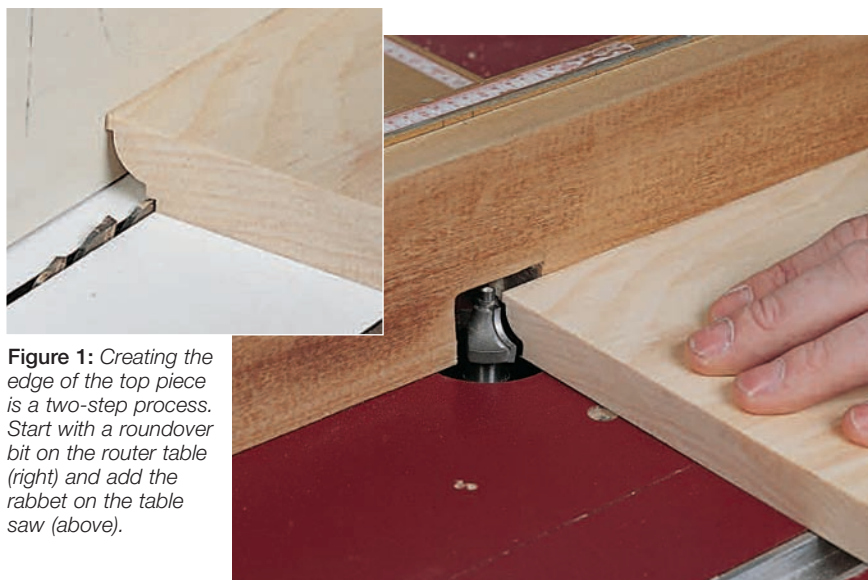


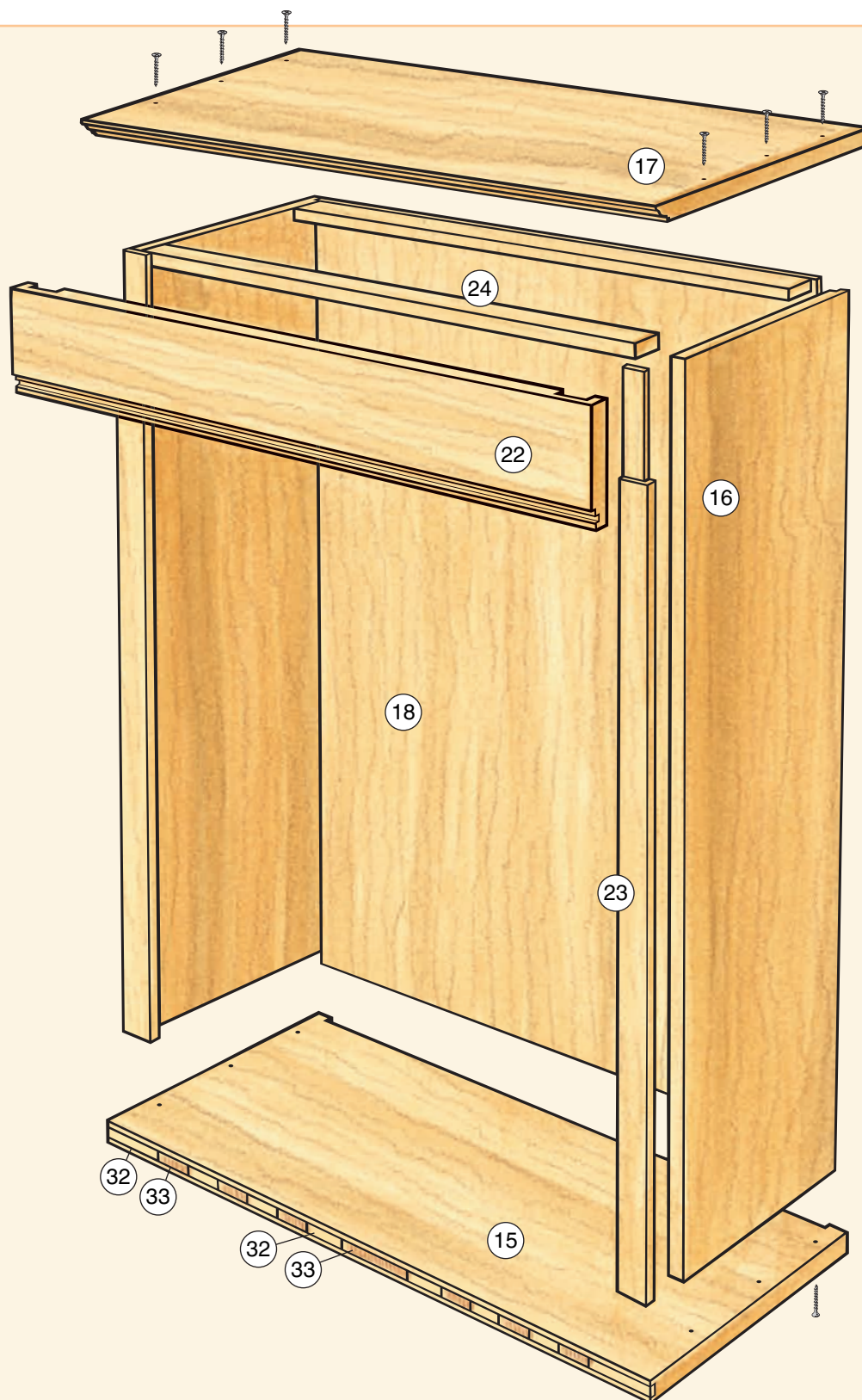
Figure 1: Creating the edge of the top piece is a two-step process. Start with a roundover bit on the router table (right) and add the rabbet on the table saw (above).

