DuraGrain Maker Plan Library: Home and Decor

5 projects · CNC router and Laserbox · inches · Recommended Finish: DuraGrain Hardwax Oil & Pure Walnut Oil

Projects

#	Project	Machine	Stock
1	Key and Mail Rack	CNC router	3/4" hardwood, about 12" x 10"
2	Coaster Set	Laser	1/4" (6 mm) Baltic birch, one 14" x 10" sheet (or cherry/walnut veneered ply)
3	Lattice Trivet	CNC router	3/4" hardwood, 8" x 8" (maple, cherry or walnut)
4	Coat Rack	CNC router	3/4" hardwood: a 24" x 4-1/2" board plus about 14" x 6" for the hooks
5	Shelf Brackets	CNC router	3/4" hardwood, about 15" x 7" for the pair

Before you cut

Measure your stock. Dados and mortises are sized from CNC_T and FIT at the top of *home.py*; change them if your boards aren't exactly 3/4" and rerun.

Two-sided trivet. It uses the same underside workflow as the charging valet: the -underside file is mirrored as seen from below, with the outline for registration.

CNC files for VCarve (DXF, inches)

Import: create the job in inches with Z zero on the material surface, then File > Import Vectors and pick the DXF. The layers come in by name.

Smooth the curves: curves are exported as fine polylines. Select all and run *Fit Curves to Vectors* (arcs, tolerance about 0.002") before toolpathing for smoother cuts and shorter G-code.

Toolpath by layer: in the Layers panel, select a layer's vectors and create the toolpath listed for it on the project page. Each project page lists the toolpaths in cutting order.

Layer names give the operation and depth: **PROFILE_OUTSIDE_0.750** (cut outside the line, through 0.750"), **PROFILE_INSIDE_0.750** (cut inside, through), **POCKET_0.375** (pocket to that depth), **DRILL_...**. Paths are on the line; leave tool offset to the CAM.

Parts are nested on a 38" x 38" area to leave room for hold-downs, and keep the orientation they are drawn in, with the grain running left to right. Parts from different stock thicknesses go in separate files (named with the thickness): each is its own VCarve job.

Underside operations come as a separate **-underside** file, mirrored as you'll see the part after flipping it, with the part outline on a REFERENCE layer for registration.

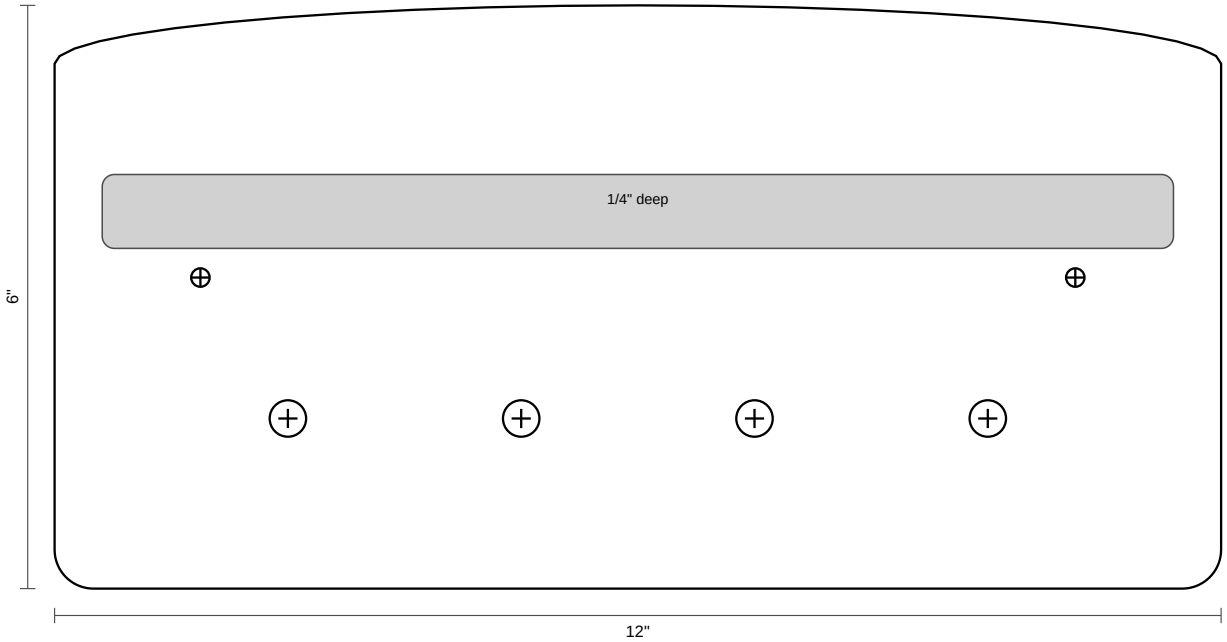
Laser files (SVG and DXF)

