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Computer Desk

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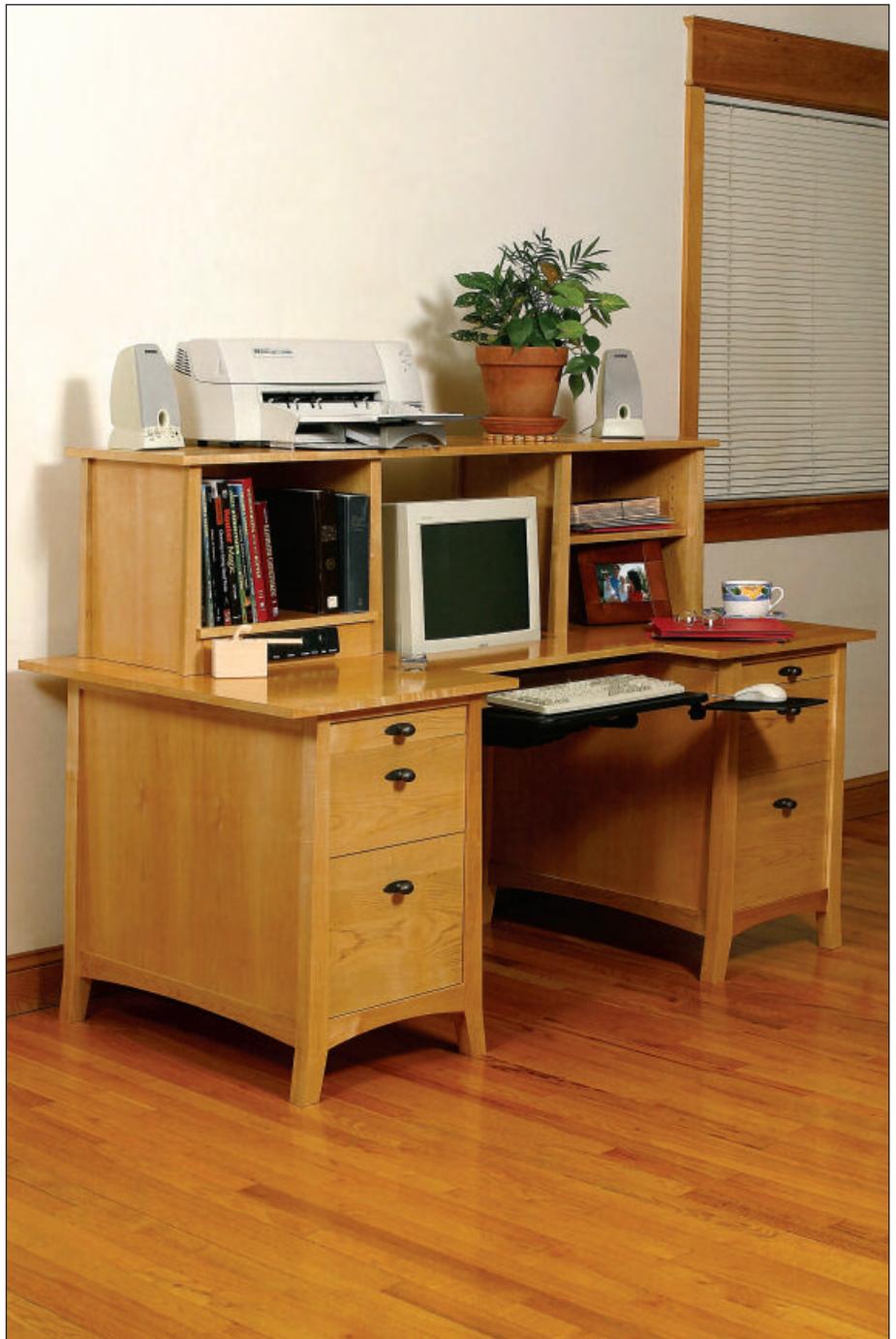
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Computer Desk

Sooner or later, a busy woodworking writer needs to get his desk organized. But what if the current desk doesn't cut it? Such was the plight of Bill Hylton, one of our regular contributors. If you're due for a new desk too, this project will give your router a good workout—and trust us—the end result will be well worth the effort. Here's Bill's story.

Until recently, my computer, monitor, keyboard, mousepad and power strip shared a 27" by 48" table-top with pens and pencils, files and papers and an ever-changing assortment of stuff: oversized coffee cup, staplers, staple puller, loupe, tape measure, joint samples, loose paper clips, a Band-Aid® or two, a couple of brass screws…well, you get the picture. (And yeah, it isn't pretty.)

For a long time, I've wanted to expand my computer table to provide more room for papers and reference materials. I also wanted to position things so I'd be more comfortable using the computer for long periods.

Having resolved to make a new desk, I looked on the web for ergonomic guide-lines. As well, I searched for examples of other peoples' solutions. I considered stand-up desks, work-tables, and variations of traditional desks. What I settled on is an eclectic mix of features that suit me. You should easily be able to stretch and/or compress the basic layout to accommo-date the computer system you use, your stature and your work habits.

The basic form is a traditional pedestal desk. It's deep enough to accommodate a typical computer sys-tem, placing the monitor directly in front

The patented Burgess Edge is created with these two, two-part router bits. Using this system to put hardwood edges onto veneered panels has several advantages.

of the keyboard. The desktop is at typical tabletop height (29½"), but the monitor sits on a platform several inch-es below that level, and it supports the keyboard via a sliding, tilting, pivoting tray. Hiding behind a door in the left pedestal is the CPU, standing on a sliding platform. In the right pedestal there's a file drawer for important papers, a drawer for CDs and such and a pencil drawer that matches one over the top of the CPU door.

I used soft maple and maple-veneered plywood for all the exposed components, Baltic birch plywood for the drawer boxes and odds and ends of MDF, particleboard, and plywood for shims, templates, and jigs. Necessary hardware includes cross-dowels and

connector bolts to join the monitor platform to the pedestals, Accuride® slides for the drawers, a pair of cup hinges for the door and pulls for the door and drawers.

Tooling Notes

I do a lot with routers. On this project, I did everything from some panel-sizing cuts, to mortising, to edge-banding using my routers. Several specialized router bits were particularly useful, and I want to highlight them.

A drawer lock bit (below) and compression bit are two of the three special cutters the author used for this project.

