



Building your Own Composting Bin:

Designs for Your Community

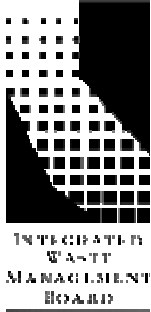
Attached are instructions sheets for building the following home composting bins, screen and worm bins:

- Portable Wood and Wire Composting Bin
- Single Compartment Wood Bin
- Urban All-Wood Bin
- Wire Mesh Composter
- Lath Snow Fence Composter
- Wood and Wire Three Compartment Bin
- Rotating Barrel Composter
- Compost Screen
- Homemade Food Waste Composter
- Worm Bins
- Known Worm Suppliers in California
- Worm Composting Bin
- Pallet Worm Bin

These designs range in complexity and price, and many can be made using recycled or reused materials. When providing this information to residents, safe tool use should be encouraged along with wearing of protective gear (safety glasses, hearing protection, etc.) when appropriate during bin construction.

The attached set of do-it-yourself compost bin designs has been compiled by the California Integrated Waste Management Board for reproduction, distribution and use by California Communities in order to promote home composting. Permission to use these designs was secured from the various original developers. Please leave any reference to original source within the document if it exists.

If you have additional design suggestions, please call (916) 341-6000.



State of California
1001 I. Street/P.O. Box 4025
Sacramento CA 95812-4025

Arnold Schwarzenegger, Governor

Known Worm Suppliers In California

Vermicomposting is becoming a popular Waste Prevention activity in California. In order to assist those who may wish to become involved in this beneficial activity, the California Integrated Waste Management Board (CIWMB) staff have compiled a list of known worm suppliers in California. The inclusion of companies in this list does not constitute an endorsement by the CIWMB nor does the absence of a company constitute a criticism. Companies are included upon request. The following is the list of known worm suppliers in California:

Earthworm Soil Factory
Chico
Larry Royal
(530) 895-9676

Shallow Creek Ranch
Foresthill
Steve Smith
(530) 367-3174

Foothill Worm Ranch
Pleasanton
Matt
(925) 484-4192

Live Nude Worms
Hemet
Deborah Bowers/Denise Grapes
(619) 698-2831

The Worm Lady
Squaw Valley
Marilyn Charest
(559) 332-2168

Iannone Enterprises, Int'l
Alta Loma
Marcia Iannone
(707) 668-5997

J & T's Redworms
Blue Lake
Tim Matthews
(707) 668-5997

San Diego Organic Supply
National City
Michael L. Castro
(619) 420-7645

Compost Worms Only
Glendale
Chris Jung
(818) 472-2593

Cosmo's Red Worms
San Francisco
Paul Cosmides
(415) 759-7874

VermiPRO
Huntington Beach
Alan Piercy
(714) 647-1275

Wild West Worm Farm Enterprises
Simi Valley
Suzanne Frazier
(800) 486-0054

For a more accurate and updated list, check our website at
www.ciwmb.ca.gov/Organics/Worms/WrmSuply.htm.

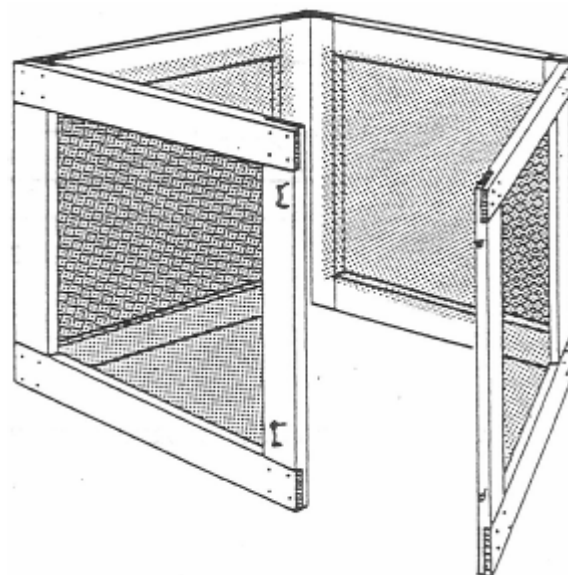
PORTABLE WOOD AND WIRE COMPOSTING BIN

Portable compost bins simply serve to temporarily confine a pile. When it is time to turn the pile or withdraw finished compost from the bottom, the bin is taken apart and set up in an adjacent location in the yard. The partially composted material from the top of the old pile is then forked over into the empty bin, leaving the finished compost at the bottom for removal and use.

Portable compost bins can be made from old wooden pallets lashed together or a roll of wire or snow fencing. This particular version is made from hardware cloth stretched over four wooden lap jointed frames. The design was originally developed for the Community Composting Education Program in Seattle, Washington.

List of Materials

- 4 12' 2x4s
- 12' 36" wide, 1/2" mesh hardware cloth
- 100 1/2" galvanized No. 8 screws
- 4 3" galvanized butt door hinges and screws
- 4 hook and eye gate latches
- carpenter's glue



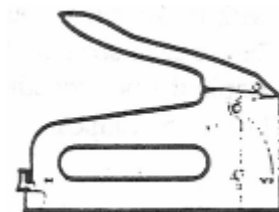
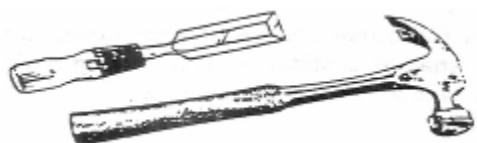
Specialized Tools

tinsnips

hammer and wood chisel or motorized saw (portable circular, or table saw or radial arm saw) with a dado blade

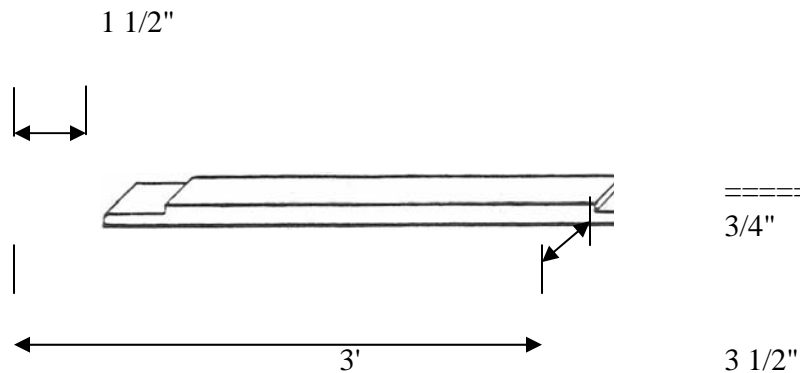
power or hand drill with a 1/8" bit

staple gun or power stapler c/w staples



Construction Sequence

1. Cut each 12' 2x4 into 4 pieces 3' long for a total of 16 pieces.
2. Cut 3-1/2" wide by 3/4" lap cuts at the ends of the 16 pieces of wood. Ensure that the cuts are made on the same side of each piece. If using a handsaw and chisel, first cut a 3/4" groove 3-1/2" in from each end and a 1/2" groove midway into the end of the board. This will help to prevent it from splitting as the ends are chiseled out. If using a power saw, set the blade depth to 3/4" and make multiple passes until the material at each end is removed.



3. Make four lap jointed frames 3' square with the 16 boards. Connect each lap joint with carpenter's glue and four wood screws. Pilot drill the screw holes with a 1/8" bit first to prevent the board ends from splitting.
4. Cut the hardware cloth with tinsnips into four 3' square sections. Reinforce each edge by bending it back an inch. Centre each section of cloth onto a frame (with the bent edge down against the wood) and staple the two together with a staple every 4". Tension the cloth so that it will not sag when filled with compost.

5. Connect each pair of frames with two hinges. At the outside edge of each connected pair, attach the hook and eye gate latches so that the L shaped sections will latch together (see illustration). For rain protection, plastic tarp can be placed on top of the pile.