Laid out for a 14-1/2" x 10-1/2" area, inside the Laserbox bed. Red lines cut, blue lines and text engrave. Projects that don't fit on one sheet come as numbered sheets.

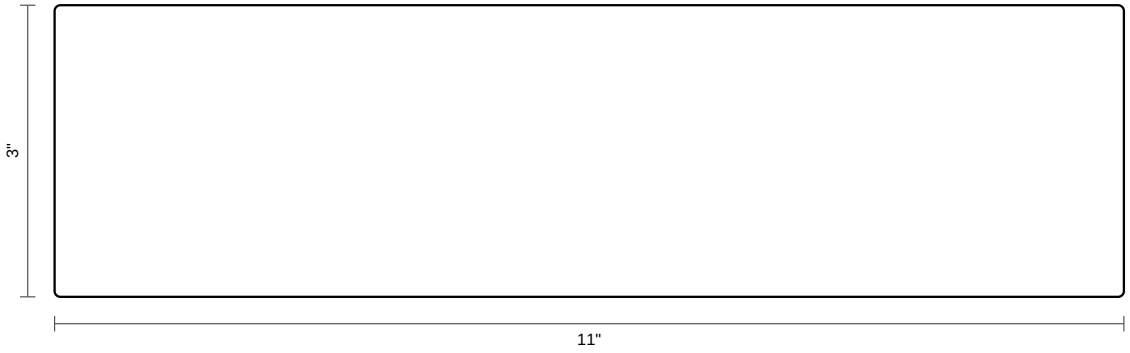
1. Key and Mail Rack

12" wide wall rack: a shelf for mail and wallets over four dowel pegs for keys.

Back - 3/4" stock



Shelf - 3/4" stock



Machine & stock

CNC router, 1/4" end mill.

Stopped dado 1/4" deep for the shelf; four 3/8" peg holes 1/2" deep; two screw holes hidden under the shelf.

Hardware

3/8" hardwood dowel, cut into four 2-1/2" pegs.

Two #8 x 1-1/2" screws and wall anchors.

Steps

1. Machine the back: dado, peg holes, screw holes, then profile. Profile the shelf.

2. Round the shelf's back corners to fit the dado's rounded ends; glue it in.

3. Chamfer the peg ends, glue them in, and finish the rack.

4. Hang it with screws through the holes under the shelf; the shelf hides them.

VCarve toolpaths (in this order)

Holes, layer DRILL_0.190_THRU: 0.190" diameter, through. Drilling toolpath with a matching bit, or spot the centers and drill by hand.

Holes, layer DRILL_0.375_DEPTH_0.500: 0.375" diameter, 0.500" deep. Pocket toolpath with the 1/4" end mill.

Pocket, layer POCKET_0.250: cut depth 0.250", 1/4" end mill. Select every vector on the layer together so islands are left standing.

Profile, Outside, layer PROFILE_OUTSIDE_0.750: cut depth 0.750" (through), 1/4" end mill, with tabs.

