A Recycled Greenhouse

Create a home for your plants using a forgotten building technique

BY LARRY HAUN



A veteran California framer turned gardener takes a freshly potted plant out of his newly completed greenhouse made with less than $80 worth of materials—mostly 1x mahogany boards salvaged from pallets. The windows and plastic roof panels also are recycled materials.

Years ago, I rented a small house while attending UCLA. That house, like many others in the area, had exterior walls made of 1x boards nailed directly to the platform-framed floor on the bottom and to a single plate at the top, with no studs. Known as single-wall construction, this type of building doesn't offer much insulation, but it's strong enough to support a lightweight roof. So I decided that single-wall construction would be perfect for a small greenhouse (photo facing page).

A platform for plants and people

I sited the 6-ft. by 8-ft. greenhouse on the southeast corner of our small lot to catch the warmth of the winter sun. An existing concrete retaining wall supports the greenhouse along one side; I poured a concrete pad for the entry that supports one of the remaining corners.

Support for the last corner comes from defective concrete block rejected by a local supply house. I filled the voids in the block with concrete left over from the entry pad. A strap embedded in the pad helps to secure the platform.

Once the piers were in place and level, I built the platform from pressure-treated 2x4s with the help of my brother Joe and my friend Clyde. After measuring across the platform diagonally to square it, we sheathed the joists with treated plywood to resist mold and rot. But rather than the toxic treated wood (CCA), we used the newer, less toxic wood (CBA) treated with borate. (See "What's the Difference," *FHB* #148, pp. 128, 130.)

Walls from salvaged pallets

A nearby plywood plant sells 4-ft. by 8-ft. pallets for $2 each. I bought 10 pallets made of 1x mahogany boards, knocked them apart and ripped the boards into 6-in. widths. I also ripped a pile of ½-in. by 2-in. battens and bathed all the wood I'd cut in linseed oil.

Single-wall construction starts with the corners (photos above). I cut four boards 82 in. long and beveled their tops at 14° to match the 3-in-12 pitch roof I planned. We screwed one of these boards to each of the corners on the long sides of the platform. Next, I cut a 14° angle on the tops of four more boards, and we screwed each of them to one of the first boards with coated fast-tap screws to form the corners.

For the top plates on the 8-ft. long walls, I bought two 10-ft. 4x4s and cut a 14° bevel on the top edge. We screwed the 4x plates to the tops of the corners, letting the plates cantilever 2 ft. for a porch on the door end. Recycled 2x4s tie the 8-ft. sides together and act as top plates for the 6-ft. long gable walls.

For the ridge, I beveled the top edges of a 10-ft. 4x6, supporting it with a short vertical 2x4 resting on the gable walls' horizontal 2x4s. Measuring 36 in. down from the top plate, we attached flat 2x4s between the corner boards for a rough windowsill, which also gave me a cleat for the planting tables inside.

Old windows get a new life

With the basic structure in place, we plumbed and braced the corners and filled the spaces between with vertical boards. We let the ends of the boards run wild into the window openings and then set up a straightedge to saw them off. To scribe the angled boards to the roof pitch at the gable, we laid a board from the ridge to the plate as a guide. We attached backerboards to the tops of the gable boards to affix the roof panels.

I bought two single-glazed aluminum-frame windows for $5 apiece at our local Habitat for Humanity Resale Store ("Where to find recycled materials," p. 104). I chose a 4-ft. wide window for the short side and a









WALLS WITHOUT STUDS

Single-wall construction starts with two boards screwed together and attached to each corner of the platform ❶. Next, plates connect the corners ❷, and secondary plates are installed at windowsill height. After the corners are plumbed and braced, the wall boards are attached to the plates to form the walls. The ends of the boards run wild into the window opening. Then a circular saw riding on a straightedge cuts the boards to length ❸. Recycled windows pop directly into the opening ❹ with the window flange caulked and screwed directly to the face of the boards.





RECYCLED EXTERIOR

Sheets of Plexiglas recycled from a nearby greenhouse screw directly to the plates and ridge via predrilled holes and countersunk screws ❶. To join the plastic roof panels at the ridge, the author's brother Joe installs a length of old aluminum siding prebent to the roof pitch. Recycled shingles cover the porch overhang ❷. Battens ripped from the same recycled pallet wood cover the seams between the wall boards ❸. The same batten stock makes great window casing as well.



WHERE TO FIND RECYCLED MATERIALS

Habitat for Humanity International: www.habitat.org, 800-422-4828. For location of Resale Stores that sell recycled building materials.

General recycled building supplies: www.recycle.net

Resource list for solar greenhouses: attra.ncat.org/attra-pub/solar-gh.html

6-footer for the long side. To maximize storage space, I left two sides of the greenhouse solid.

We applied a bead of silicone caulk along the top and side window flanges to keep out the rain, and screwed the windows directly to the outside of the wall boards. Pieces of batten stock worked fine as outside window casing.

The simplest way to make a door in single-wall construction is to cut it in place (photos facing page). I made the door only 24 in., or four boards, wide. Being long, lean and hungry looking, I don't need much of a door to slip into and out of.

Roof glazing from one greenhouse to another

Roofing for my greenhouse consists of two 4-ft. by 8-ft. sheets of 7/16-in. Plexiglas. I got them from a local commercial greenhouse that had been forced to close. At $10 apiece, they were a gift compared with the price of the corrugated fiberglass often used for greenhouses.

I predrilled the Plexiglas sheets with clearance holes and countersunk each hole. After screwing the sheets to the ridge and the plates (photos left), I put a dab of silicone on each screw head to seal the holes.

Next, we screwed the 2-in. battens over each of the board seams. I sheathed the roof overhang at the door end with the same pallet boards and then covered them with asphalt shingles. A recycled strip of 8-in. wide aluminum siding bent to fit the roof pitch made a dandy ridge cap. I secured one end by bending it around the Plexiglas sheets and slid the other end about a foot under the shingles before nailing on the cap shingles.

Shelves and counters inside

With my sturdy little greenhouse complete structurally, I was ready to build workspaces inside. Along the two window walls, I built 22-in. wide planting counters from the same wall boards. Below the counters, I built a 22-in. wide plywood shelf as storage space for pots, garden tools and growing materials.

To keep my plants happy even in cool, cloudy weather, I plan to have an underground electrical cable run out to the greenhouse so that I can install grow lamps. □

Larry Haun, author of *Habitat for Humanity How to Build a House* (The Taunton Press, 2002), tends his garden and builds Habitat houses in Coos Bay, OR (www.carpentryforeveryone.com). Photos by Roe A. Osborn.

A DIFFERENT KIND OF PREHUNG DOOR

Instead of buying a prehung door, the author built the greenhouse door. He screwed the boards in place, then screwed Z-bracing to the inside. Hinges go on, the top and bottom are cut, and the door pops open.



First, the wall boards are screwed in.



Bracing goes on the inside.



Hinges join the door to the jamb board.



A saw cuts the top and bottom of the door.



Voilà! The door swings open.