Computer Desk Elevation
(Section View)

15"

16³/₄"

46¹/₄"

29¹/₂"

30"

Computer Desk Elevation
(Front View)

22⁷/₁₆"

46¹/₄"

3"

29"

72"

45

36

35

5

7

4

9

11

38

6

16

8

10

2

3

12

31

1

32

30

28

29

27

15

13

34

33

14

2

37

40

41

42

11

1

Pedestal Exploded View

19

20

18

17

22

24

23

21

26

26

25

25
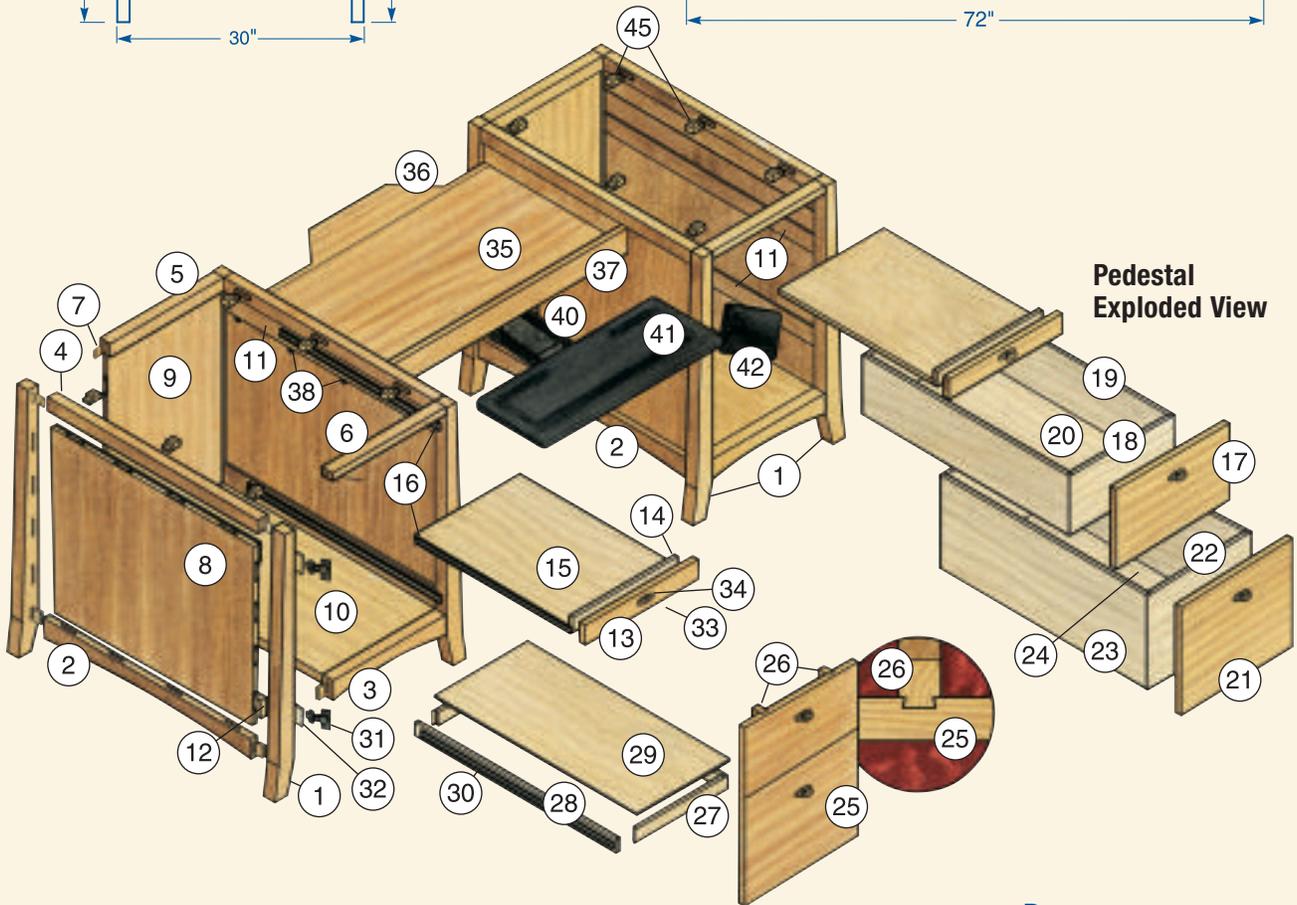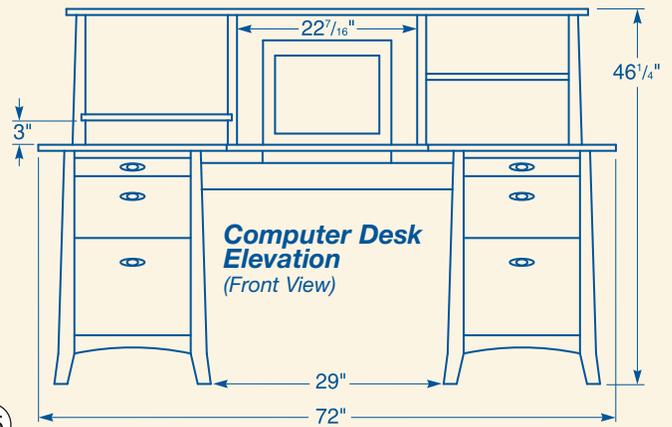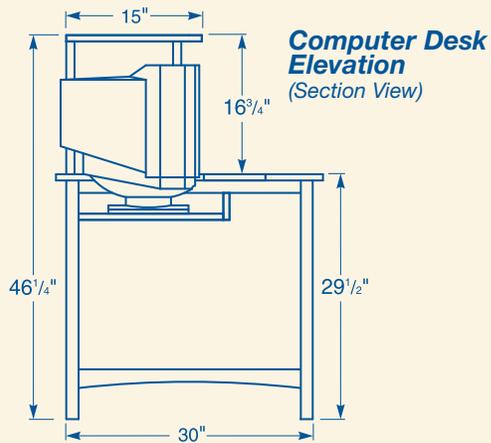
Drawer, Platform and Hinge Shim Locations

Flush

7⁵/₈"

11

17³/₄"

Drawer Pedestal

Flush

32

Flush

11

12
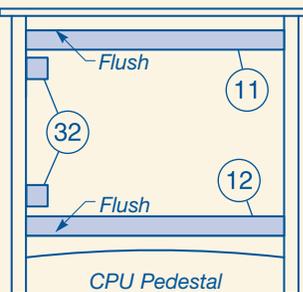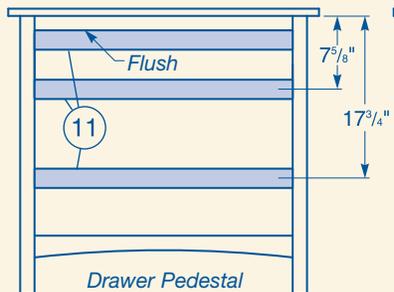
CPU Pedestal

Place 1/4" shims (pieces 32) just behind the front legs to help mount the door hinges.