SINGLE COMPARTMENT WOOD BIN

This single compartment bin serves to hold and confine a compost pile. Access for pile turning and removing finished compost is via the loose front boards which are fitted into the slots formed by four of the upright posts. A sliding cross bar at the top prevents the sides from bulging out. An optional removable top to the unit can also be made for the unit with a sheet of heavy black plastic stapled to the backboards and the cross bar.

This design is an adaptation of the New Zealand Hot Box developed by Sir Albert Howard, a noted pioneer composting researcher. It should be sited on a level piece of ground.

SINGLE COMPARTMENT WOOD BIN

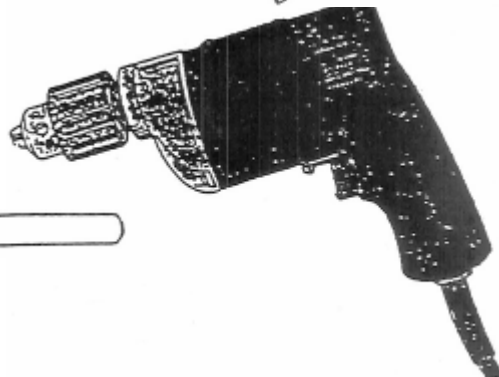
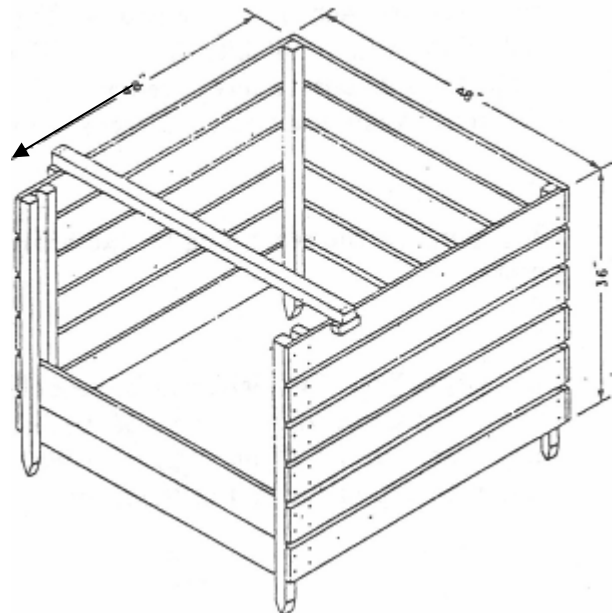
List of Materials

- 6 3'-6" 2x2s (posts)
- 1 4'-9" 2x2s
- 24 4' 1x6s
- 96 1-1/2" No. 10 galvanized wood screws
- 4 2-1/2" No. 10 galvanized wood screws

Specialized Tools

hatchet

power or hand drill with 1/8" twist bit



Construction Sequence

1. Posts. Shave down the ends of the six 3-1/2' long 2x2 posts to a point with a hatchet. At the location where the composter will be sited, pound in the four corner posts vertically to a depth of six inches into the soil. The posts should be spaced apart (outside of post to outside of post) 4 feet from front to rear and 3 feet 10-1/2" from side to side. Pound in the remaining two posts to the same soil depth immediately behind the front posts. Allow a one inch gap between the posts for the front boards.

2. Sides and Rear. Starting at the bottom with a 1/2" gap, attach six 1x6 boards to the side posts on each side. Use two 1-1/2" screws per post per board. Pilot drill the screw holes first with a 1/8" bit. Allow a 1/2" vertical gap between the boards for airflow. After the side boards have been attached, screw and attach six 1x6 boards to the rear of the unit. Again use two 1-1/2" screws per post per board.

3. Front. Fit the remaining six 1x6 boards loosely into the slots formed by the four front posts.

4. Cross Bar. Cut two 3" long pieces from the remaining 4'-9" 2x2. Turn the pieces and attach one under each end of the 2x2 with two 2-1/2" screws. Pilot drill the screw holes first with a 1/8" bit to prevent the wood from splitting. Fit the completed bar across the top of the unit at the front.

URBAN ALL-WOOD BIN

- For fruit, vegetable & yard trimmings
- For “No-Fuss” or “Mixed” compost (see *Basic Composting* brochure)
- Has 2 front doors for easy harvesting and turning, a top that doubles as a sifter, & full wire-mesh lining
- Produces small to large amounts of compost
- Carpentry skills needed for construction
- 100-120 for new materials

MATERIALS

- ◆ (8) 8' 1x6 wood*
- ◆ (2) 8' 2x4 wood
- ◆ (1) 10' 2x4 wood
- ◆ (3) 6' 1x4 wood
- ◆ 15' 1/4 wire mesh hardware cloth
- ◆ (4) 5" drawer handles
- ◆ (8) 1-1/2" hooks & eyes
- ◆ (8) 4" corner brackets with 1/2" wood screws
- ◆ Waterproof wood glue
- ◆ (20±) 8 penny galvanized nails
- ◆ (125±) 6 penny galvanized nails-or screws and a power drill-driver can be used instead
- ◆ (250±) 3/4" poultry wire staples

*Bin dimensions based on planed wood

TOOLS

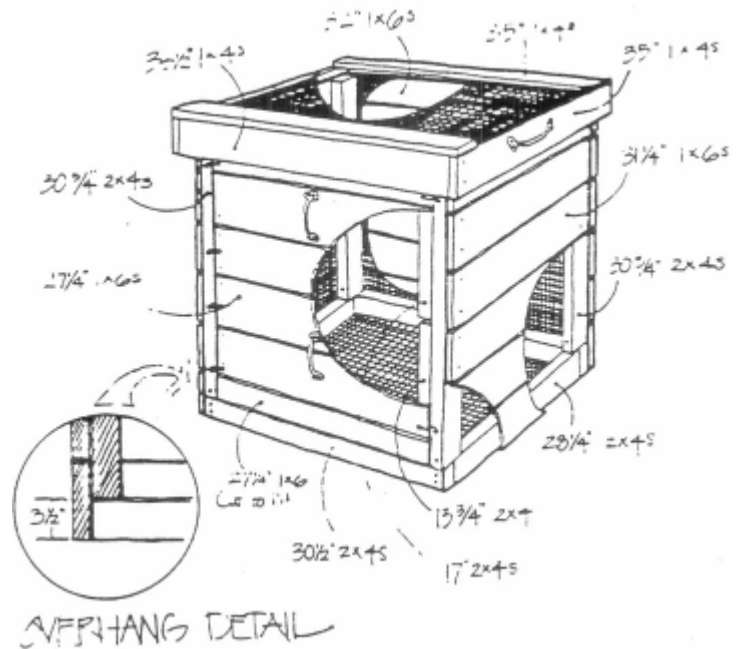
Power saw (use eye protection)
or handsaw, screwdriver,
hammer, measuring tape,
pencil, square, drill with 1/16"
bit, sandpaper



ASSEMBLY

Glue all wood pieces before nailing.

1. Nail 2x4 bottom frame together with the larger nails. Be sure the finish dimension is 30-1/2x31-1/4".



2. Build sides by nailing bottom and top 31-1/4" 1x6s to the 2x4s (use smaller nails). Be sure bottom 1x6s hang down 3-1/2" below 2x4 uprights (see overhand detail). Fill in the remaining 1x6s equally spaced, with no gaps larger than 1/4".
3. Attach sides to base by nailing 3-1/2" overhang to base as drawn (with smaller nails). Toenail 2x4 uprights into bottom frame with larger nails.
4. Nail the six 32" 1x6s to back by first attaching the top and bottom pieces, then filling in the remaining four, spaced equally.
5. Before cutting pieces for the front doors, measure the actual opening at the front of the bin, and make sure to cut the 1x6s (1/4" apart), then measuring the remaining space, and cutting the last 1x6 lengthwise to fit.