on the rails are created on a table saw using a dado head, while the stopped laps on the stiles (see *Lap Joint Detail* on page 70) are formed on a router table. Clamp a stop to your fence to limit the cut, and remove most of the waste with a straight bit. Follow up by squaring the corners with a sharp chisel. You'll notice that the top rail and the stiles are made of 1/2"-thick stock, a subtle deviation from standard

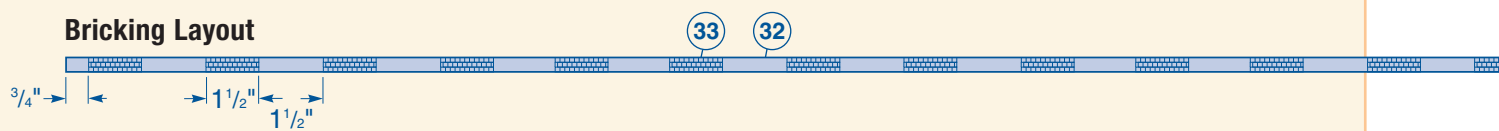
dimensioning that lends a little lightness and elegance to the design.

Before moving on, chuck a 3/8" straight bit in the router table and make the groove in the bottom rail for the bricking molding, as shown on the *Pinup Shop Drawings*. Assemble the face frame with glue and clamps and set it aside to dry.

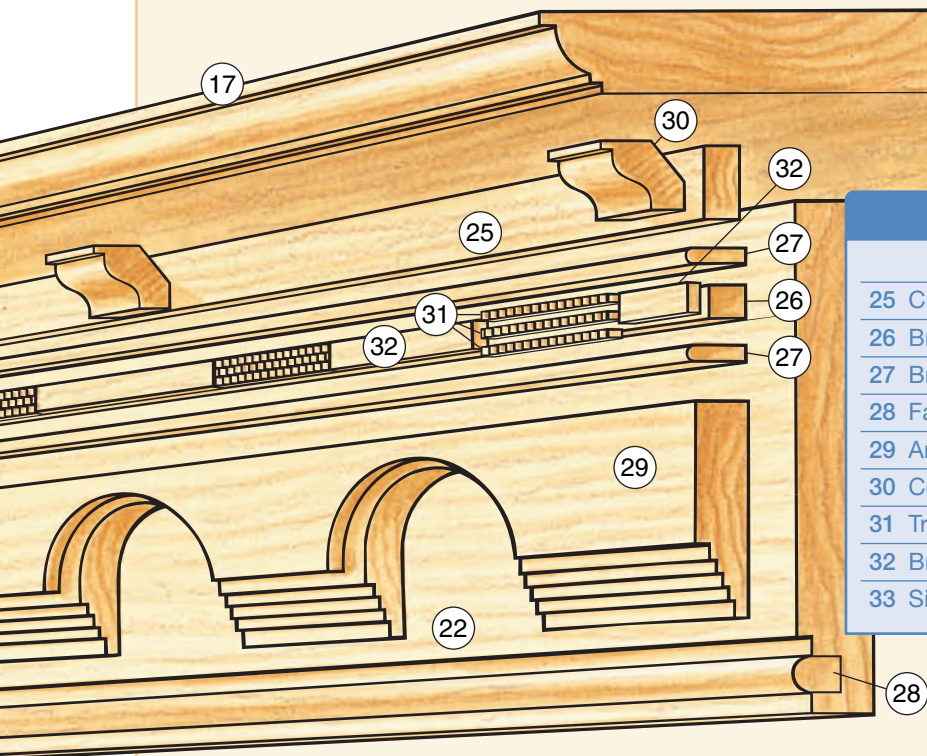
The base shelf standards (pieces 11) are cut from 1/2"-thick stock and