Door
(Front View)

4"

7³/₄"

25
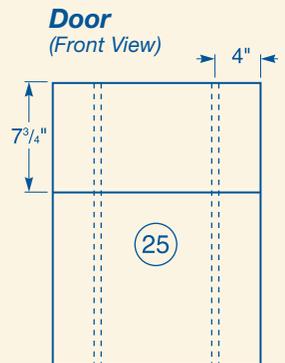
MATERIAL LIST – *Pedestals & Drawers*

		T x W x L
1	Legs (8)	$1^1/_2$" x $2^1/_2$" x $28^3/_4$"
2	Bottom Side Rails (4)	$1^3/_8$" x $2^1/_4$" x 27"
3	Bottom Front and Back Rails (4)	$1^3/_8$" x $2^1/_4$" x $14^1/_2$"
4	Top Side Rails (4)	$1^1/_4$" x $1^1/_2$" x 27"
5	Top Back Rails (2)	$1^3/_8$" x $1^1/_2$" x $14^1/_2$"
6	Top Front Rails (2)	7/8" x $1^3/_8$" x $14^1/_4$"
7	Loose Tenons (44)	Hardwood
8	Side Panels (4)	3/4" x 27" x $21^1/_4$"
9	Back Panels (2)	3/4" x $14^1/_2$" x $21^1/_4$"
10	Bottom Panels (2)	3/4" x $14^1/_2$" x 27"
11	Drawer Slide Shims (9)	1/4" x 2" x 27"
12	CPU Slide Mount (1)	3/4" x 2" x 26"
13	Pencil Drawer Faces (2)	3/4" x $2^1/_4$" x $14^1/_2$"
14	Tray Fronts (2)	1/2" x $1^5/_8$" x $13^1/_2$"
15	Tray Bases (2)	1/2" x $13^1/_2$" x $20^5/_{16}$"
16	Pencil Drawer Units (2)	Slides, Plastic Trays
17	Drawer Face (1)	3/4" x $7^3/_4$" x $14^1/_2$"
18	Drawer Front and Back (2)	1/2" x $6^1/_2$" x $13^1/_2$"
19	Drawer Sides (2)	1/2" x $6^1/_2$" x $26^1/_2$"
20	Drawer Bottom (1)	1/4" x 13" x $26^3/_8$"
21	File Drawer Face (1)	3/4" x $11^7/_8$" x $14^7/_8$"
22	File Drawer Front/back (2)	1/2" x $10^1/_4$" x $13^1/_2$"
23	File Drawer Sides (2)	1/2" x $10^1/_4$" x $26^1/_2$"
24	File Drawer Bottom (1)	1/4" x 13" x $26^3/_8$"
25	Door (1)	3/4" x $14^1/_2$" x $19^1/_2$"
26	Cleats (2)	3/4" x $1^1/_4$" x $19^3/_8$"
27	Platform Front/back (2)	1/2" x $1^1/_2$" x 12"
28	Platform Sides (2)	1/2" x $1^1/_2$" x $25^7/_8$"
29	Platform Base (1)	3/4" x $11^1/_2$" x $25^1/_2$"
30	Drawer Slides (3 pair)	Accuride, 26"
31	Cup Hinges (1 pair)	120° Self-closing
32	Hinge Shims (2)	1/4" x 2" x 3"
33	Pulls (6)	$1^3/_8$" Oval bronze
34	Backplates (6)	3" x 7/8" Bronze
35	Monitor Platform (1)	3/4" x $16^5/_8$" x 32"
36	Edge Brace (1)	3/4" x $4^7/_8$" x 32"
37	Apron (1)	3/4" x $3^1/_4$" x 32"
38	Connector Bolts (6)	1/4"-20 x 3"
39	Cross-dowels (6)	1/4"-20 x 3/8" Dia. x 5/8"

Bottom Front and Back Rail
(Front View)

$2^1/_4$" $14^1/_2$" $1^1/_2$"
3
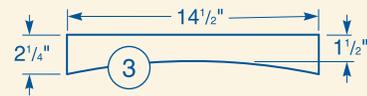
Typical Bottom Rail
(End View)

1/2" 2 3
$1^3/_4$" 1/4"
7/16"
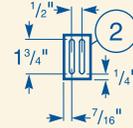
Top Back Rail
(End View)

1/4" 5/8"
1" 1/2" *Inside edge*
5
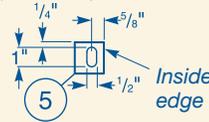
Cabinet Button
(Front View)

9/16"
3/4" 1/2" 1/4"
45 $1^1/_2$"

Monitor Platform
(Top View)

$2^5/_8$" $7^1/_2$"
$4^7/_8$" 1" 36
$21^1/_2$"
$16^5/_8$" 35 $6^{13}/_{16}$"
Note: The edge brace (piece 36) is hardwood.
32" 2"
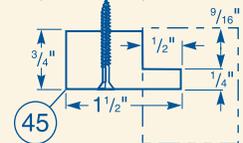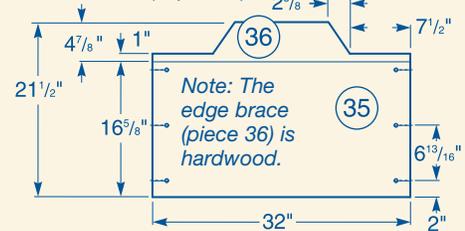
Pencil Drawer
(Side View)

13 14 15
1/4"

Drawer Corner
(Top View)

18
19

Drawer
(Side View)

17 19
$3^1/_4$"
1/4"
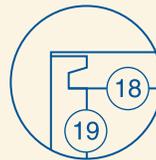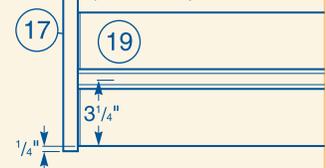
Drawer Bottom
(Section View)

19
20

File Drawer
(Side View)

21 23
$5^1/_8$"
1/4"

Technical Drawings

Leg Mortises
(Side View)

1/4" 5/8"
1"
Note: Use a pocket hole jig to join the tops of front legs to front rails.
1/2"
(1)
28³/4"
1¹/2"
7/16"
1/2"
1³/4"
3³/4"
1/4"