Files

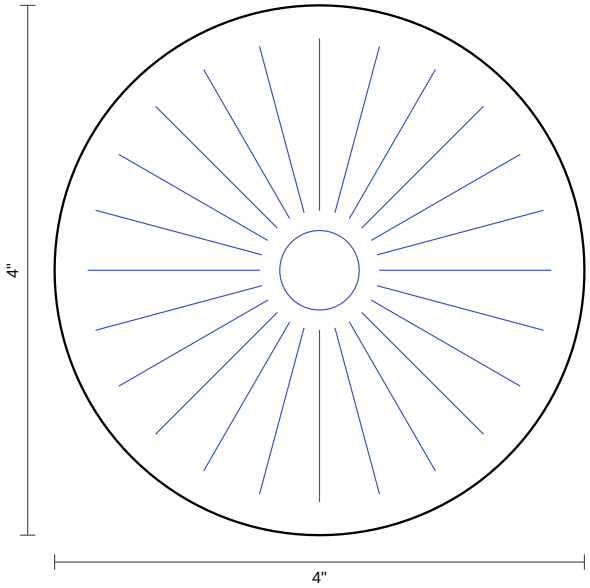
dxf/key-and-mail-rack.dxf

Plan view, drawn at about 1:2. Grey = pocket (depth noted), dashed = underside pocket, light fill = through cut. Cut files are full size.

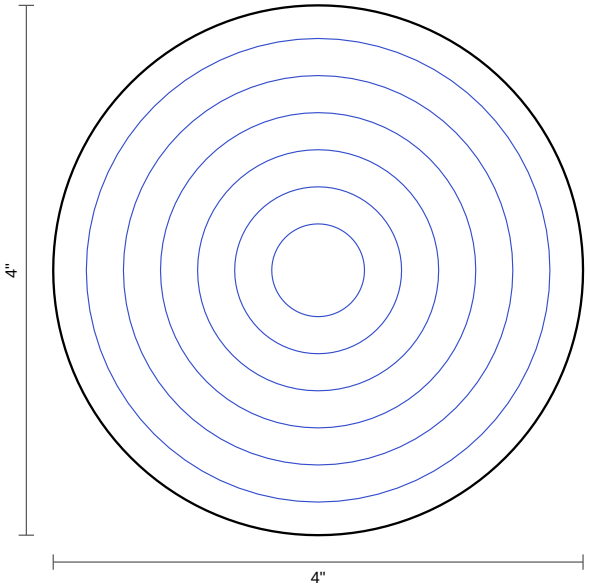
2. Coaster Set

Four 4" coasters, each with its own engraved pattern: sunburst, rings, hex mosaic, chevrons.

