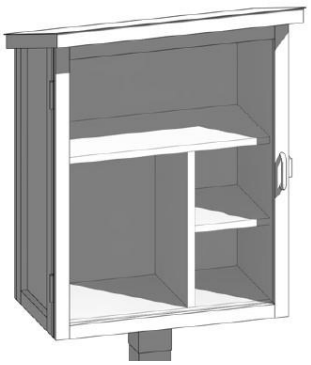
Little Free Pantry Construction



Overview

The Mini Pantry Movement, www.littlefreepantry.org/, provides plans for just one pantry. It's a good one, but it is a small challenge to build. The return on your effort is a strong outdoor cupboard that will withstand the elements and most animal attempts at intrusion.
This pantry design is a five-sided box with a clear door as the sixth side. This basic weakness of an open side is offset by the interior dividers. The final construction is quite rigid.
Some skill with woodworking and tools is required to accomplish this project. Some considerations:

- The plywood sheet must be cut into usable size pieces while maintaining straight edges and square corners for proper assembly.
- Cutting and fitting trim to cover the plywood edges against rain damage.
- Working with the 22.5° angle of the roof and side pieces.
- Assembling a strong door frame to hold the Plexiglas window
- Mortising the door hinges into the Box frame and door frame as necessary.

I use a mix of hand tools and power tools to construct the Pantry. A few special tools help.

Materials

All new materials can be used, or various used materials can be substituted as desired.
Don't forget your local Architectural Salvage Yard where expensive hardware parts can be more affordable, including screws, handles, hinges, latches and even trim material.
Priming and painting the Pantry helps protect gaps and edges from the weather. It also hides materials that don't match, providing greater flexibility in construction. Plan ahead for the look of an unpainted or stained Pantry.

These are the materials you will need for the Pantry:

- Less than a full sheet of ¾" plywood
- 1 x 2" trim pieces
    - 20' for the Roof and Door frame
    - 30' for the Box, or
    - 8' for the bottom edges of the Box and 6' of 2x6" for corner moldings.
- Plexi/Acrylic sheet for door about 2'x3'
- 1½" to 2" exterior screws
- Roofing material and short roofing nails
- 2 – 3" door hinges
- 1 – Door Pull
- Door Latch and/or rare-earth magnets

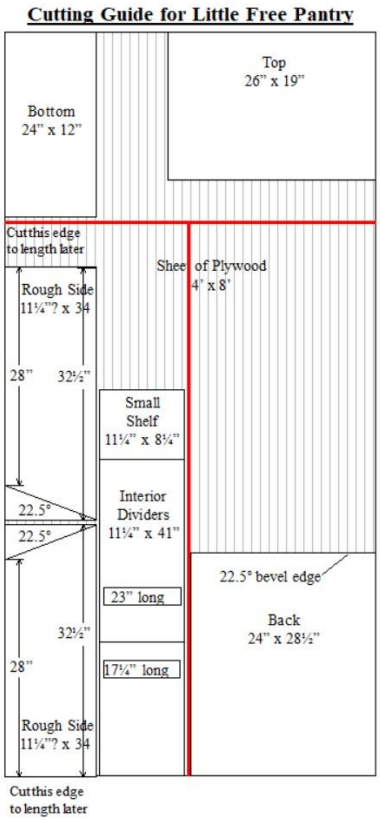
Mounting Materials

- Less than 6' of 4x4" Pressure Treated for Ground Contact
- 1 sack of Quick Concrete Mix
- Scrap pieces to brace the post while cementing
- 1 4x4 post Bolt-down bracket (use it upside-down)
- 4 - ½"x 1½" Carriage Bolts with Nuts & Washers

Cutting

- **Planning**
  Dimensions for this Pantry are for ¾" plywood. Using thinner material requires adjusting the final width of the Side pieces so they reach the front of the Bottom piece, and meet the front corner trim.
- **Dividing the Plywood Sheet**
  When laying-out the Pantry pieces on the plywood, consider the direction of the surface grain for individual pieces.
  - Vertical grain for the Sides and Back
  - Left-to-Right grain for the Bottom and Interior Dividers
  - The Roof piece will be entirely covered. No preference.

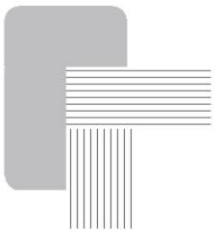
  Cut the plywood sheet into pieces that you can still feed through the table saw. My saw has a 25" width of cut limit. Plan ahead to keep factory straight edges and square corners intact for use with the table saw. I suggest rough-cutting on the red lines in the drawing.