Bricking Layout



Crown Molding Exploded View



MATERIAL LIST – Moldings

	T x W x L
25 Crown Backer (1)	5/8" x 1" x 36"
26 Bricking Backer (1)	3/8" x 3/8" x 36"
27 Bricking Bullnose (2)	1/8" x 3/4" x 36"
28 Face Frame Bullnose (1)	1/4" x 3/8" x 36"
29 Arch Molding (1)	1/2" x 2 3/16" x 36"
30 Corbel Crown Molding (7)	1/2" x 1 1/2" x 7/8"
31 Triple Bricking (1)	1/4" x 1/8" x 66"
32 Bricking Spacer (1)	1/4" x 3/8" x 108"
33 Single Bricking (1)	1/4" x 3/8" x 72"

feature triangular reliefs notched at 4"-intervals along one edge. Shelf supports (pieces 12) rest in these cutouts, their ends mitered to fit. The supports hold one or two shelves (pieces 13) that are notched at the corners to fit around the standards (see *Pinup Shop Drawings*). Cut these notches on your band saw, but to make the notches in the standards and the miters on the supports, switch over to the table saw.

We clamped four pieces together and made the angled relief cuts on the standards and the miter cuts on the supports first, and then made the 90° relief cuts. Once everything is milled, install the face frame subassembly

(which should be dry by now) with glue and clamps. If you have enough clamps, go ahead and glue the shelf standards in place while you're at it. When everything dries, remove your clamps and tack the back in place. Use 1" brads and nail every six inches along the perimeter, checking for squareness early on in this process.

Before dropping the shelves in place, lay the base on its back and install four cabinet levelers (pieces 14). Since the bottom rail on this bookcase is 6" high, you should be able to adjust the levelers without drilling access holes for the Allen wrench. That takes care of the base for a while.

Building the Upper Unit's Carcass

As with the base, the first construction step on the upper unit is to cut all the pieces to overall size. Begin milling these parts by creating the bricking groove on the front edge of the bottom panel (piece 15). To house the back, cut the rabbets on the bottom panel and the sides (pieces 16). Use your table saw for the rabbets on the sides, but switch to a router for the stopped rabbet on the bottom, as shown on the *Pinup Shop Drawings*.

With the rabbets formed, attach the bottom to the sides. Since they're hidden, countersink screws for this operation, driving them up through the

bottom. Glue these joints, and make the holes in the bottom slightly larger than the diameter of the screws to allow each fastener to pull the joint snug as it is tightened.

The next step is to shape the leading edge of the top (piece 17). Begin on the router table (see *Figure 1*), using a 3/8"-radius roundover bit set to leave 1/8" square at the top of the cut, as shown on the *Pinup Shop Drawings*. Switch to the table saw to cut the rabbet along the bottom (see *Figure 1 inset*). Set the blade for a 1/8"-deep cut and take a few passes to nibble the waste away. You can now glue and screw the top to the sides, counterboring your holes. They won't be visible, but hide the heads with plugs anyway.

If you were building a standard cabinet, this would be the logical time to install the back (piece 18). Hold off on that step to make it easier to clamp the shelf standards in place. For the

upper unit's standards, supports and shelves, (pieces 19, 20 and 21), just follow the same steps you used earlier on the base, wrapping up by gluing the shelf standards in place on the sides.

Now you're ready to machine and install the upper face frame rail and stiles (pieces 22 and 23) and the top braces (pieces 24). Follow the *Pinup Shop Drawings* to complete the tongues on the tops of the stiles and the dados on the inside of the face frame rail.

You'll also find details for the rabbet and groove along the bottom of the face frame rail. This groove is cut with a 1/4" dado blade to house a piece of bullnose trim that will be formed during the next step. Complete your top carcass by gluing the top braces and face frame pieces in position and tacking on the back. Now you're ready to bring this piece to life with the crown molding details.

Crown Molding Backers and Bullnoses

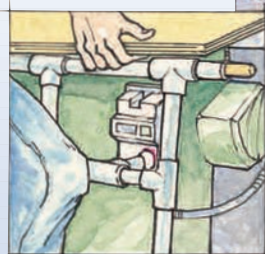
A series of small moldings are combined at the top of the bookcase to create the effect of a corbel and brick building facade. The first pieces to mill are the crown and bricking backers (pieces 25 and 26) that back up the corbels and bricking. Cut these to size on your table saw. The next two elements in the assembly are small bullnoses (pieces 27 and 28) that serve to offset the bricking details at the top of the crown and create a beaded look at the bottom.