6. Attach eyes to front 2x4 uprights, and hooks to front doors as drawn.

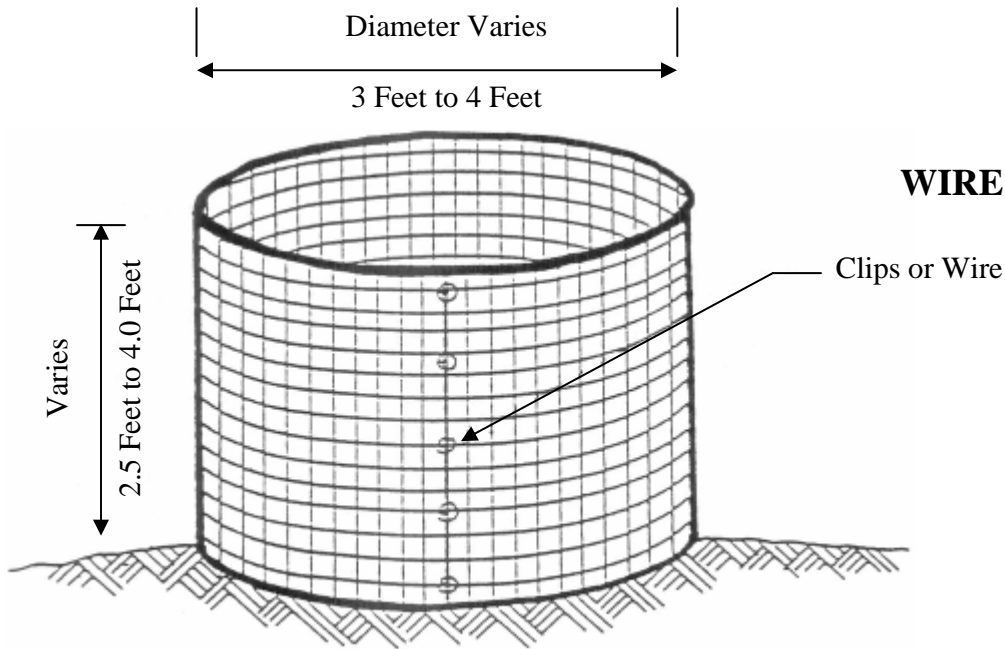
7. Build lid by pre-drilling and tracking together as drawn (using smaller nails), making sure the finished dimension is 35x35" and square. Then pre-drill and screw the corner brackets to the inside corners, and the

top 1x4s into place. Cut a 33x36" piece of wire screen and staple it in as shown in detail drawing.

8. Cut remaining screen to fit—staple side, back and door pieces inside bin on 1x6s (not over 2x4s). Staple bottom piece onto the underside of bin.

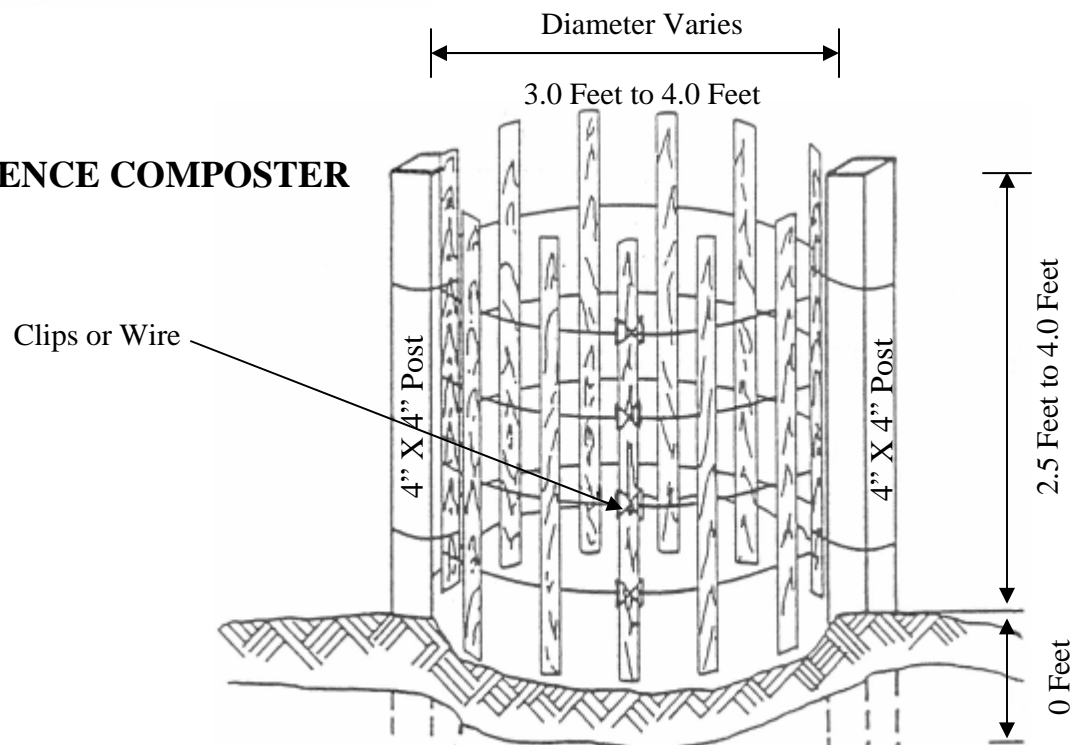
OTHER PORTABLE COMPOSTING BINS

Other portable bins can also be made with rolls of wire mesh or lath snow fencing. The following two illustrations are adapted from design sheets prepared by the City of Regina.



WIRE MESH COMPOSTER

LATH SNOW FENCE COMPOSTER



WOOD AND WIRE THREE COMPARTMENT BIN

Multi-compartment composter bins allow for continuous processing of large amounts of material in batches. In a three compartment composter, material can be turned and mixed between two of the compartments, with the third compartment used for curing and storage.

A three compartment composter can be simply thought of as two additional sections attached to a single compartment unit. A simple three section unit can be constructed with seven discarded pallets lashed together. This particular design employs four identically constructed wooden frames connected to common top and bottom boards and with a single fiberglass lid. It is adapted from a design originally developed for the Community Composting Education Program in Seattle, Washington.

List of Materials

- 4 10'2x4s
- 4 12' 2x4s
or eight 6' 2x4s
- 4 10' 2x2s
- 2 6' 2x2s
- 1 12' 2x6s
- 9 6' 1x6s
- 22' 36" wide 1/2" mesh hardwire cloth
- 1 10' x 2' sheet and one 8' x 2' sheet of 4 oz. corrugated fiberglass
- 40 gasketed aluminum nails for corrugated fiberglass roofing
- 3 8' lengths of wiggle molding to fit corrugated fiberglass
- 2 3" zinc planted butt hinges for lid
- 12 1/2" carriage bolts 4" long c/w nuts
- 12 1/2" flat washers for the bolts

12 1/2" flat washers for the bolts

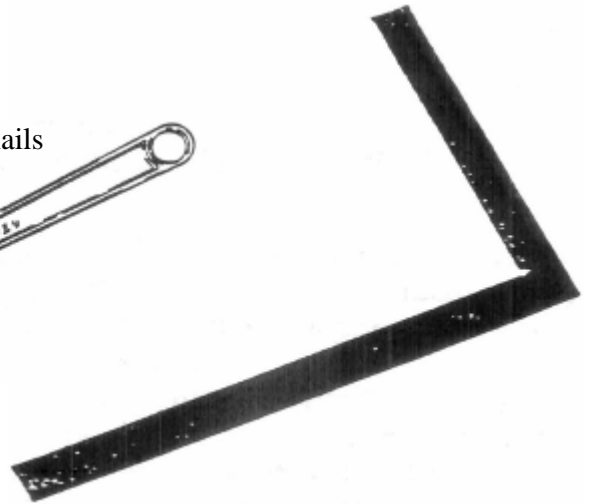
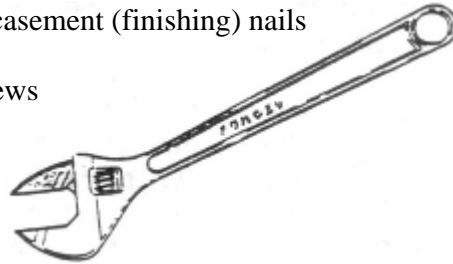
2 pounds of 3-1/2" galvanized nails