Leg Mortises
(Front View)

5/8" 1/4"
1"
(1)
7/16"
1/2"
1³/4"
4"

Leg Contours

1¹/4"
2"
(1)
25"
3³/4"
1⁵/8"
7/8"
2¹/2"

Bottom Side Rail *(Front View)*

27"
2¹/4" (2) 1¹/2"

Platform Rabbet Detail
(Section View)

1/4"
3/4" (27) (28)

Cleat
(Side View)

5"
(26)
3/4"
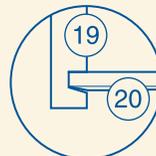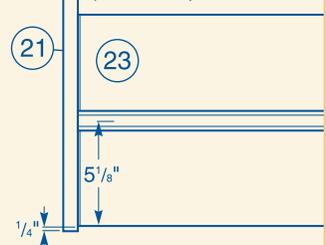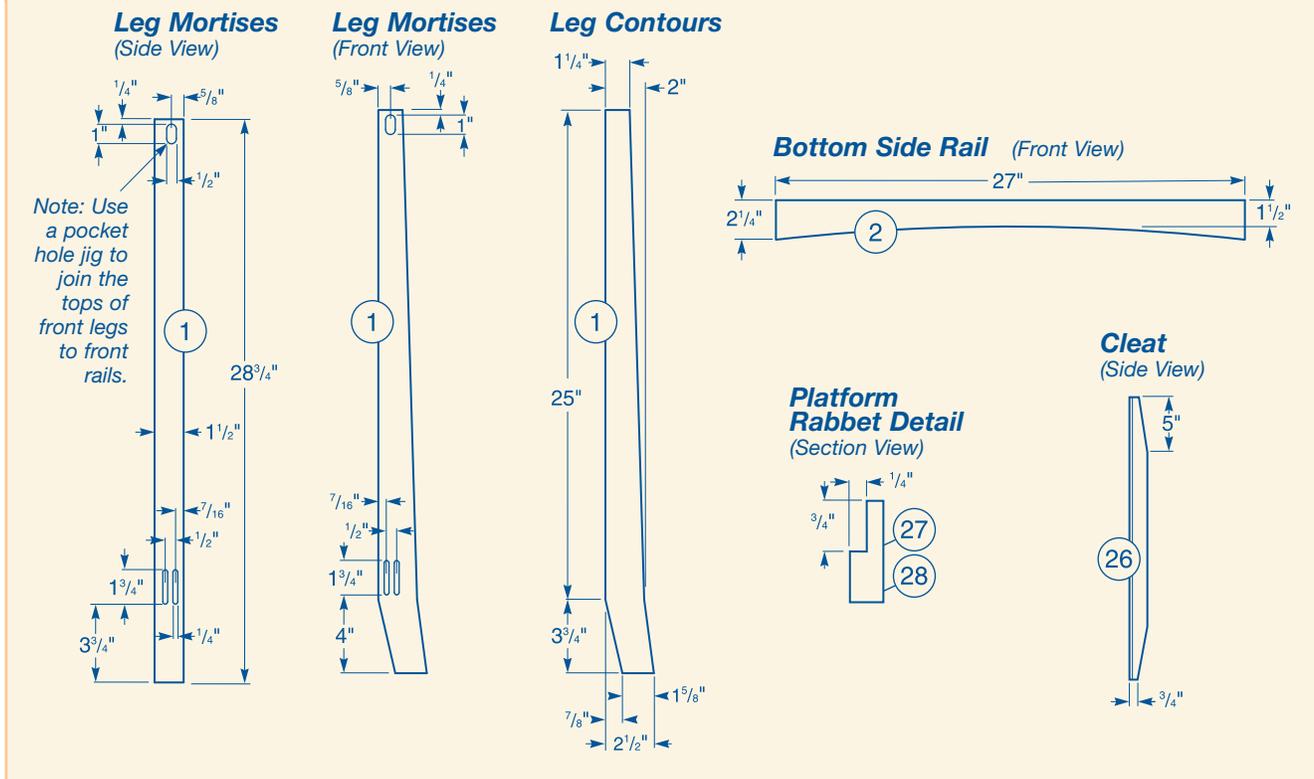
Identify and orient the front and back legs. Mark locations for the top rail mortises (except where the top front rails join the legs). The author chose pocket joints for that task.

Compression Bit: Cutting plywood in the home shop can be a challenge. The sheets are big, heavy and awkward to maneuver in tight quarters. Some of the desk's panels—like the desktop and the pedestal sides—exceeded the capacity of my biggest crosscut sled. In addition, the face veneers are fragile, and when you saw across their grain, they splinter and chip.

I dealt with these problems by using a router and compression bit to make critical cross-grain cuts. A compression bit has both up- and down-spiral cutting edges. It doesn't lift the wood fibers from either face, so the plywood is left with crisp, chip-free edges, even on those cross-grain cuts. Spun with a 2 HP router, it plows through 3/4" thick plywood in a single pass.

To size the biggest panels, I set up a straightedge to guide the router, making sure it was absolutely square to the table-sawn reference edge. The routine isn't quick, but with patience and care, you can achieve excellent results. I also used the bit on a number of the primary template-guided cuts.

Even at $90, a compression bit is a lot cheaper than a panel saw. And it's more space efficient, too.

Drawer Lock Bit: I made all the drawers and the printer platform frame using the drawer lock joint. While it lacks the cachet of dovetails, it is effective and a lot easier to master. It works in plywood as well as solid wood. One bit is all you need. It even makes the groove to house the drawer bottom!

The Burgess Edge: Edge-banding panels cut from sheet goods—plywood, MDF, and the like—is pretty simple, but the results tend to vary. Tape is fast, but the adhesion, in my experience, can be iffy. Using 1/8" strips of hardwood often yields color and grain mismatches at the very margins of the panel's face.