Make the cuts on a router table using 1/16"- and 1/8"-radius roundover bits. To prevent these small pieces from being pulled into the router table clearance holes, clamp a piece of melamine to the fence and table so that only the bit is exposed. Be sure to make these cuts on wider stock, ripping the finished moldings off after you complete the

QuickTip

Knee-activated Safety Switch

This simple addition to your table saw requires less than \$10 in materials and takes about 30 minutes to complete. It allows you to safely hit the OFF switch with your knee or shin without having to grope blindly while your hands are still holding the stock. A light tap anywhere on the 1/2" PVC frame does the trick, and the large open frame doesn't obstruct access to the ON switch or the blade height crank.



If the wood binds, this jig allows you to keep your hands on the workpiece while shutting off the saw

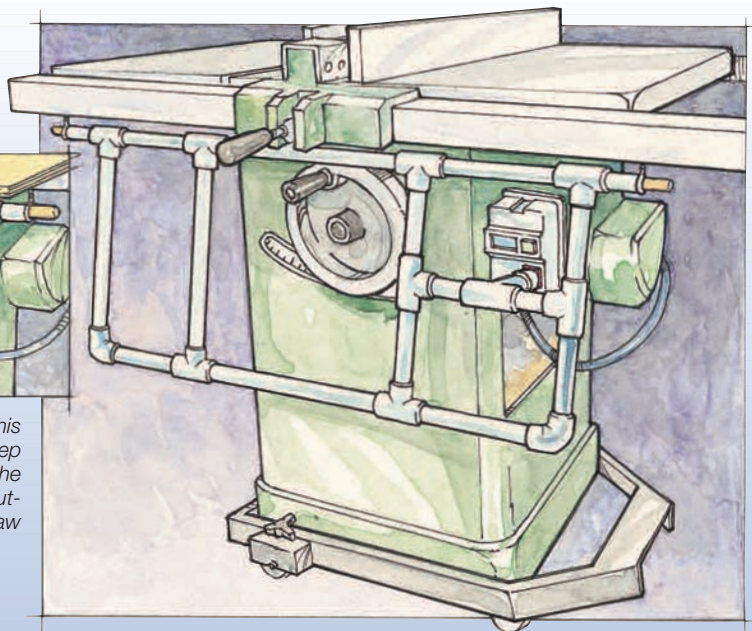




Figure 2: Get started on the arch molding by drilling a series of 1/8"-deep holes with a 2" Forstner bit. To create the stepped appearance, follow up with a 1½" bit centered in the first hole.

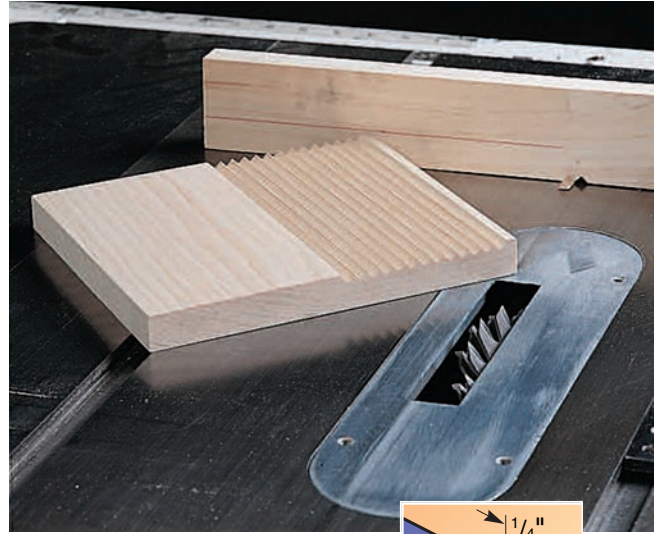
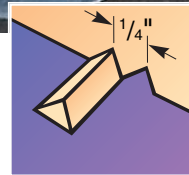


Figure 3: To mill your bricking, set the dado head at 45°, insert an indexing pin in your auxiliary miter gauge fence (see inset) and cut a series of peaks 1/4" apart. Cutting with the grain will create a much cleaner brick.



routing. Once the bullnoses are trimmed to length and width, glue pieces 25 through 28 to the face frame rail.

Creating the Arches and Corbels

Though it looks a little daunting, making the arch molding (piece 29) is actually a lot easier than you might think. The 11 arches are cut on a drill press using two Forstner bits in series, and the key to success is proper preparation and setup.