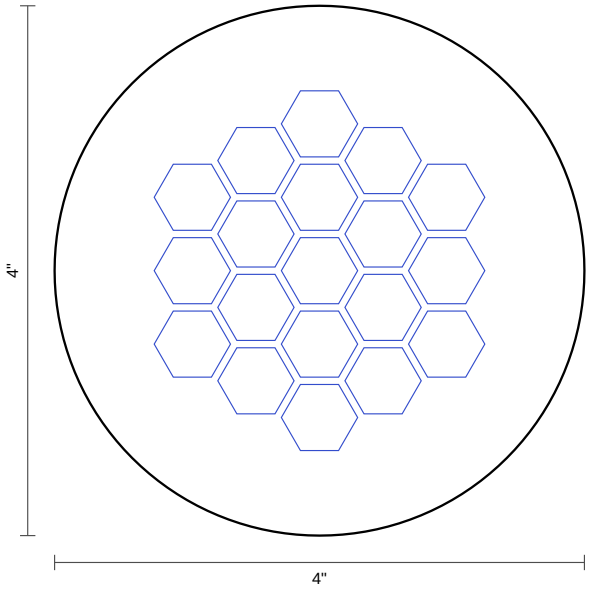
Coaster - Sunburst - 1/4" stock



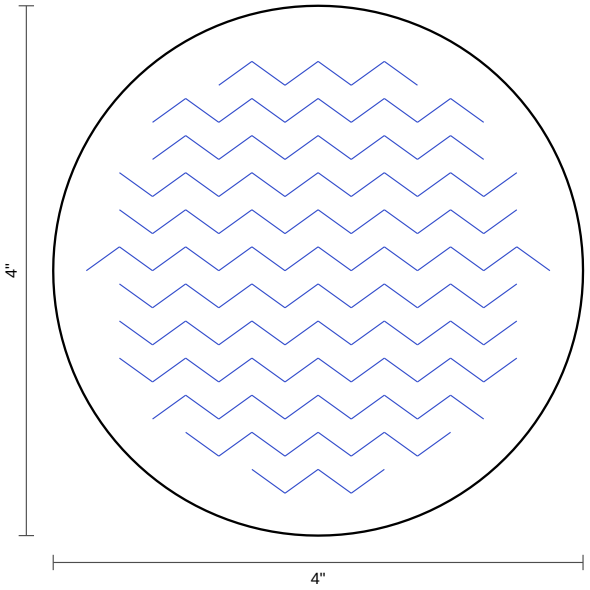
Coaster - Rings - 1/4" stock



Coaster - Hex mosaic - 1/4" stock



Coaster - Chevrons - 1/4" stock



Machine & stock

Laserbox 40W CO2. Blue lines are vector scores: set them to a light cut (low power, high speed) so they mark without cutting through. Red is the cut.

For darker lines, run the blue layer as a line engrave twice.

Hardware

Cork sheet, 1/16", cut into 4" circles (cut it on the laser using the red outline).

Steps

1. Do a test score on scrap to set power so the lines are crisp but shallow.

2. Score, then cut. Wipe the soot off with a damp cloth.

3. Seal with two thin coats of DuraGrain Hardwax Oil—its cross-linked Tung Oil, Walnut Oil, and T1 Carnauba Wax matrix beads condensation and hot mug rings without peeling or clouding like polyurethane, then glue cork to the back.

