Ladder Shelf Plans

Final dimensions: 25" L x 21" W x 72" H

Router bits and supplies needed:

       3/8" Rabbeting bit (#10691)
       1" Bottom Cleaning bit (#7941)
       Top and Bottom bearing flush trim bit (#8812 or #18816)
       Router Table Crosscut Sled (#9779)
       Double Face Tape (#9489 or #9493)

Tools and materials needed:

       Router table
       Table saw
       Band saw or Jigsaw
       Brad Nailer
       1-1/4" Brad Nails
       Bevel Gauge
       Sander and Sandpaper
       Scraper
       Glue
       Clamps
       Walnut or other wood of choice (7 boards, 8ft x 6-1/2" x 3/4")

After milling all material to 3/4" thick, crosscut two boards to 72" in length, and then rip each both boards to 6" in width, to make the uprights.

Using a workbench, lay one of the uprights on the bench to layout out the 14-degree angle that the uprights will lean against the wall, and how far the uprights will sit out from the wall. The uprights will sit 21" away from the wall at the bottom. Using the 14-degree angle, mark the bottom of the uprights about 1-1/2" up the back edge and cut them to make them sit flat on the floor. Cut the top of both uprights 2" in from the back and 7" from the top so they sit flat against the wall. The 14-degree angle will also be used layout where the dadoes need to be cut for each shelf using the Router Table Crosscut Sled (#9779).

Using the remaining pieces from the uprights, make 4 backs for each shelf by ripping and crosscutting them to 2-5/8" wide x 24" length. Cut 24" off of another board and rip to 2-5/8" for the last shelf back.

Then make the shelf sides by ripping one - 8ft board into two 3" wide strips. Use these two 8ft by 3" wide long strips and cut 2 shelf sides to for each shelf, at lengths of 9", 12", 15", 18" and 21".

Next, use a 3" wide piece of scrap to make a template for the rounded shelf sides. Use a Band saw or Jigsaw to cut the rough shape, and then sand the profile until smooth. Tape the template to the shelf sides using double sided tape and rough cut to shape of the shelf sides on a Band saw or Jigsaw leaving a 1/16" to 1/8" to trim off using a flush trim bit (#8809).

Use the remaining wood to glue up panels to make the five different sized shelves. Cut the shelves to final sizes: 9" x 24", 12" x 24", 15" x 24", 18" x 24", and 21" x 24". Scrape and sand the shelves, sides, backs and uprights up to 220 grit sandpaper.

With the top of the shelf face down on the table, cut a rabbet 3/8" x 3/8" (using the #10693) along the back 24" edge and also along the short sides of each shelf. Rabbet out 3/8" x 3/8" on the inside edge of each shelf sides and inside of shelf backs.

Assemble the shelves by trimming the backs to 23-1/4 ", then place the shelf back on top of the shelf so the shelf back sits up on top the shelf and not overhanging the back edge. Glue and brad nail shelf backs to the shelves using 1-1/4" brad nails. Then glue and nail the shelf sides into place, with the edge of the sides overhanging the shelf bottom, so the side view of each shelf hides the end grain on the shelf bottom.

Using the 14-degree angle from the uprights, set the fence on the Router Table Crosscut Sled (#9779) for one upright. Mark on the wood where the shelves will be dado-ed into the upright. Invert the angle of the fence to cut the dadoes on the other upright.
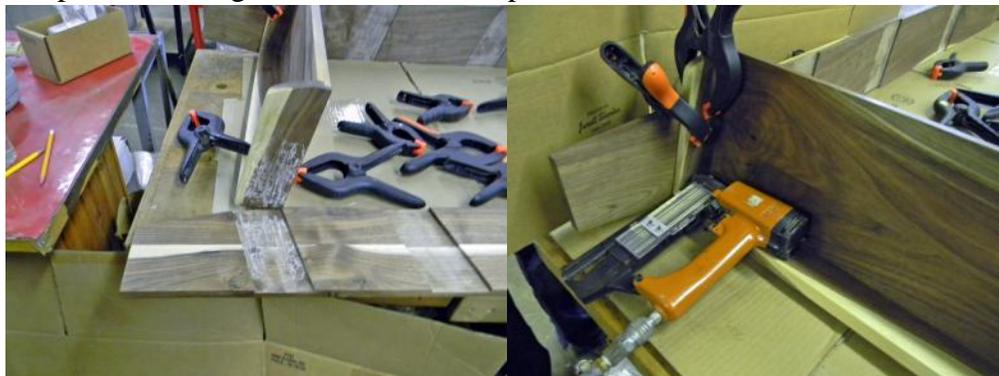
Using the Bottom Cleaning Bit (#7941), set the cutting height to make a 1/8" deep cut and cut a 2-7/8" wide dado. Raise the bit height to make a 1/4" deep cut and cut the dadoes 1/4" deep and 3" wide to accept the shelves.

Sand one last time and apply 1 coat of finish to all pieces, before attaching the uprights to the shelves.

Stand the top shelf on its back and clamp the uprights to the shelf. Place the top shelf into final position then glue and brad nail, in place.

Clamp the bottom shelf into place making sure the bottom of the uprights are 21 inches above the bench. Carefully insert the other shelves one at a time working from the top shelves down, and gluing and nailing each shelf in place. Glue and nail the bottom shelf in place and apply another coat or two of finish.