1/2 pound of 2-1/2" galvanized casement (finishing) nails

4 flat 4" corner braces c/w screws

4 flat 3" T braces c/w screws

carpenter's glue



Specialized Tools

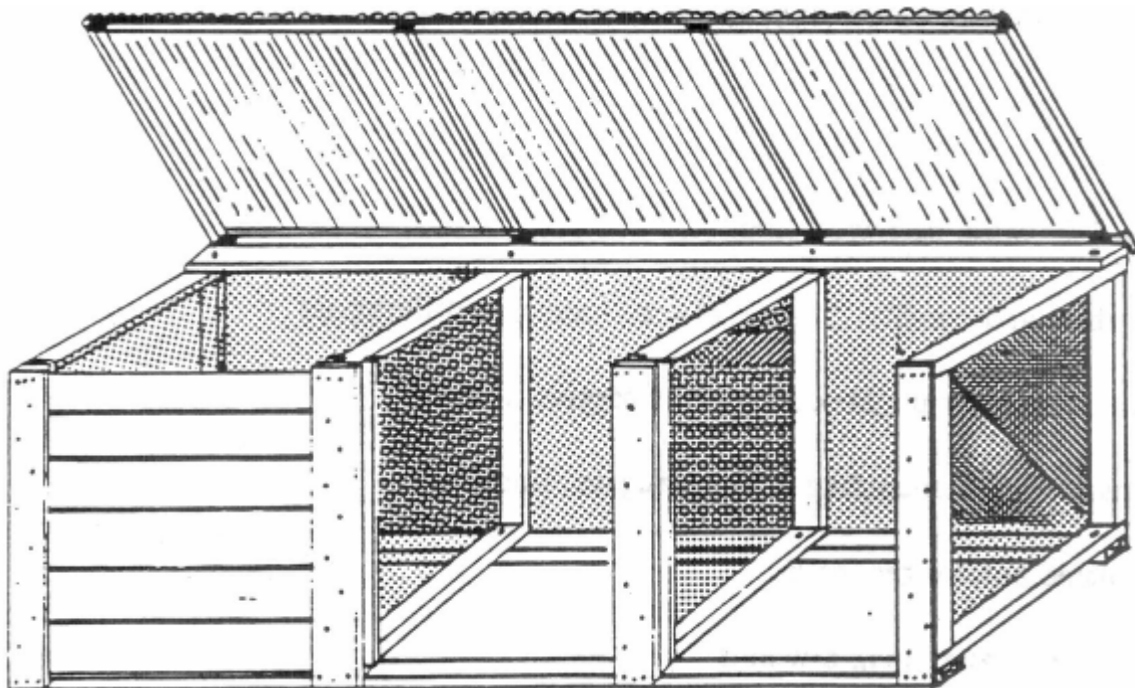
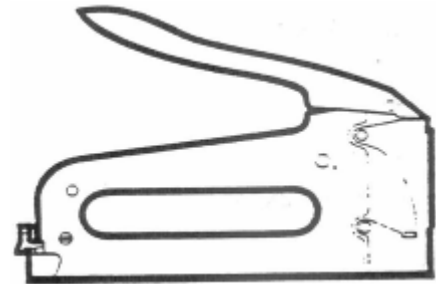
tipsnips

hand or power drill with 1/8" bit and 1/2" spade bit

3/4" socket wrench or adjustable wrench

carpenter's square

staple gun or power stapler c/w staples

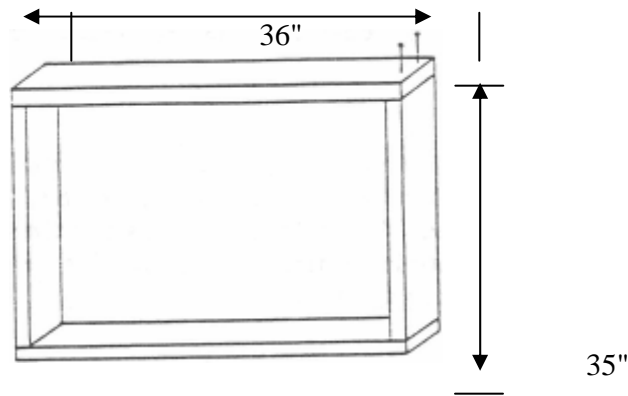


Construction Sequence

1. **Sides and Dividers.** From the 12' or 6' 2x4s, cut eight pieces 36" long and eight pieces 32" long. Using two pieces of each on edge, form four butt jointed frames 35" by 36" (see illustration). Connect each joint with nails and glue. Cut four 37" long pieces of hardware cloth. Reinforce each edge by bending it back an inch. Center each section of cloth onto a frame (with the bent edge down against the wood) and staple the two together with a staple every 4". Tension the cloth so that it will not sag when filled with compost.

2. **Composter Frame.**

Cut the four 10' 2x4s into four 9' pieces. Lay two of them flat side down parallel to each other, 36" apart, outside to outside. Place the four frame pieces on the two boards, 36" dimension down. The two outside frames should be flush with the ends of the board and the two dividers should start at 35" in from each end.



Mark the edges of each frame on both 9' long boards. Lay three of the frames aside.

Starting with an outside frame, align it with its markings on a base board and drill a 1/2" hole through the frame and base board into a piece of scrap wood. Secure the frame to the base board with a carriage bolt, washer and nut, but do not tighten. Feed the bolt through from the remaining three frames.

Lay another 9' top board on top of the frames aligned with their rear outside edge and mark it in the same manner as the bottom boards. Keeping the frames aligned with their markings, drill a 1/2" hole through the top board and each frame in turn. Again, feed a carriage bolt down through each hole and secure the pieces together with a washer and nut.

Check the composter frame for squareness with a carpenter's square or by measuring the distance between outside corners. Adjust if required and tighten down all bolts with a socket or adjustable wrench.

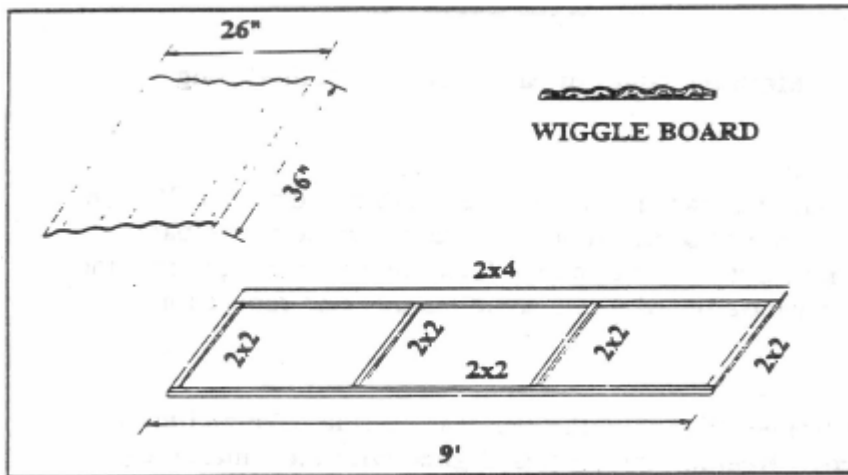
connect the cloth to the frame with a staple every 4". Keep the tension on the cloth to prevent sagging.

3. Runners and Front Slats. Cut four pieces 36" long from the 12' 2x6. Nail two of them flush to the top and outside front edges of the frame. Nail the other two 2x6 pieces to the front of the inside dividers, keeping them centered and flush with the top.

From two 10' 2x2s, cut six pieces 35" long for back runners. Nail these to the frames parallel to the front runners with a 1" gap for slats.

For slats, cut all nine 6' 1x6 boards into pieces 30-1/2" long.