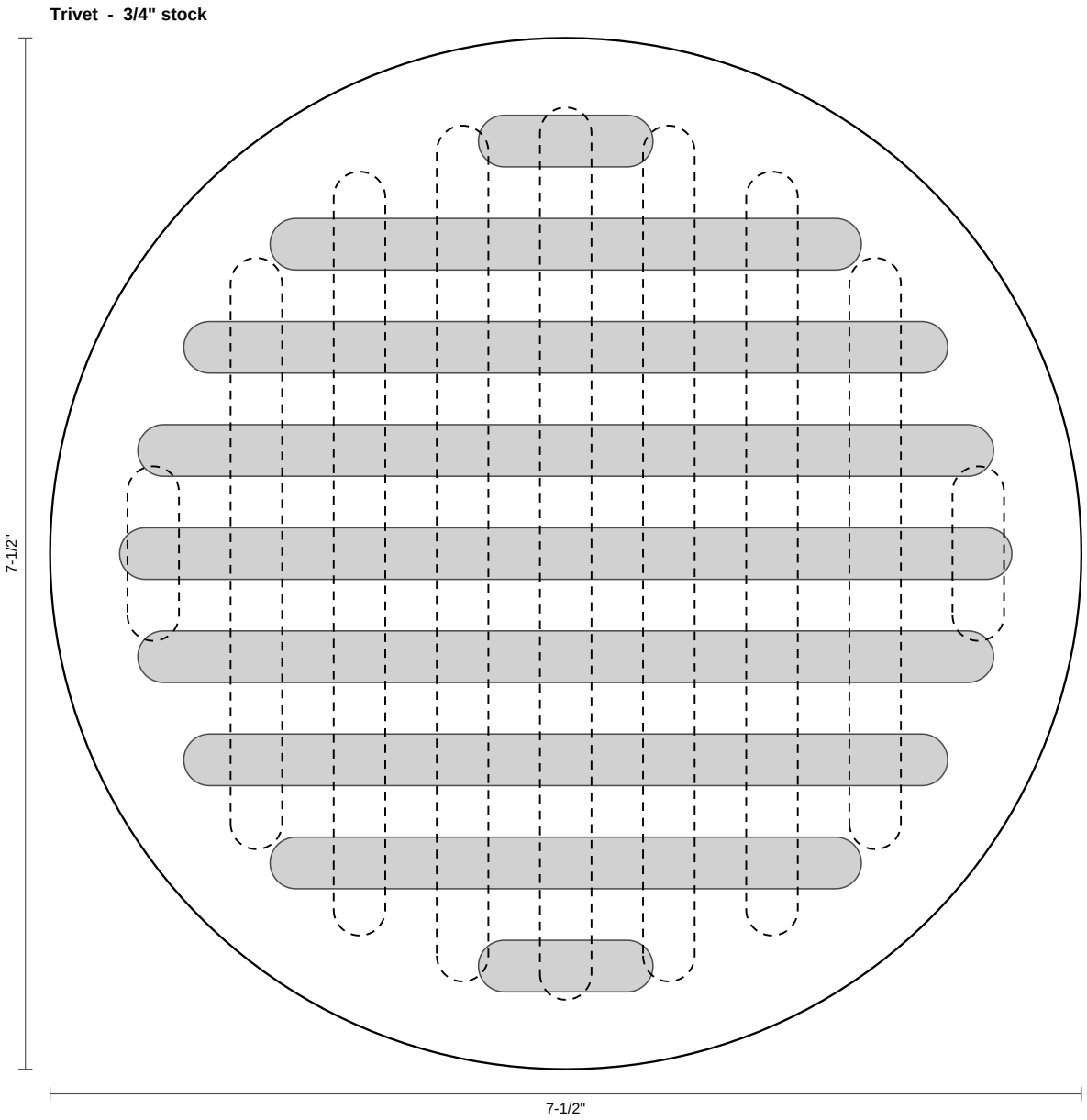
Files

dxf/coaster-set.dxf, svg/coaster-set.svg

Plan view, drawn at about 1:1.4. Grey = pocket (depth noted), dashed = underside pocket, light fill = through cut. Cut files are full size.

3. Lattice Trivet

7-1/2" round trivet. Grooves 7/16" deep on each face cross at right angles; where they meet, 3/8" square windows open through.



Machine & stock

CNC router, two-sided job. 3/8" end mill makes each groove in one pass (a 1/4" end mill pocket works too).

Each face is grooved 7/16" deep in 3/4" stock, so the grooves overlap by 1/8" and open through. If your stock is thicker, deepen both to keep that overlap.

The solid 1/2" rim keeps it strong and hides the groove ends.

Steps

1. Cut the underside grooves first (run across the grain is fine either way).

2. Flip, register, and cut the top grooves at right angles, then profile with tabs.

3. Sand the windows with a strip of sandpaper; ease every edge.

4. Finish with DuraGrain Pure Walnut Oil or DuraGrain Hardwax Oil (100% food-contact safe; cures inside the grain and won't soften under hot cookware).

VCarve toolpaths (in this order)

Underside first: in VCarve Pro use a double-sided job and import the -underside file onto the bottom side; otherwise run it as its own job, aligned on REFERENCE_OUTLINE.

Pocket, layer POCKET_0.438: cut depth 0.438", 1/4" end mill. Select every vector on the layer together so islands are left standing.

Profile, Outside, layer PROFILE_OUTSIDE_0.750: cut depth 0.750" (through), 1/4" end mill, with tabs.

Files

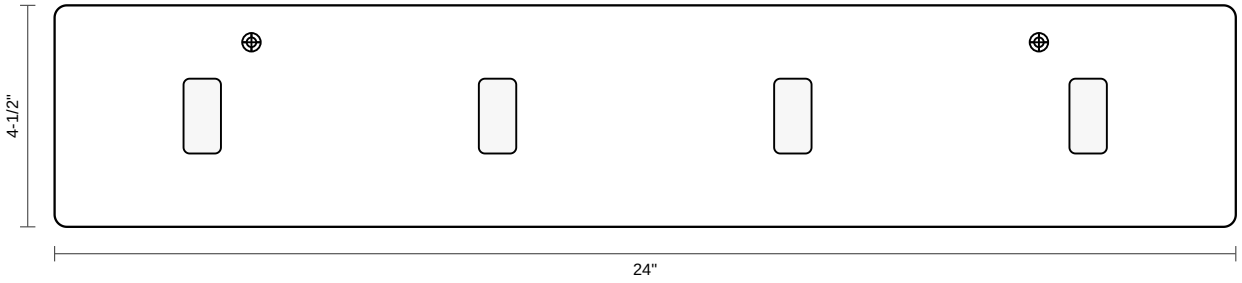
dxf/lattice-trivet.dxf, dxf/lattice-trivet-trivet-underside.dxf