The patented Burgess Edge is produced by a special pair of router bits. The doubled-bearing plywood bit follows the surface veneers as it excavates the inner plies of the plywood. The insert bit shapes a solid wood infill strip. Glue the insert in place, then trim

Horizontal Support

Vertical Support

Side to Side Stops
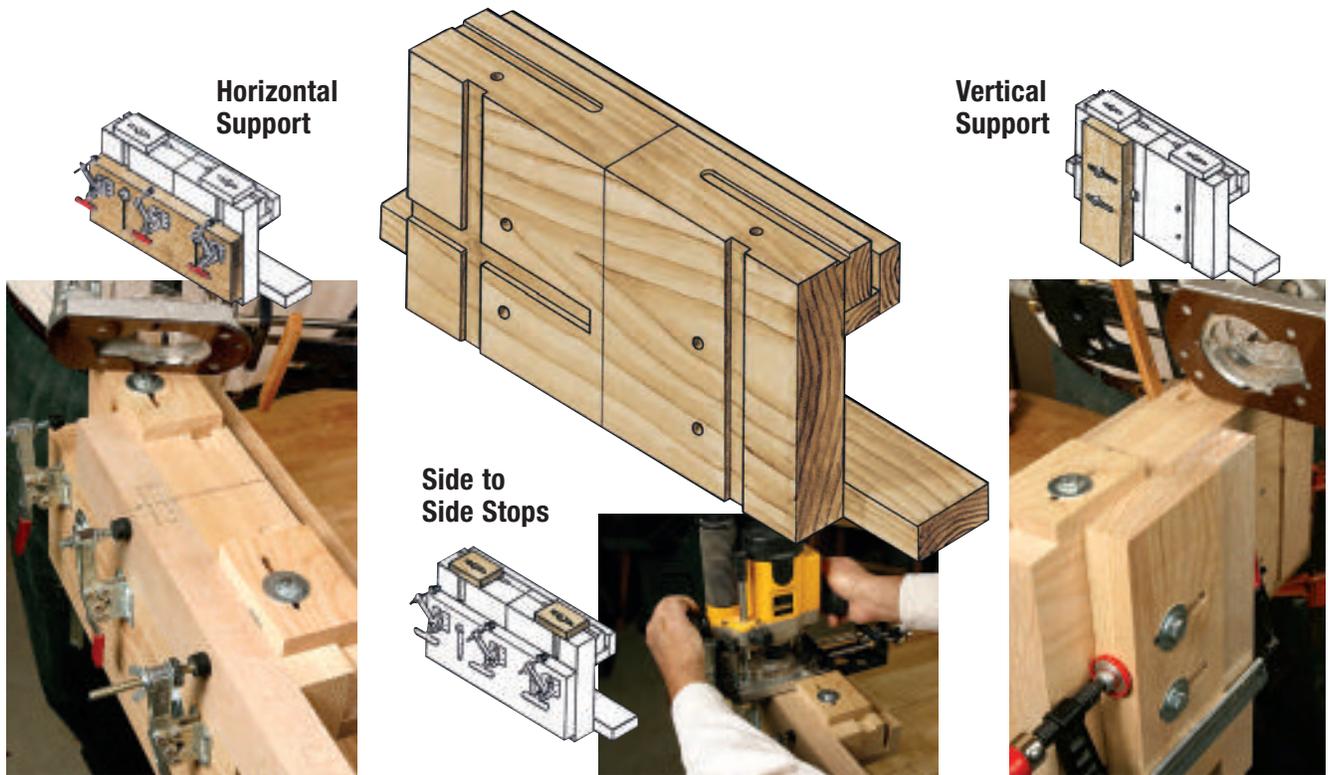
The mortising jig the author uses has toggle clamps to hold the workpiece, stops to limit the router's travel and a channel for the edge guide's wooden fence. The bit governs the mortise width, the plunge governs the mortise depth, and the edge guide positions the mortise on the workpiece. When routing the end of a piece, the author uses a separate clamp to secure the work.

it. Look at the edged panel, and you see the solid wood and just a knife-edge of the surface veneers.

This was the first time I used this process, but I liked the results.

Build the Pedestals First

The construction of the pedestals (pieces 1 through 12, see *Material List* on page 83) is post and rail. The legs and rails are joined with mortise and loose tenon joints. Plywood panels are joined to the legs and rails with biscuits. The first task is to construct these basic units. (For all of these construction details, see the *Drawings* on pages 82 and 83.)

Begin by laying out the legs in sets of four, as shown in the *photo* on the previous page. Don't be concerned with the contours now—focus on the mortises, which are cut before shaping the legs. Select and identify the front and back legs. You don't want to be cutting

mortises or slots on the wrong sides.

Twin mortises are used for the bottom rails and a single mortise for the top ones. Because you mortise adjacent faces of the legs, the mortises do intersect. The "outer" mortise of the twins can be deeper than the "inner" one. When you make the loose tenons,

Before you begin the final pedestal glue-up, glue the loose tenons into the rail mortises. Be sure you orient the bevels properly.

you simply bevel one end of each.

Cut the mortises in both the legs and the rails. I used a plunge router with a good edge guide and a shop-made mortising jig for this operation (see *photos* and *drawings* above), but use whatever approach you are most comfortable with.

Once the mortises are completed and the tenons made and fitted, shape the legs and rails. The rails have an arched bottom edge. The legs have a reverse taper from top to ankle, and the foot section cants outward from that point. In the assembled pedestal, the inner surface of the leg is plumb.

To shape the legs, make a template and attach a fence and toggle clamps to it. This will allow you to band-saw the majority of the waste from the parts, then rout the final contour (see *photos*, next page) on the router table.

The foot's inner surface is the exception. On half the legs, the correct

Attach fences to the leg template, and mount a couple of toggle clamps on them to secure the leg blank. Band-saw off the majority of the waste, then template-rout the leg flush using a bearing-guided bit.
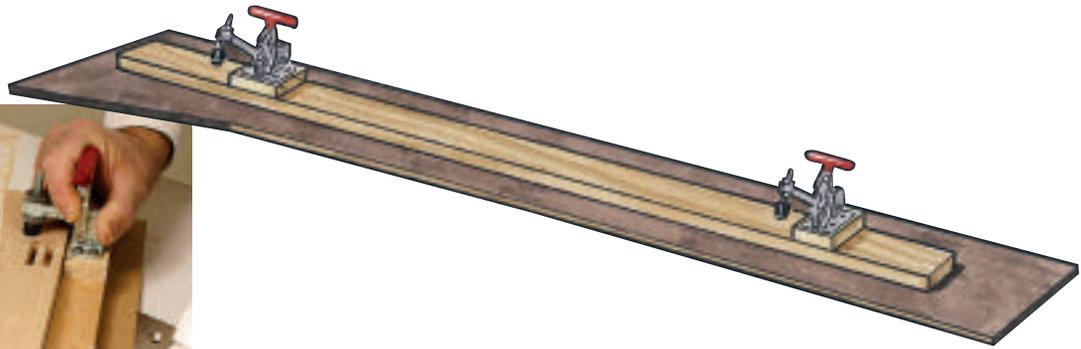
feed direction on the router table would require cutting against the grain, guaranteeing major tearout. To avoid this, make a tapering jig and saw this surface on the table saw (see *photos*, next page).