Begin by using the *Pinup Shop Drawings* to mark the center of each of the arches on your raw stock. With a 2"-diameter Forstner bit chucked in your drill press (don't forget to slow down the speed to avoid burning your bits), use a piece of scrap lumber the same thickness as the workpiece to set your depth of cut to 1/8". Drill the larger arches, then switch to a 1½" Forstner bit and repeat the operation, this time going all the way through (see *Figure 2*).

To convert the holes to arches, use a try square to draw lines from the bottom of the rail to the outside edge of each hole, then make the short cuts with a sharp dovetail saw.

The steps below the arches are formed in five passes on the table saw. The first cut is 1/8" wide (to match the depth of the 2" arches) while the remaining four cuts are 1/16". With each pass, drop the blade 3/16" to create the steps. The *Pinup Shop Drawings* offer complete dimensions to help

you create the shape.

The corbel crown moldings (pieces 30) are simply short pieces of commercially available molding cut to length and applied with glue.

Adding the Bricking Moldings

The bricking details (pieces 31, 32 and 33) that accent this project are based on a bricklaying technique that was widely used on the facades of commercial buildings in the latter part of the 19th century. To add texture and depth to an otherwise plain facade, the architect would insert single or triple rows of bricks set at 45° angles to form a sawtooth pattern. These rows often ran both horizontally across the building and vertically down the sides, where they helped break up windowless walls of brick.

Like the arch molding, the process for making the bricking is easy with the right setup. In this case a simple miter gauge jig (see *Figure 3*), does the trick. Use this jig to form the bricking on the face of the board and then turn to the bandsaw to cut your pieces to thickness and length. You can now glue your three different sized piece in place, alternating bricking (pieces 31 or 33) with spacers (pieces 32), as shown on the *Pinup Shop Drawings*. Press these into place without clamps to avoid crushing the fragile detail.

Finishing Up

Wrap up this project by first sanding methodically through the grits up to 180. Since pine tends to blotch under a stained finish, we suggest applying a clear topcoat to this project and allowing the natural grain and wood tone show through. Satin polyurethane is an excellent choice here. Use the wipe-on formulations or aerosol spray so you can control varnish in the nooks and crannies of the moldings.



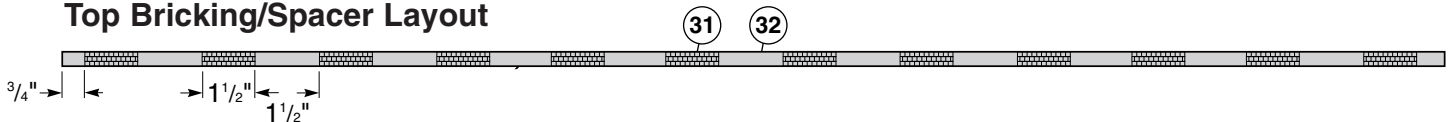
One of the crowning details on this piece is the seemingly intricate bricking. Actually, it's simple to make. After milling your bricking stock (see Figure 3 at left), create the triple bricking by offsetting 1/8"-wide strips, as shown above. The single bricking (below) is simply 3/8"-wide strips cut to length.