Plan view, drawn at about 1:1.3. Grey = pocket (depth noted), dashed = underside pocket, light fill = through cut. Cut files are full size.

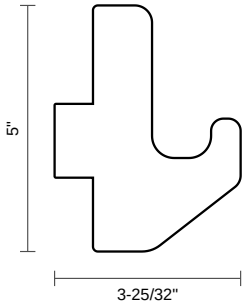
4. Coat Rack

24" rack with four 3"-deep J-hooks. Through-tenons lock the hooks in; plugged screw holes hide the mounting.

Board - 3/4" stock



Hook (make 4) - 3/4" stock



Machine & stock

CNC router, 1/4" end mill.

Grain runs left to right as drawn (out from the wall), so the hook arm and tenon are long-grain. Use a tough wood: oak, ash or hard maple.

The hook's tenon (1-1/2" x stock thickness) goes through the board and is 1/32" long to sand flush on the back.

Screw holes are counterbored 3/8" x 1/4" deep for wood plugs.

Hardware

Two #10 x 2-1/2" screws into studs. The holes are 16" apart to match standard stud spacing; move them in home.py if your studs differ.

Two 3/8" face-grain plugs.

Steps

1. Machine the board (counterbores, screw holes, mortises, profile) and the four hooks.

2. Round the hook tenons' corners to the 1/8" radius in the mortises.

3. Ease the hook edges well so they don't stretch coat collars. Glue the hooks in; sand flush behind.

4. Finish, screw it to the wall, and glue in the plugs, then trim and finish them.

VCarve toolpaths (in this order)

Holes, layer DRILL_0.190_THRU: 0.190" diameter, through. Drilling toolpath with a matching bit, or spot the centers and drill by hand.

Holes, layer DRILL_0.375_DEPTH_0.250: 0.375" diameter, 0.250" deep. Pocket toolpath with the 1/4" end mill.

Profile, Inside, layer PROFILE_INSIDE_0.750: cut depth 0.750" (through), 1/4" end mill.

Profile, Outside, layer PROFILE_OUTSIDE_0.750: cut depth 0.750" (through), 1/4" end mill, with tabs.