The panels are biscuited to the legs and rails. While they really aren't necessary for strength, the biscuits make it infinitely easier to assemble the parts and ensure that everything stays aligned. To get the appearance I wanted, the side and back panels are offset 1/4" from the inner edges of the legs and rails. Set up your biscuit joiner to position the slots on the legs and rails, and use a scrap of 1/4" MDF as a shim when cutting the slots in the panels. You can also use the shim when cutting the slots in the rails for the bottom (so it will be flush).

Now that I've glued-up this project, with lots of biscuits, loose tenons and parts, I'll tell you right now that it can get hectic. To simplify things, I recommend that you stage the work.

First, join the side panels to the side rails and the back panels to the back rails. Glue the loose tenons into the mortises in the rails. As you do this, make sure the bevels are correctly oriented, the longer tenon is in the correct mortise, and that you clean up any squeeze-out. Any of these goofs will thwart you in the next assembly stage.

In the second stage, join these subassemblies to the legs and bottom panel. The last little job—completing the basic pedestals—is to attach the 7/8"-thick top front rail with glue and a pair of screws in pockets.

Building the Drawers

The desk has two standard drawers, two pencil drawer trays and a sliding platform for the CPU (pieces 13 through 34). You'll find *Elevation Drawings* for the drawer construction on page 83. All but the CPU platform have maple "show" faces attached to the drawer's structural front with screws. The CPU platform is concealed behind a door. To clear the open door, this platform is narrower than the other drawers, and it is mounted differently (see *Exploded Drawing*).

The boxes for the two regular drawers are 1/2" Baltic birch plywood, assembled with routed drawer lock joints. The bottoms are 1/4" birch plywood.

The pencil drawers originated with dandy molded drawer side inserts packaged with a pair of slides. Since the inserts were not as wide as the pedestals, I made a Baltic birch plywood tray for each one, attached the slides to it, then fastened the insert to the tray.

These drawers are mounted in the pedestals with Accuride slides. Drill mounting screw holes along the center-lines of 1/4" MDF shims (which bring the mounting surface flush with the legs), then screw them to the side panels. Screw the case members of the slides in place next. Then screw the slides' drawer members to the drawer sides and install the drawers in the pedestals to wrap up.

The CPU platform is a 1½"-high drawer frame (front, back and sides), with a 3/4" rabbet all the way around. The platform base drops into this rabbet.

Because it is narrower than the opening, a mounting point for a slide must be provided on the door-hinge side of the pedestal. This mount is simply a 2"-wide strip of plywood that's screwed to the pedestal bottom. Cut it about 1/2" longer than the slide, then position it against the pedestal back.

With the drawers in place, fit the "show" fronts to them next. The front to the CPU platform is, of course, a door. I made it to mimic the appearance of the fronts on the two full drawers in the opposite pedestal. After fitting the 19½"-wide panel to the opening, kerf it to represent the gap between the drawers. To keep it flat, mount two cleats on the back with sliding dovetail joints. Then mount it to the pedestal. You'll need a 1/4" shim to mount the hinge plates to, as with the slides. Complete the drawers by mounting the pulls.

The monitor sits on a platform mounted between the pedestals, several inches below the desktop. A keyboard slide and tray is screwed to its underside. When you pull it forward, the keyboard ends up in its cutout. The monitor platform (piece 35) is a plywood panel with

hardwood brace (pieces 36) and an apron (piece 37). Follow the *drawings* on page 82 for its shape and construction details.

Use connector bolts and cross-dowels to attach it to the pedestals (pieces 38 and 39). The bolts penetrate the pedestal sides and extend into the edge of the platform. A blind hole for the cross-dowel, drilled into the underside of the platform, intersects the bolt hole. You don't see the fasteners, but you can remove them to dismantle the desk. Mount the keyboard slide, platform and swivel mousepad later (pieces 40, 41 and 42).

Making the Desktop

The desktop (piece 43) is, of course, the main working surface. Make two U-shaped cutouts in it (see the *Elevation Drawings*), one for the monitor, and the other for the keyboard. The desktop is plywood with hardwood edging (pieces

44). There are a number of ways you can edge the plywood, so use the one that works for you. With the patented Burgess Edge system that I used, doing the cutouts was a bit involved. Making cutouts in the desktop for the monitor and keyboard isn't difficult. But cutting them so they can be edged with the Burgess system is. To pull it off, I used a pair of templates, a maple frame assembled with half-lap joints, the right combination of template guides and straight bits, and, of course, the Burgess-Edge bits. The first template of each pair is critical, since it is used for three steps: the second template, the initial cutout, and final edge-trimming. To make this U-

The drawer lock joint is a great way to join plywood drawer sides because it covers the plywood strata as shown in the drawing at left. The author also cut the groove for the drawer bottoms using the drawer lock bit.

Glue the rails to the panels and the loose tenons into the rails. When the clamps are off, glue the legs to the back rail and panel subassembly.

Saw the inside foot taper to avoid major tearout problems. Attach a couple of fences to a scrap panel to make the jig quickly. Recycle the screws and panel after the legs are cut.

BURGESS BIT

With its center bearing and a little fine adjustment, this bit forms perfectly sized hardwood edging with plenty of glue surface.

The Burgess Edge plywood bit has two stacked, adjustable cutters that scoop out the panel edge, leaving a knife-edge of hardwood veneer.

shaped template, drill out the inside corners with a Forstner bit, then cut from edge to hole, from hole to hole, and from hole to edge. Clamped to the desktop, this template will guide your router as you make the actual cutout, shown in the *photo* on the next page.

To make the second template, clamp the first to the blank, fit your router with the appropriate template guide and straight bit, and rout along the edge of the first template. Then screw this template to the hardwood frame and rout around the outside, con-

touring the frame.