4. Fiberglass Lid. For the lid frame, cut the remaining 10' 2x2 into a 9' piece and the two 6' 2x2s into four pieces 32" long. Form these pieces and remaining 9' 2x4 into a rectangular frame 9' by 37" as per the illustration. Check for squareness and then connect the frame together using corner braces for the outside corners and T braces for the interior dividers. Pilot drill the screw holes first to avoid splitting the wood.



Lay the lid frame, brace side down, on the compartment frame with the 2x4 piece at the rear. Attach the two together with the butt hinges. Pilot drill the screw holes first to avoid splitting wood.

Cut the wobble board molding to fit the front and back of the lid frame. Position the pieces an inch in

from the sides of the frame and nail them to the top of the lid frame with the 2-1/2" casement nails. Pilot drill the nail holes first to avoid splitting the wood.

Cutting the 10' and 8' sheets of fiberglass into five pieces 37" long. Overlay each piece by at least one channel and position them on the top of the lid. Trim any overhangs at the ends to fit. Pre-drill the fiberglass and wobble board molding with one nail hole every third hump and connect with gasketed nails.

ROTATING BARREL COMPOSTER

A rotating barrel composter can ease the labor requirements for turning and aerating the composting materials. Most of them are limited in capacity due to the size of readily

available barrels. They must be operated on a batch basis (no further materials added after a point in time) in order to produce finished compost. A number of small to very large commercially made barrel units are available that rotate either on their sides or end to end.

This particular side rotating barrel design makes use of the standard 45 imperial gallon size metal drum 34-3/4" in height. It is adapted from a design originally presented in The Rodale Guide to Composting.

List of Materials

- 1 45 imperial gallon (205 litre) 'food grade' metal drum
- 4 8' 2x4s
- 3 8' 1x3s
- 1 2' x 2' piece of 3/4" (19 mm) plywood
- 2 1-1/2" x 2" galvanized butt hinges
- 1 small hasp
- 1 steel rod, 1/2" diameter by 42" long
- 8 1/4" x 1-1/4" stove bolts c/w nuts
- 12 1/4" x 1" stove bolts c/w nuts
- 28 1-1/2" galvanized No. 10 wood screws
- 2 1/2" flat washers
- 2 1/8" x 1-1/2" steel cotter pins