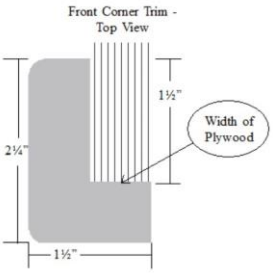
- **Trimming the Plywood Pieces**
  - **Sides** – Leave the Side width untrimmed until the back is installed.
    Cut the top edge of the two Side pieces at 22.5°. Leave the bottoms long, to be trimmed later. Pay attention to the good side of the plywood when cutting the angles; are they inside or outside of the Box.
  - **Back** – The Back piece has a 22.5° bevel along its top edge to match the sides. Use a straight-edge and circular saw for this. Trim the bottom edge, square, to length using the same method; 28" from the long edge of the top bevel
    Ensure the short side of the bevel is on the outside of the Back.
  - **Bottom** – Trim to exactly 12" x 24".
  - **Interior Dividers** – Trim all three Dividers to 11¼" width/depth. Trim the length of the two shorter pieces to 17¼" and about 8". Leave the longest, top shelf longer than 22½" so it can be cut to fit snuggly between the Sides.
    Glue solid-wood edging onto the front of the Interior Dividers, clamp and trim after dry.
  - **Roof** – Trim the Roof piece to 26" wide and bevel one long edge at 22.5°. Decide which side of the Roof you want inside and trim/bevel the other long edge to an overall 19".
- **Making Trim Pieces**
  If your trim pieces have a radius edge they can be cut to length.
  If they are square or you're cutting your own, round the edges.

  Making Corner Trim
  - The corners of the Box will have exposed plywood edges that need to be covered. The plans show two adjacent 1x2 trim pieces for corner trim. I devised a corner molding that is simpler and strengthens the Box. These moldings can be cut from 2x material. A table saw is required. Make these moldings 36" long. Trim to length later.
    Here's how:
  - Cut 2¼" strips from the edge of 2x boards. If you use 2x6", you'll have two edges for this. Try to avoid loose knots that may be a problem.

- With two cuts, you will create a rabbet in the length of the strip. All the moldings are identical; opposite sides get flipped end-for-end.
- In the wide side of the strips, cut a groove that is the depth of the thickness of your Side material. This depth is important to fit the front edge of the Box. This groove will meet the other one 1½" from the short edge. See diagram.
- Take care to place your blade curf inside the material you are removing when you cut.
- Radius the three outside edges of the back trim and the two outside edges of the front trim. Leave one outside edge of the front trim square to match the front inside edge of the Box.



Assembly



I use wood glue and sometimes silicon caulk for the sub-assembly of the three components of the Pantry, but I do not adhere the components on final assembly. Additionally, I do not use adhesive for the internal dividers. I consider them bracing and the screws at each end are enough.

- **The Box**
  The box is built on top of the bottom piece using glue and screws through the bottom, into the sides and back. Once the back is glued and screwed to the backs of the sides, the basis of the rigidity is established.

Details on Box Assembly
Pre-drill all holes for screws in the Box. Countersinking the screw-holes is optional as the plywood is soft enough to bring the screw heads flush.

- Lay the Back piece on its back then glue and screw the bottom to the back.
- Turn that assembly on its side to measure for the Side length.
  Place a Side piece on the assembly with the short edge of the angle-cut aligned with the Back bevel, and resting on the Bottom piece. Mark the Side piece where it crosses the Bottom piece and cut to length. Repeat for the other Side. Check your insides and outsides of the plywood.
- If using thinner material, check the width of the Sides and trim to fit the front of the Bottom piece.
- Place the Box assembly on its back again and glue and screw the Sides to the Bottom piece.
- Lift the angled top of the Sides away from the Back piece and place a small shim to hold them apart, allowing some glue to be applied to the joints.
- Remove the shims, stand the assembly upright, align the three pieces and screw them in place.
- Cut the long Internal Shelf to fit between the Side pieces at about 18" above the Bottom.
- Use the Internal Dividers to mark the outside of the Box to position screws that will fasten the Dividers to the Sides and back. Position the Divider screw-holes so they are covered by the corner trim as much as possible.
- Align and fasten the Interior Dividers using the other dividers to align each other, starting with the long shelf. Position the vertical Divider using the short Shelf.

Screw through the Back, Sides and Bottom with a couple screws for each end of a Divider.

Attaching the Trim

- Remember to raise the Box carcass ¾" so that the corner and bottom trim hangs below the bottom of the Bottom piece. A slab of plywood smaller than the Bottom, or two strips under the ends will do the trick.

Using Corner Trim

- When attaching the corner trim, I find it easiest to glue and clamp both backs before screwing from the inside, if you have long enough clamps. Smaller clamps work for the front trim.
- Place a corner piece on the upright Box while resting it on your bench. Scribe a line on the inside of the trim where the side ends. Cut the end of the corner trim at that height. Adjust to fit.
- Glue and clamp the corner trim to the box. Screw from the inside. Careful with your screw length.
- Fit the bottom trim for all sides and glue and nail/screw in place.