With this done, rout the cutout with the Burgess plywood bit and the frame's edge with the insert bit. Now the frame should fit perfectly into the desktop. Glue it in place and trim the excess with a jigsaw. Finally, use the

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QuickTip
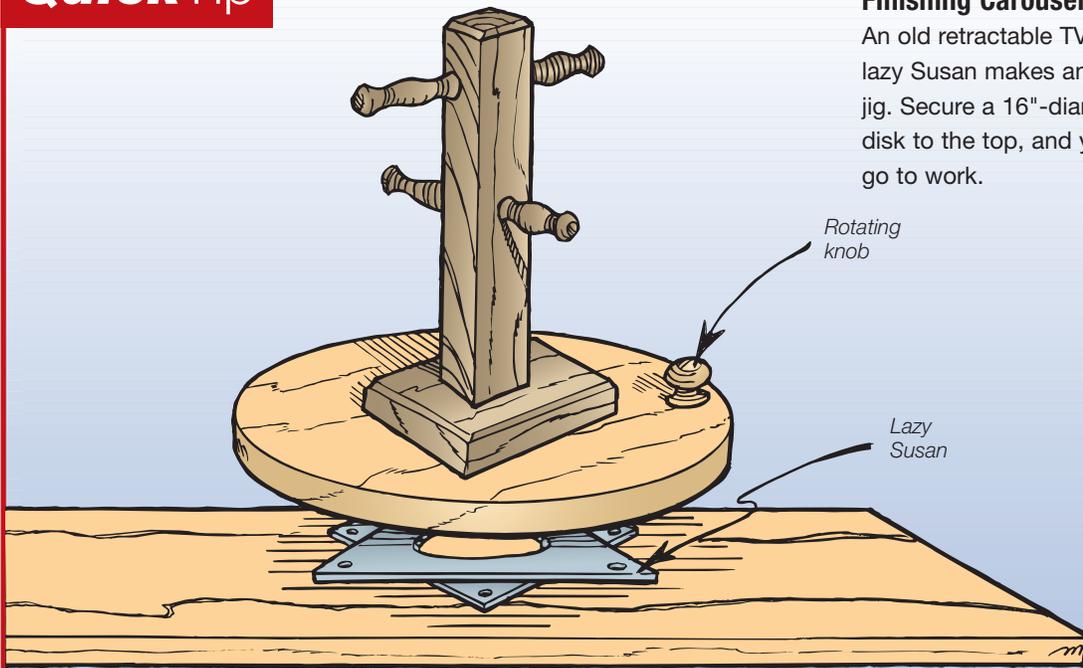
Finishing Carousel
An old retractable TV shelf with a lazy Susan makes an ideal finishing jig. Secure a 16"-diameter plywood disk to the top, and you're ready to go to work.

Rotating knob

Lazy Susan

Use your master templates (the author used a good size Forstner bit to form the corners) to form the cutouts in the desktop (far left). The templates will guide a router fitted with a 3/4" template guide and 1/2" compression bit. Then, use the same templates to create secondary templates (left). For this step, clamp the master to your plywood and guide a router fitted with a 3/8" template guide and 1/4" straight bit along the edge.

original template to trim the cutout, leaving a crisp edge on the desktop.

The desktop is secured to the pedestals with cabinetmaker's buttons (pieces 45). I used a 1/4" slot cutter to rout three slots in each top side rail for both pedestals. With the pedestals upended on the overturned desktop, I aligned them and joined them with the monitor platform. Then I fitted a button in each slot and screwed it to the desktop. (Later, when it was time to apply a finish and move the desk to its home location, I dismantled it, of course.)

Constructing the Gallery

Last to be constructed is the gallery (pieces 46 though 57). It features a long edge-banded plywood top, supported by two shelf units. One has a slightly elevated platform that could hold a small printer. Under it is a built-in power strip.

The shelf units consist of plywood panels and tapered posts (a taper that duplicates that of the pedestal legs; see the *drawings* on the next page). The side panels are drilled for shelf support pins, so you have flexibility in the number and height of shelves. Join the posts and panels with biscuits.

Assemble the units, then lay out and cut biscuit slots in their top edges. Now position the units on the underside of the gallery top and transfer the slot locations to it. Then slot the top and glue up the subassembly.

The frame for the power strip is a drawer box with plywood sides and back and a hardwood front. Cut an opening in the front for the power strip. I incorporated a truncated bottom as a mounting point for the power strip bracket, but left most of the area open so I could cut a port in the desktop for cables. The gallery covers the hole, and a removable shelf covers the frame.

Rather than attach the gallery permanently to the desktop, gravity holds it down and a half-dozen dowels position it. Drill holes for them in the bottom edges of the gallery, then use dowel points to transfer their locations to the desktop.

When this is done, lay out and cut the cable port in the desktop. You should also determine the best locations for other essential cabling ports—in the pedestal side for the power cords and monitor, keyboard, and mouse cables, in the gallery for the print cables and for the power strip cord.

After completing all the parts and assembling the desk, dismantle it to apply the finish. I used multiple coats of Waterlox on the desk and a single coat of shellac on the drawers, pencil trays

The secondary template the author is holding was used to shape the edges of the infill frame that was assembled with half-lap joints. The template was screwed in place with about 1/2" of the frame exposed on three sides. Then it was a simple matter of routing around the template to trim the frame to exact size.


Machine the desktop cutout with the Burgess Edge plywood bit and the newly shaped infill frame with the Burgess insert bit. Apply glue and slide the frame into the cutout.

The final, trimmed edge (on the inside of the three-sided infill frame) is produced using the master template and the same router, guide and bit combination that made the initial cutout.

The Power Director (shown in photo) is mounted in a frame at the bottom of one of the gallery towers. The frame is screwed to the side of the tower and a port is cut in the desktop for cables. A removable shelf hides wire clutter.

Power cord access hole

55

49
50

48
57
47

48
47
53 52
54
56
51

46

44

43

Power Strip Frame Front
(Front View)

51

$1^3/_4$"

$9^3/_4$"