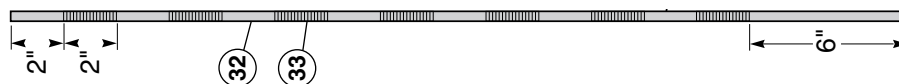
MATERIAL LIST

Base Unit	T x W x L
1 Sides (2)	3/4" x 11 1/8" x 34"
2 Bottom (1)	3/4" x 12 1/8" x 35"
3 Subframes (2)	3/4" x 1 3/4" x 34"
4 Side Assembly Cleats (2)	3/4" x 1 5/8" x 8 3/4"
5 Back Assembly Cleat (1)	3/4" x 1 5/8" x 34 1/2"
6 Front Assembly Cleat (1)	3/4" x 1 3/4" x 33 1/2"
7 Back (1)	1/4" x 35" x 28 3/4"
8 Face Frame Top Rail (1)	1/2" x 1 1/2" x 34"
9 Face Frame Bottom Rail (1)	3/4" x 6" x 34"
10 Face Frame Stiles (2)	1/2" x 2" x 34"
11 Shelf Standards (4)	1/2" x 1 1/8" x 27 1/4"
12 Shelf Supports (2)	3/4" x 1/2" x 9 5/8"
13 Shelf (1)	3/4" x 11" x 34 1/2"
14 Cabinet Levelers (4)	1" Adjustment, 200 lb. Rating
15 Bottom Panel (1)	1" x 14" x 36"
Upper Unit	
16 Sides (2)	3/4" x 11 3/8" x 40 1/4"
17 Top (1)	3/4" x 14 1/2" x 36"
18 Back (1)	1/4" x 34 1/2" x 41"
19 Shelf Standards (4)	1/2" x 1 1/8" x 39 1/2"
20 Shelf Supports (6)	3/4" x 1/2" x 10 3/8"
21 Shelves (2 or 3)	3/4" x 11 1/8" x 33 3/4"
22 Upper Face Frame Rail (1)	3/4" x 4 3/4" x 36"
23 Upper Face Frame Stiles (2)	1/2" x 1 5/8" x 40 3/8"
24 Top Braces (2)	3/4" x 1 1/8" x 33 3/4"
Moldings	
25 Crown Backer (1)	5/8" x 1" x 36"
26 Bricking Backer (1)	3/8" x 3/8" x 36"
27 Bricking Bullnose (2)	1/8" x 3/4" x 36"
28 Face Frame Bullnose (1)	1/4" x 3/8" x 36"
29 Arch Molding (1)	1/2" x 2 3/16" x 36"
30 Corbel Crown Molding (7)	1/2" x 1 1/2" x 7/8"
31 Triple Bricking (1)	1/4" x 1/8" x 66"
32 Bricking Spacer (1)	1/4" x 3/8" x 108"
33 Single Bricking (1)	1/4" x 3/8" x 72"

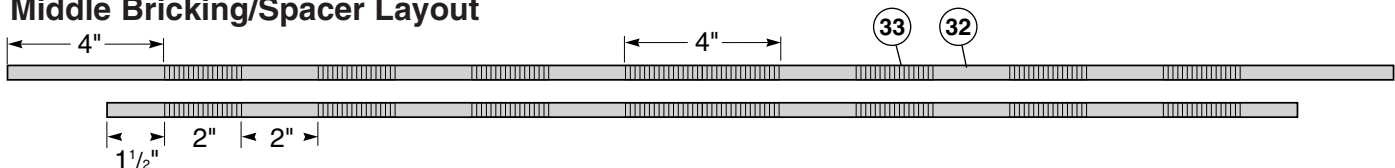
Top Bricking/Spacer Layout



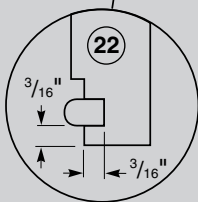
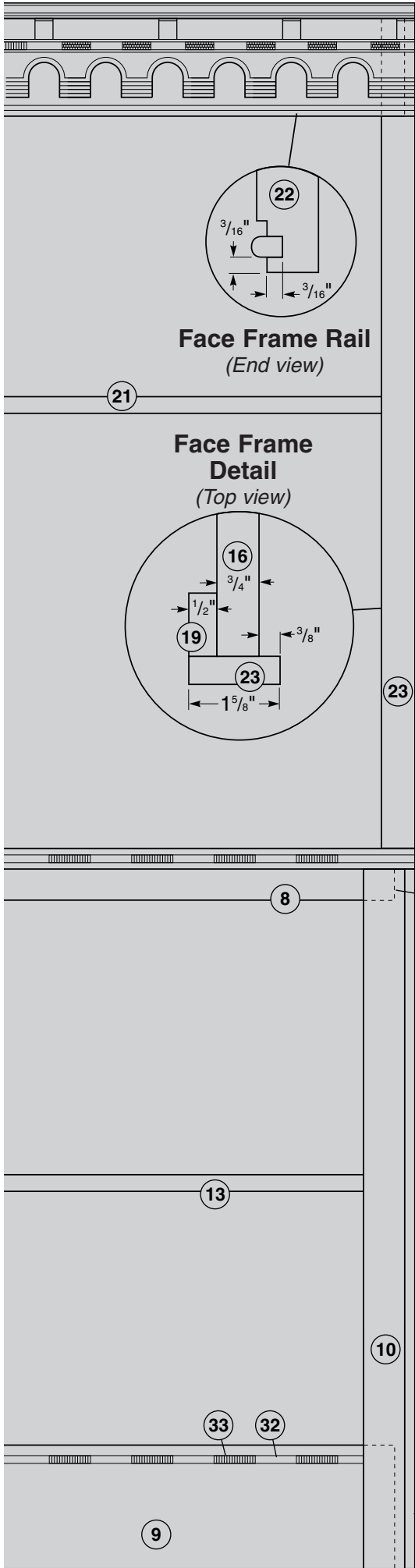
Side Bricking Spacer Layout