Carpenter's glue

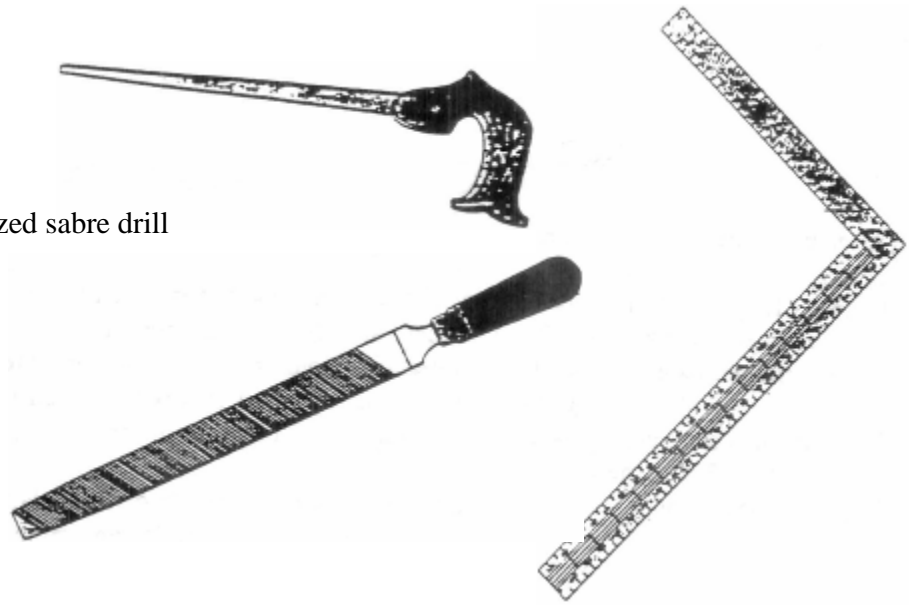
Specialized Tools

drafting compass

keyhole saw or motorized sabre drill

metal file

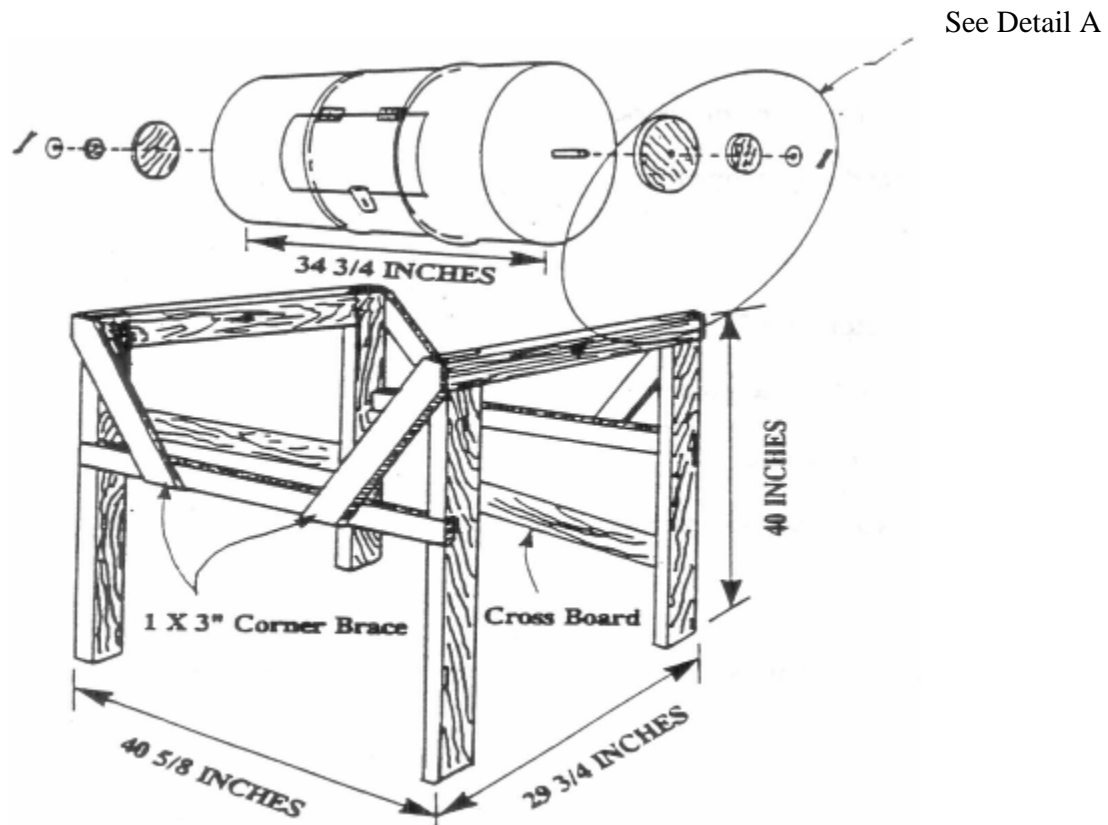
centre punch



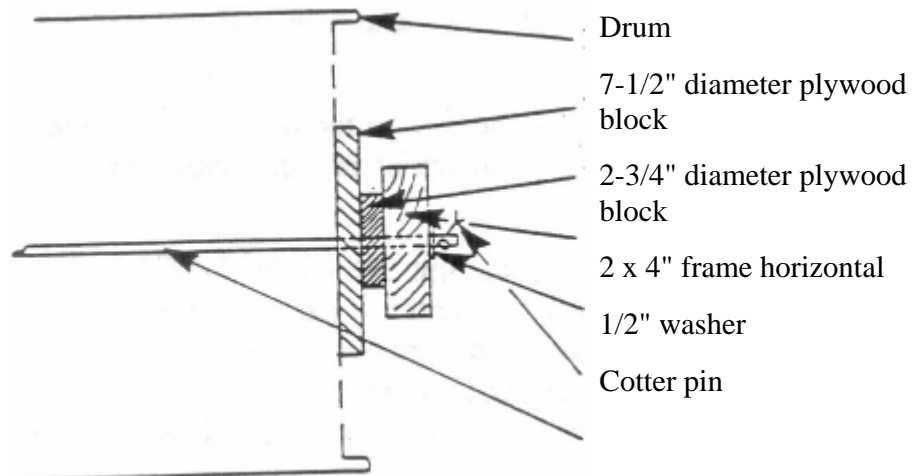
hammer and wood chisel

6" adjustable wrench

Hand or power drill with 1/2" spade bit and 1/4" and 3/16" bits



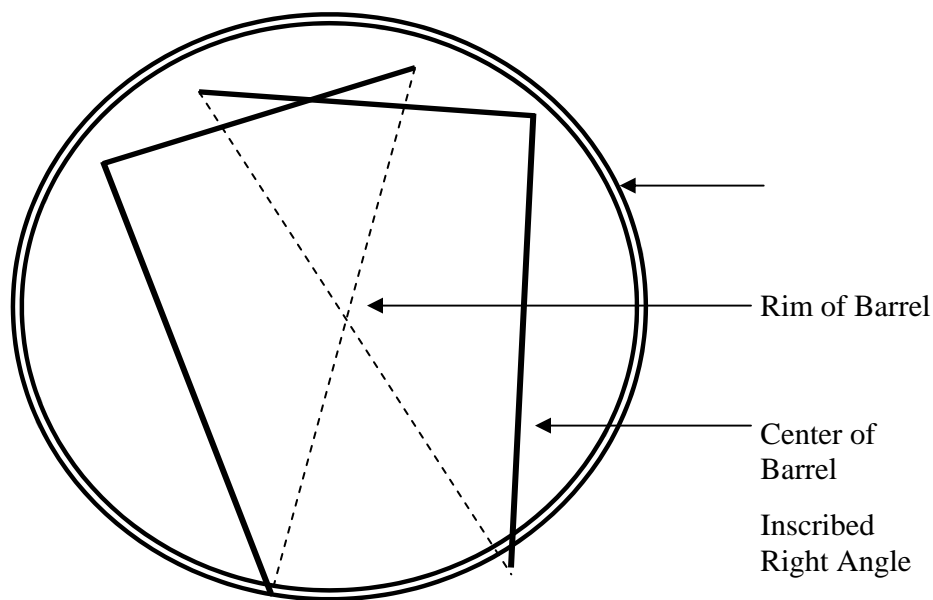
Detail A



1/2" Rod 42" long

Construction Sequence

1. Obtain a good 45 gallon drum that has not been used to hold any toxic chemicals. Those designated 'food grade' are the best choice. If the barrel is metal, it should be unpainted on the inside and free of rust. Plastic barrels may also be used.
2. To accommodate the steel axial rod, a 1/2" hole must be drilled through the exact center of the barrel at both ends. There are a number of ways of finding the center of the top and bottom of a circular barrel. One simple method (see illustration) is to use a carpenter's square to inscribe two right angles on the circular surface. The lines join the ends of the right angles will intersect at the center of the circle.



3. Mark the outline of the door opening on the outside of the barrel. The opening should be large enough (8"-10" x 16"-20" is good) to accommodate easy loading and unloading of material. For easier cutting, round the corners of the opening slightly. Drill a 1/4" hole on one of the lines to start the keyhole saw or sabre saw. If the door cuts across a rib on the barrel, a 1" vee notch must also be cut out on the rib to facilitate opening the door. Once the door has been cut out, re-attach it to the barrel using the hinges and hasp and the 1/4" x 1" stove bolts.
4. For ventilation, drill several rows of 1/4" holes into the barrel on the side opposite the door. To aid in heat retention, paint the entire outside of the unit with a flat black rust paint.
5. On the 3/4" piece of plywood, scribe and cut out two circles 7-1/2" in diameter and two 2-3/4" in diameter. Drill a 1/2" hole through the center of each. Center and glue each small circle to its larger counterpart. Slipping each set of circles temporarily over the 1/2" steel rod prior to gluing will ensure that they remain centered. After the glue has dried, attach the large circles to the ends of the barrel, as illustrated, with four 1/4" x 1-1/4" stove bolts per circle. Keep all the holes aligned.
6. File down each end of the steel rod by 1/2" to provide two flat parallel surfaces for drilling. Drill a 3/16" hole in each flattened end of the rod. Center punching the holes first will make them easier to drill.
7. For the support frame, take the 8' 2x4s and cut 4 pieces 40" long for the uprights, 2 pieces 29-3/4" long for the frame horizontal pieces and 2 pieces 27" long for the crossboards. On the horizontal pieces, drill a 1/2" hole in the exact center of the board (14-7/8" from each end) to accommodate the steel rod. On the outer narrow side of the uprights, mark and chisel out horizontal dado cuts for 1x3 side bracing. Start these 23" up from the bottom. The cuts should be 2-1/2" wide by 3/4" deep.
8. Assemble the two ends of the frame as illustrated with glue and two 1-1/2" No. 10 screws per joint. Use a corner lap joint between the uprights and the frame horizontal pieces. For additional support, brace the two U-shaped ends with the cross boards set at angle as shown. Pilot drill all screw holes with a 3/16" bit.
9. For the 1x3 side supports, cut 2 pieces 41" long and 4 pieces 23-3/4" long. Slip the steel rod through the wooden bearing pieces on the barrel and fit the barrel assembly through the holes on the support frame ends. Insert a washer and steel cotter pin through each end of the steel rod and bend back the pin to keep the barrel in place.
10. Stand up the end frames and insert and fasten the two 1x3 side braces to the dadoed uprights with glue and 1-1/2" No. 10 screws. Attach the corner braces in the same manner and trim the ends to fit. Pilot drill all No. 10 screw holes with a 3/16" bit.
11. In order to keep material properly turning in the barrel and not simply sliding along the bottom as it is rotated, take one or two remaining 2x4 scrap pieces, cut them to fit and wedge them into the barrel at an angle.

COMPOST SCREEN

A compost screen is a handy device for separating out the finely textured finished compost for immediate use from the remaining coarser, incompletely de-composted materials such as twigs, large lumps and nut shells. The latter can then be returned to the compost pile for further breakdown.

A compost screen can be constructed and sized to suit individual requirements and preferences. This design measures 20 inches by 18 inches and is adapted from one prepared by the Recycling Council of Ontario. A number of mesh sizes can be used depending on the end uses for the compost passing the screen. Finer, 1/4 inch mesh is suitable for finished compost to be used as lawn top dressing or in a seed starter mix.

List of Materials

- 1 6' 2x4
- 1 6' 1x2
- 1 2' x 2' piece of 1/4" galvanized wire mesh
- 8 3" common nails
- 16 1-1/2" common nails
- carpenter's glue