Using Separate Trim Pieces

- Fit the four side trim pieces even with the front and back corners of the Box carcass and cut to length. The top of these pieces will be cut at 22.5°. Glue, clamp and nail/screw in place.
- Fit the four front and back trim pieces even with the corners of the previously installed trim and cut to length. The top of these pieces will be cut at 22.5° in a different plane. Glue, clamp and nail/screw in place.
- Fit the bottom trim for all sides and glue and nail/screw in place.

- **The Roof**

The Roof is an angled piece of plywood that sit on top of the box, which is banded with 1 x 2" wood trim. The front and back trim is double-beveled on the long edges to match the angle of the roof, and the side pieces are cut to fit between the front and back pieces.
Once complete and trimmed, the roof sits on top and is screwed through the top to the sides of the box.

Details on Roof Assembly

- Because the front and back trim pieces are beveled on two edges, the overall width of these trim pieces is reduced. The side trim pieces will need to be trimmed to width to match if you are using factory trim. Alternatively, you can make your front and back trim wider.
- Glue and nail/screw the front and back trim flush with the top of the Roof, letting the ends of the trim run long enough to cover the side trim pieces.
- Fit the side trim pieces between the front and back trim with 22.5° angles on the ends.
- Trim the front and back pieces to length after all the glue dries.

- NOTE: The side trim can be attached first if you can trim carefully for them to meet the front and back trim.
- It may be easier to install the roof shingles after the Roof is installed on the Box. Try to keep your roof nails from going inside the Box. Trim if necessary.
- The top Door-strike is added after the Door is installed.
- I've widened the Roof piece from the plans by ½" to ensure the side Roof trim will fit over the Box corner trim when you install the Roof. A little extra rain coverage never hurts.

- **The Door**

  Doors are the weak-point of this system.
  Doors move and are susceptible to wind damage if they are not properly secured.
  Tethers, both rigid and flexible can be useful. Magnetic and spring-loaded catches can help trap the door on the back-swing for preservation. Over-swing stops for this box design are problematic because of the roof overhang. Shortening the door and filling the space above against rain, can provide some flexibility.

  Visibility and structural integrity are two competing design aspects for doors.
  I've had mixed success with the thin-frame design in these plans because we have access to ¼" thick Plexiglas, which is heavy. Corner fastening is the key.
  The door on this design is butt-jointed with the rails inside. It's a good design as long as you can hold the square edges of the wood together. Long screws through the corners or dual pocket-screws have that strength in dense wood. Screwing your clear panel into a recess can help with rigidity also.

  Details on Door Assembly
  - Cut the material you've chosen for the sides of the door to length.
    - 30" is a good reduced height if you fill the gap above the door against rain.
    - 32" or more is required to reach a door strike attached to the roof.
  - Place the two side pieces together and mark the bottom piece for the required door width. Cut both the top and bottom pieces together to the same length.
  - Lay out your door pieces, glue and clamp. Drill and screw the door together. If only one screw is used in each corner, be careful not to rotate your pieces as you make the recess in the back face.
  - Hopefully using a router or router table, make a recess in the back face of the door frame to hold your clear panel. If you make cut-outs for the hinges in the clear panel, you can attach it directly to the back of the door without a recess. Adjust your hinge mortise to account for the increased thickness. This may be effective for thinner clear material. NOTE: I tried using a centered groove, but it takes bearing space from the corner joint.
  - Fit and drill the clear window for the Door.
  - Silicone and fasten the window into the door recess, or onto the door.

  Mounting the Door
  - Last time I mounted the hinges on the Door and stood it on the bench with the Box to mark the mortises. Another time I mortised the Box and mounted the hinges then attached the Door. Experiment. For this cabinet, I only mortise the Box side of the hinge. The Plexiglas complicates the Door/Hinge situation.
  - Install a Door pull, magnet and/or a latch. Your door will likely meet the box in one place before another. Place your magnet there.
  - Tight, that is not too stretchy, bungee-cord is a resilient anti door-breaker.

Mounting

- **Installing the Post Hardware on the Box**
  Find the center of the Box Bottom and see if the Vertical Divider will interfere with the bolt heads. Move your installation as necessary to make four holes for the 4x4 post mount. Check the alignment of the bracket and the holes but don't drive the Carriage Bolt heads into the bottom until mounting to the installed post.

- **Preparation of the Site**
  Think about placement options for your Pantry.
  - Facing the front of the Pantry toward the sun can turn it into a greenhouse. We are drilling five ½" ventilation holes in the top of the Back, so the rear of the Roof covers them, and five more in the back of the Bottom. You may want to cover these holes with screen, depending on your insect/bird population.
  - Where are people standing when they access the Pantry?
  - Is the standard height appropriate for the situation?

- **Mounting the Pantry**
  - Dig a hole of appropriate depth for your climate. We try to get two feet deep.
  - Brace your post and fill the hole with mixed concrete or crushed stone.
  - The next day, cut the post to height.
  - Pound the bracket onto the post and screw securely.
  - Mount the pantry on the bracket and bolt in place.
  - Test and enjoy!

Administration and Operation