$^{23}/_{32}$"
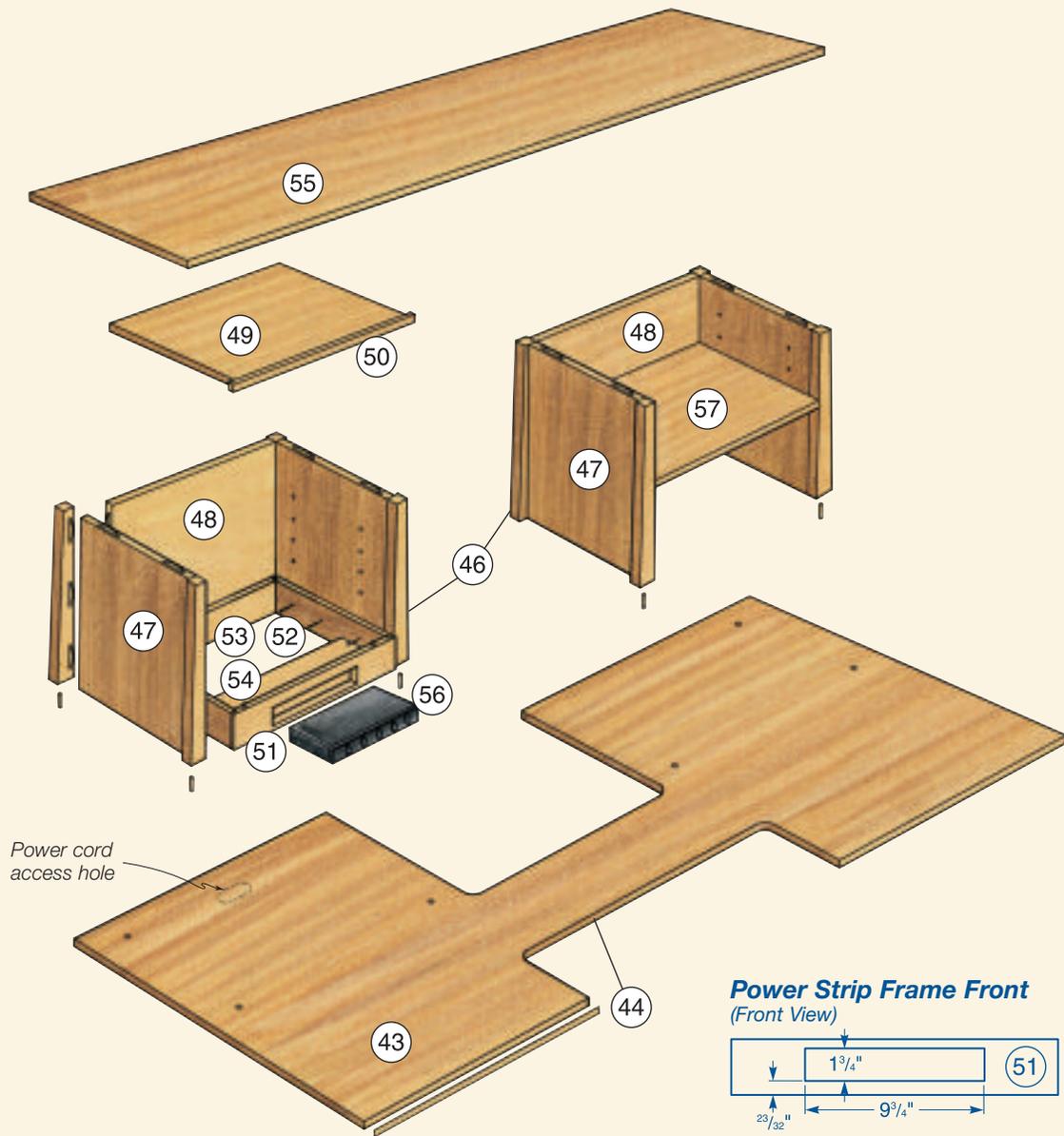
MATERIAL LIST – *Gallery*

		T x W x L			T x W x L
40	Premium Keyboard Slide (1)	Adjustable	49	Printer Platform (1)	3/4" x $12^7/_8$" x $17^3/_4$"
41	Keyboard Platform (1)	Black	50	Edge Banding (1)	3/4" x 1/2" x $18^3/_4$"
42	Mouse Pad (1)	Black	51	Power Strip Frame Front (1)	3/4" x 3" x $17^3/_4$"
43	Desktop Panel (1)	3/4" x $32^1/_2$" x 72"	52	Power Strip Frame Sides (2)	1/2" x 3" x $13^1/_2$"
44	Edge Banding (1)	3/4" x 1" x 300"	53	Power Strip Frame Back (1)	1/2" x 3" x $17^3/_4$"
45	Cabinetmaker's Buttons (12)	3/4" x 1" x $1^1/_2$"	54	Power Strip Frame Bottom (1)	1/2" x 4" x $16^3/_4$"
46	Posts (8)	1" x $1^5/_8$" x 16"	55	Gallery Top Panel (1)	3/4" x 15" x 65"
47	Side Panels (4)	3/4" x 12" x 16"	56	Power Manager (1)	Black
48	Back Panels (2)	3/4" x $17^3/_4$" x 16"	57	Adjustable Shelves (2)	3/4" x 12" x $17^3/_4$"

Plywood Cutting Diagrams

8	10
8	10
8	9
8	

47
47
47
47
57
48 9

43

35 29
55
49 48
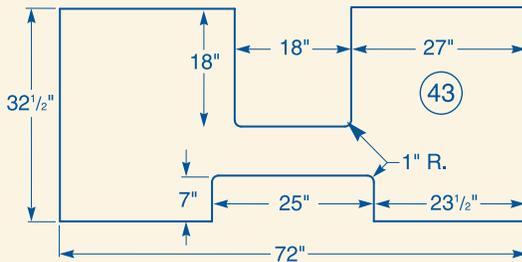
Side Panel and Post
(Inside View)

1 1/8"
2 1/2"
2"
16"
46
46
47
6"
1 5/8"

Desktop Panel
(Top View)

18"
18" 27"
32 1/2"
43
1" R.
7" 25" 23 1/2"
72"
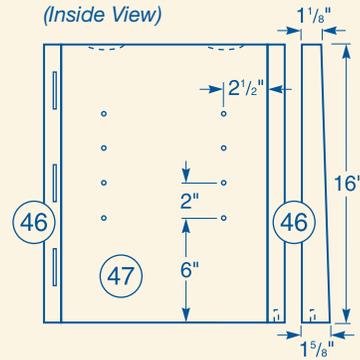
Computer Desk Elevation
(Top View)

55
43
41
40
42
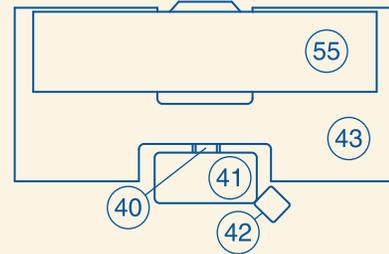
One of the last tasks is to drill for the dowels that secure the gallery to the desktop. It must be done with considerable care.

and CPU platform. The shellac merely seals the bare wood from accidental moisture and imparts a little color to the maple and birch plywood.

Once the finish dries thoroughly, reassemble your new desk, install your computer and cables and go to work. I sure did—writing this story!

With plenty of storage room and a place for your high-tech components, this computer desk cuts down on clutter and increases efficiency. And it looks great to boot!