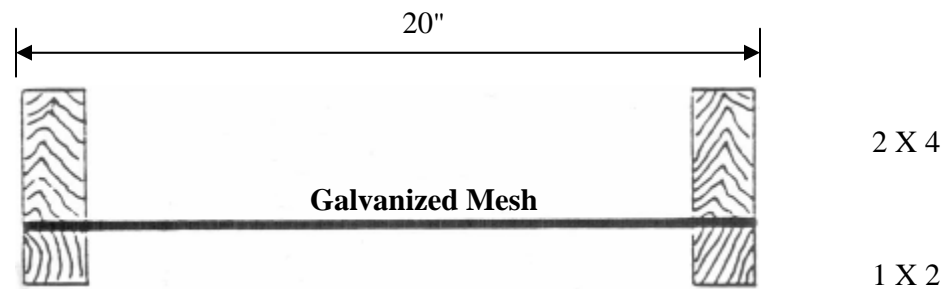
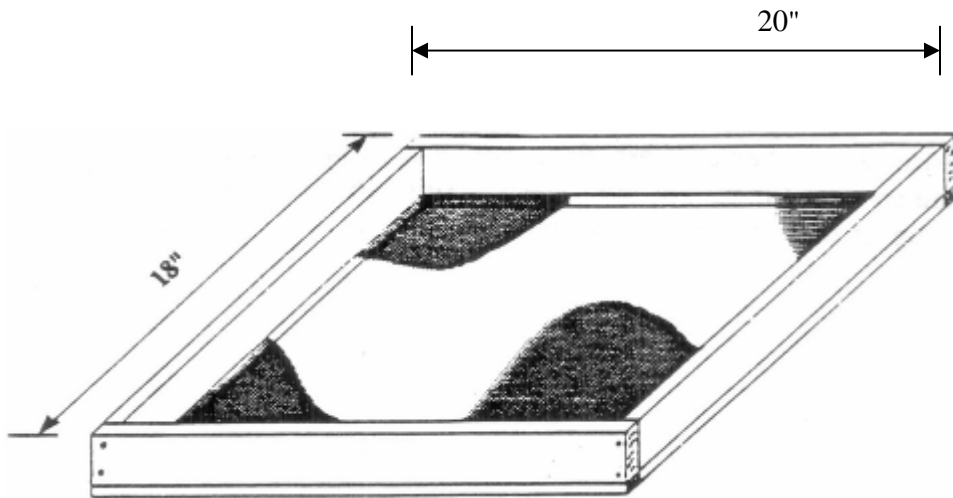
Specialized Tools

- tinsnips
- staple gun or power stapler

Construction Sequence

1. Cut the 6' 2x4 and the 6' 1x2 each into four pieces, two at 20", two at 15". With the 2x4 pieces on edge, form them into a rectangular butt joint frame and connect the frame together using carpenter's glue and two 3" nails at each joint. If required, the joints can be made more secure with screws and corner braces.

2. Cut the galvanized mesh to fit the frame and staple the two together. Use a staple every 4" around the edge. Tension the mesh so that it will not sag when filled with compost.
3. Once the mesh is secure on the bottom of the frame, nail the 1x2 strapping pieces over top of it.



HOMEMADE FOOD WASTE COMPOSTER

Properly composted food scraps can turn into an excellent fertilizer for gardens. However, composting food scraps in an open pile or mixed with yard waste can attract some unwanted urban pests - rats, mice, raccoons and possums! Here's how to easily make your own pest-proof food waste composter that avoids that problem.

Making the Composter and Getting Started

One of the simplest ways to compost food waste is in a sunken garbage can. The can should have a tight-fitting lid and holes punched in the bottom. A galvanized metal can (about \$15 new) works well. Drill or punch about 20 drain holes, 1/4 or 3/8 inch diameter, in the bottom of the can. Then drill 10 air holes in the side, spaced around the upper lip of the can. If the lid is not tight, make a lid out of a piece of plywood, with a handle on the top and some wood blocks underneath to fit the lip of the can and help hold the lid on.



Dig a hole about 15 inches deep in a well-drained corner of your yard and set the can into the hole. Then push the soil back in around the sides. Your new composter is ready to use! If odor or fruit flies are a problem you can stockpile bags of brown leaves, sawdust, straw, or shredded paper near the composter and place a thin layer of them on each new addition to the can.

Harvesting the Compost

Depending on your household's food habits, the composter will fill in 4-8 months. Now it's time to harvest some compost. You can shovel the upper foot or so of under-composed food off to one side and shovel the dark, soil-like compost out of the bottom. If the finished compost is wet and smelly, mix it with some soil and wait a week for it to turn drier and sweet smelling. Replace the top layer in the can. You can also bury the top layer in a trench in the garden, making more room for food scraps in the can. If you choose to use a second can, you can just let the food scraps sit until the worms move in and finish the composting!

Using Compost

The most common uses of compost are as a mulch on established plants, as a soil en-richener at planting time, and in potting mixes. Food waste compost contains more nutrients than yard waste compost, and should be used more sparingly. It can be applied as one-inch mulch around plants or up to two inches can be dug into garden soil. For a potting mix, add up to 20% food waste compost to a commercial or homemade potting mix.

Do Compost	Don't Compost
<ul style="list-style-type: none">• Vegetable Scraps• Grains and pasta• Fruit rinds and peels• Breads• Coffee grounds, filters• Tea Bags• Paper napkins, towels• Egg shells	<ul style="list-style-type: none">• Meat• Fish and poultry• Cheese• Oily foods• Butter• Other animal products

Problems?

Here are some common problems and how to fix them:

▪ **Odors and fruit flies**

Stir in leaves or sawdust to keep the pile aerobic. Cover the fresh food waste with leaves, sawdust, straw or shredded newspaper to exclude fruit flies. If you prefer to use grass clippings as a covering material, first leave them in the sun for a week until they turn brown. Once a health worm population is established in the composter, they will help reduce odors by aerating the pile. Always keep the lid closed.

▪ **Raccoons or dogs knock the lid off**

It's important to keep the lid on your composter to keep rodents out. Place a rock on the lid or tie a bungee cord from the can handle up through the lid handle and down to the other can handle to hold the lid on. And be sure to keep mean waste out! It smells bad and attracts animals, so it is better to put it in the garbage.

WORM BINS

- For fruit, & vegetable trimmings
- For indoors or outdoors, very compact
- Most fun! (See *Composting Fruit & Vegetable Trimmings* brochure)
- Produces small amounts of excellent fertilizer

1-PERSON PLASTIC WORM BIN

- Very easy to build; tidy for indoor use
- Plastic bins keep compost moist—will require regular additions of dry bedding
- \$6 - \$20 for new materials

MATERIALS

- ♦ (1) Plastic storage container with a tight-fitting lid – min. 10"-tall, 12"x24" base



TOOLS

Power drill with 1/4" bit *or* utility knife

ASSEMBLY

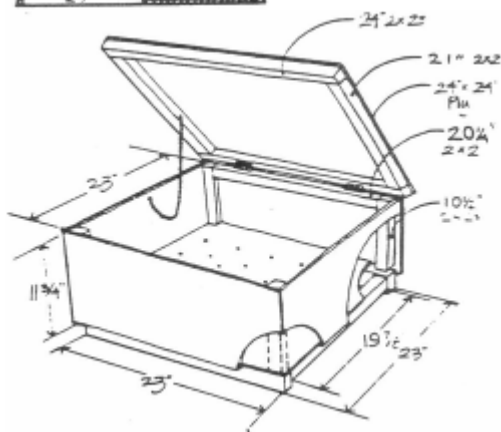
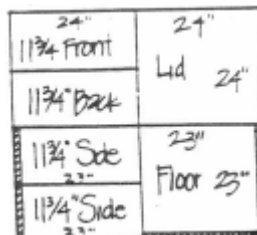
For indoor use, drill several holes for ventilation about half-way up the sides of the bin. For outdoor use, holes can be drilled in the bottom for ventilation and drainage. If you are using a utility knife to make holes, cut out triangles 1/4" or smaller.

2-PERSON WOODEN WORM BIN

- Basic carpentry skills needed for construction
- Doubles as a seat!
- Breathes well—will need occasional watering
- \$20 – \$30 for new materials

MATERIALS

- ♦ (1) 4'x4' pieces of 1/2" exterior-grade plywood
- ♦ (3) 6' pieces of 2x2" wood
- ♦ (1) 4' piece 2x4" wood



Based on design by

City Worms & Compost



HINGE DETAIL

- ♦ 1 lb. 4-penny galvanized nails
- ♦ 16" light chain with (2) 1/2" wood screws
- ♦ (2) 2" hinges, with 3/4" wood screws
- ♦ Waterproof wood glue

TOOLS

Power drill saw (use eye protection) or hand saw, hammer, measuring tape, pencil, square, drill with 1/4" and 3/32" bits, sandpaper.

ASSEMBLY

Glue all wood pieces before nailing.