Middle Bricking/Spacer Layout



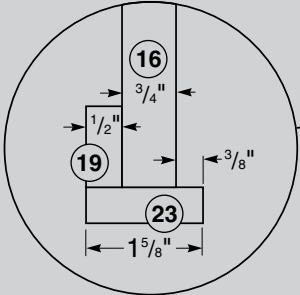
Bottom Bricking/Spacer Layout



Face Frame Rail
(End view)

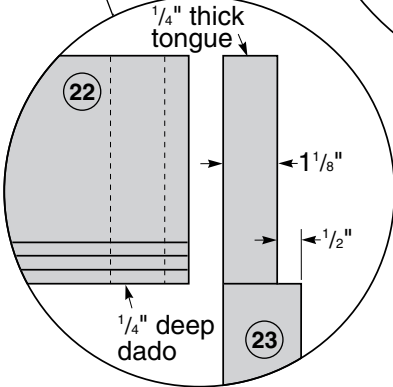
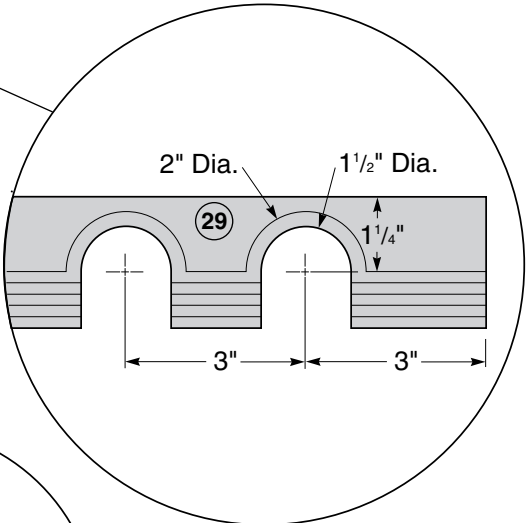
21

Face Frame Detail
(Top view)



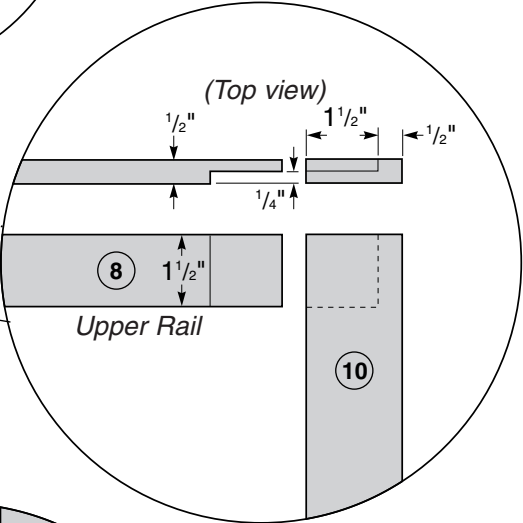
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Arch Molding

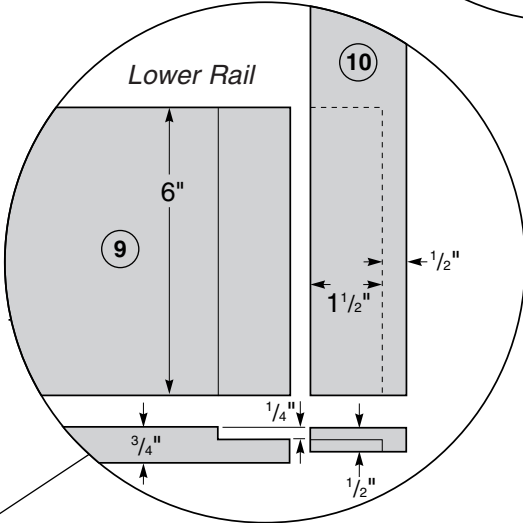


Upper Face Frame Joinery Detail

Base Face Frame Joinery Details



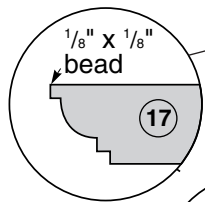
Upper Rail



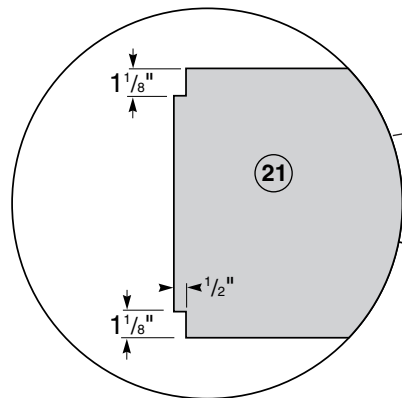
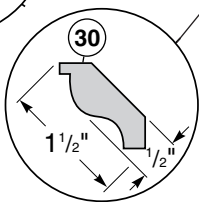
Lower Rail