Files

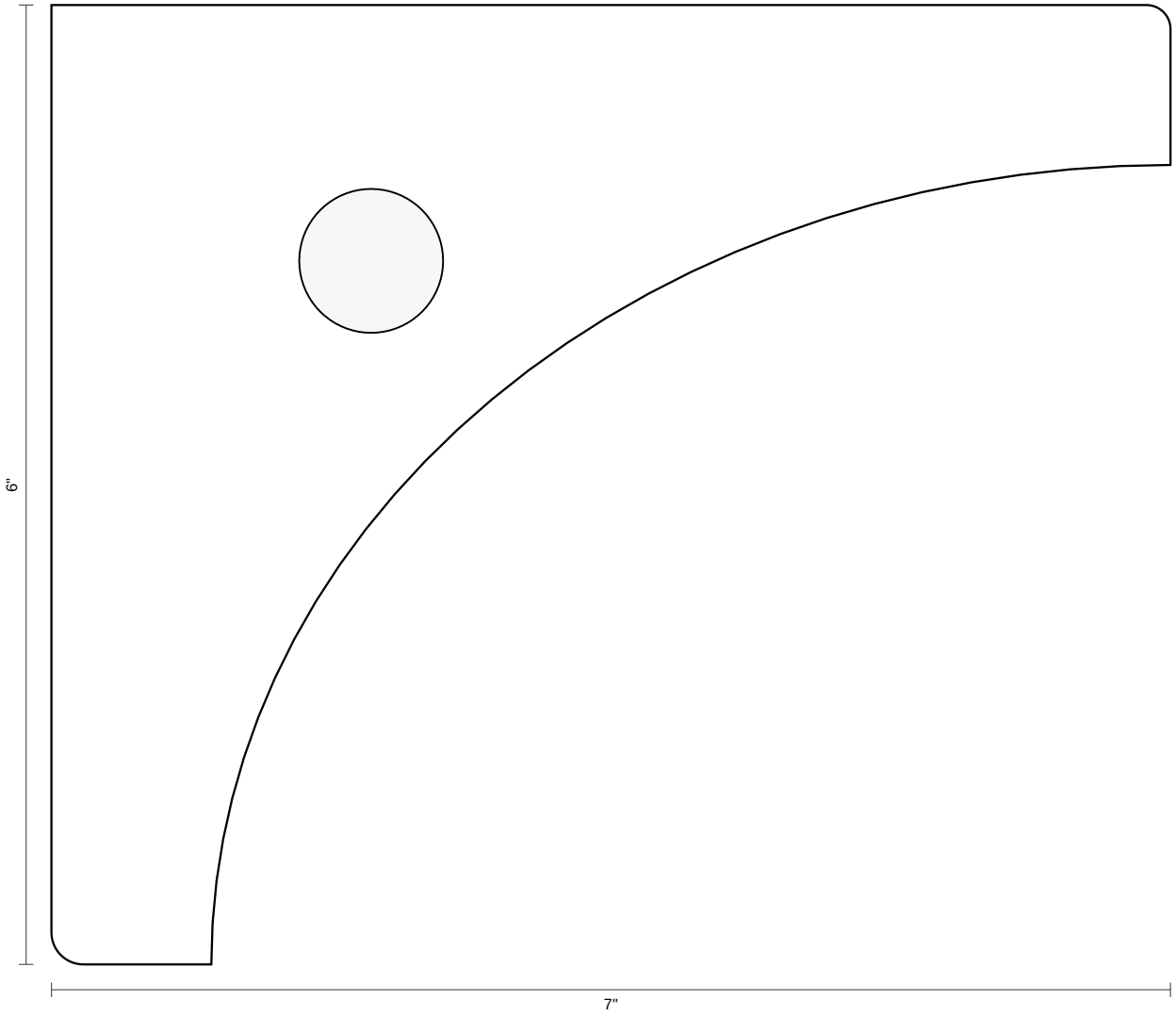
dxf/coat-rack.dxf

Plan view, drawn at about 1:3.9. Grey = pocket (depth noted), dashed = underside pocket, light fill = through cut. Cut files are full size.

5. Shelf Brackets

A pair of 7" x 6" corbels with a sweeping cove underneath, for shelves up to about 8" deep.

Bracket (make 2) - 3/4" stock



Machine & stock

CNC router, 1/4" end mill. The round cutout is decorative and lightens the look.

The back edge goes against the wall; the top edge carries the shelf.

Hardware

Two #10 x 3" screws per bracket into a stud, through counterbored holes you drill in the back edge by hand; or pocket-hole screws from the side.

Two #8 x 1-1/4" screws per bracket up into the shelf.

Steps

1. Profile both brackets with the cutout.

2. Lay out and drill two counterbored holes square into the back edge of each bracket (a drill guide or drill press helps).

3. Round over the cove edge, sand, and finish to match the shelf.

4. Screw the brackets to studs, level, then screw the shelf down onto them.

VCarve toolpaths (in this order)

Profile, Inside, layer PROFILE_INSIDE_0.750: cut depth 0.750" (through), 1/4" end mill.

Profile, Outside, layer PROFILE_OUTSIDE_0.750: cut depth 0.750" (through), 1/4" end mill, with tabs.

Files

dxf/shelf-brackets.dxf

Plan view, drawn at about 1:1.1. Grey = pocket (depth noted), dashed = underside pocket, light fill = through cut. Cut files are full size.