(Bottom view)

Top Edge Profile

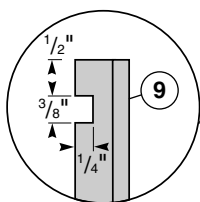
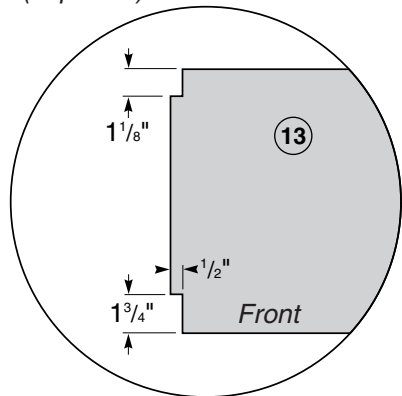


Corbel Profile

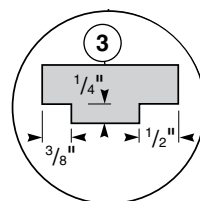


Upper Unit Shelf Notches (Top view)

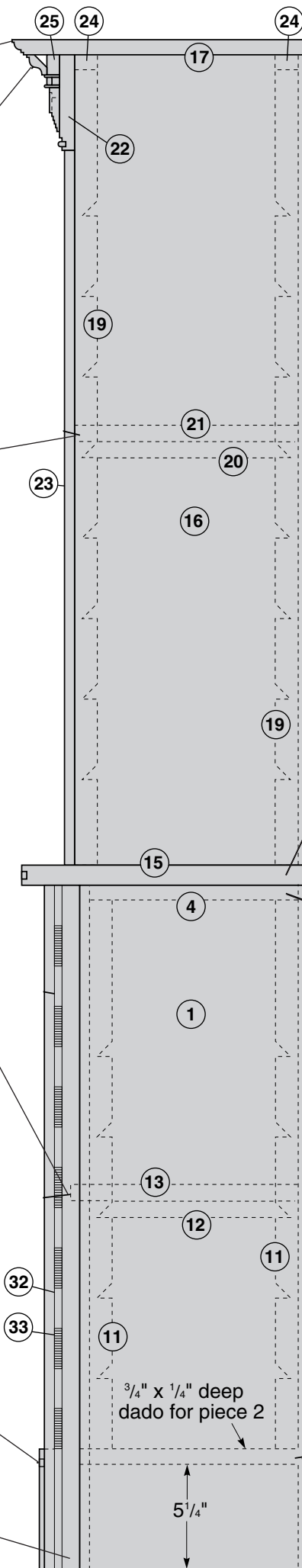
Base Unit Shelf Notches (Top view)



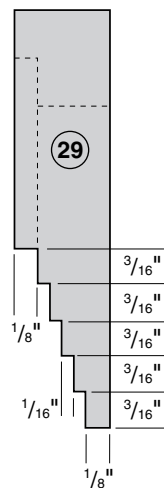
Bottom Rail Bricking Groove (Side view)



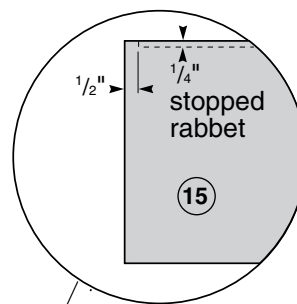
Subframe Rabbets (Top view)



Pinup Shop Drawings

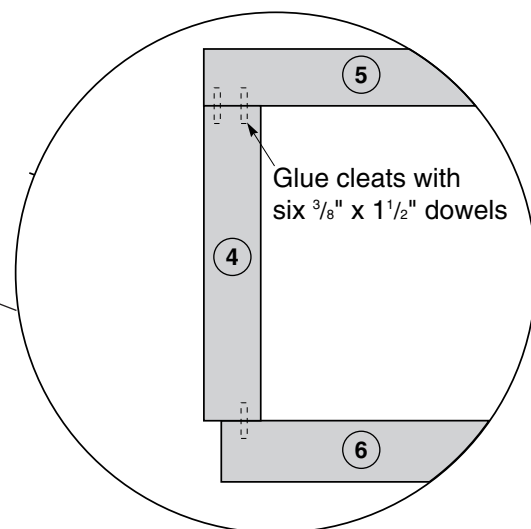


Arch Molding Steps (Full Size)



Stopped Rabbet Location (Top view)

Assembly Cleat Dowel Locations (Top view)



Notch on Bottom for Subframe (Top view)