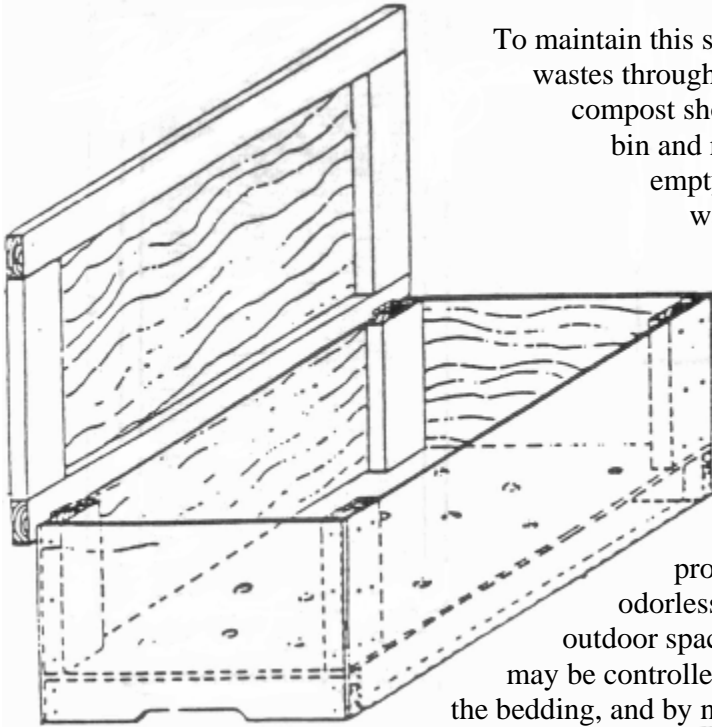
1. **Base:** Nail the two 23" 2x4s and two 19-7/8" 2x2s to the bottom of 23x23" plywood as drawn. Drill several 1/4" holes for drainage.
2. **Side, front & back walls:** Nail the four 2x2 uprights to the two side walls along the 11-3/4" edge, with one end

of each 2x2 flush with the top edge of the walls. Nail a 20-1/4" 2x2 hinge support to the top edge of the back wall piece, leaving 1-1/2" on each side for 2x2 uprights. Assemble box by nailing the 1-1/4" overhang of the side walls to the 2x2s on the base as drawn. Then nail the front and back walls to the 2x2 uprights and to the 2x4s on the base as drawn. Be sure the hinge support is at the top of the bin.

3. **Lid:** Nail lid together as drawn. Attach to box with hinges, make sure to pre-drill screw holes into the 2x2s, and position hinges as in detail. Attach chain with 1/2" wood screws so lid can rest in an opened position.

WORM COMPOSTING BIN

This system is designed for composting vegetable food wastes using red worms. Food wastes and worms are "bedded" in shredded and moistened newspaper, cardboard, peat or brown leaves. The worms turn both food wastes and bedding into a high-quality compost suitable for use on house plants, seeding or general garden use.



To maintain this system simply rotate burial of food wastes throughout the bin. Every 3-6 months the compost should be moved to one side of the bin and new bedding added to the empty half. At this time, start bury wastes in the new bedding only.

Within one month, worms will populate the new bedding, finished compost may be harvested from the first half, which can then be re-bedded. During the winter worm bins may be kept in a cool indoor space such as a basement or warm garage to avoid freezing. A

properly maintained worm bin is odorless. Bins may be placed in a shady outdoor space the remainder of the year. Flies may be controlled by placing a sheet of plastic over the bedding, and by not over feeding the worms.

This bin can be built for about \$35 with new wood and hardware or less using recycled materials. Worm bins can also be made from wooden boxes or other containers. Any worm bin must have drainage in the bottom and a tight fitting lid to keep moisture in and pests out. A starter batch of worms can be purchased at a small additional cost, or find some in an old compost pile! For more information, see Mary Appelhof's book, Worms Eat My Garbage.

Materials:

- 1 1/2" treated sheet of plywood
- 1 14 foot utility treated 2" x 4"
- 1 16 foot utility treated 2" x 4"
- 1 pound 4d galvanized nails
- 1/4 pound 16d galvanized nails
- 2 3 inch door hinges

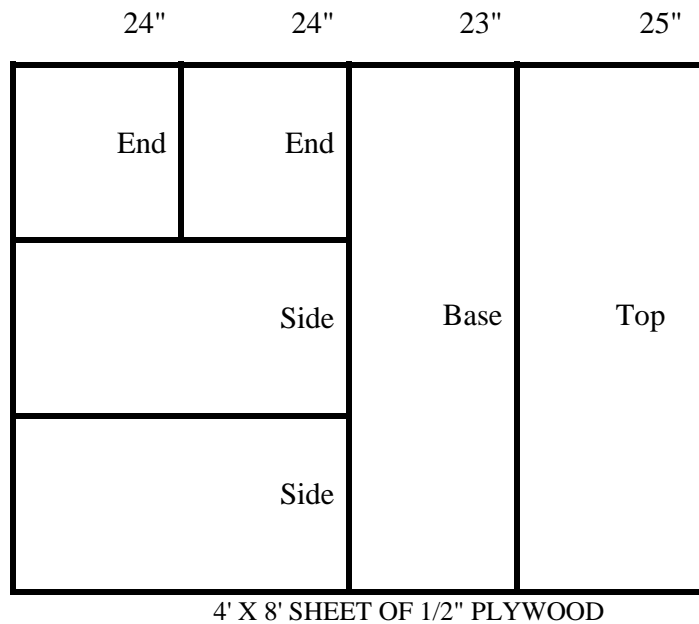
Tools:

Tape measure, skill saw or rip hand saw, hammer, saw horses, long straight edge or chalk snap line, screwdriver, chisel, wood glue, and drill with 1/2" bit.

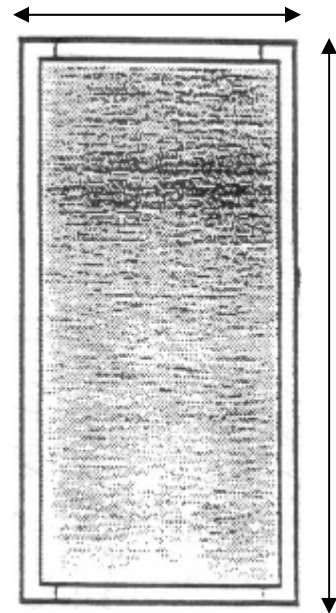
Wear eye and ear protection.

Where to Get Your Worms

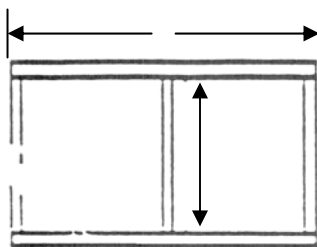
See the California Integrated Waste Management Board's website at www.ciwmb.ca.gov/organics/Worms/WrmSuply.htm for a listing of worm suppliers near you.



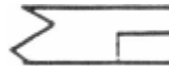
4' X 8' SHEET OF 1/2" PLYWOOD



TOP LID 2 X 4
FRAME WITH
PLYWOOD
COVER



BASE FRAME 2X4s



Construction Details:

Measure and cut plywood as indicated in the drawing above. To make the base, cut the 14 foot 2x4 into five pieces: two 48 inches and three 20 inches long. The remaining 12 inch piece will be used to make the sides. Nail the 2x4s together on edge with two 16d nails at each joint as illustrated in the Base Frame diagram. Nail the plywood base piece onto the 2x4 frame using the 4d nails.

To build the box, cut three 12 inch pieces from the 16 foot 2x4. Place a one foot 2x4 under the end of each side panel so that the 2x4 is flush with the top and side edges of the plywood. Nail the boards into place. Nail the side pieces onto the base frame. To complete the box, nail the ends onto the base and sides. To reinforce the box, place a nail at least every 3 inches wherever plywood and 2x4s meet. Drill twelve 1/2 inch holes through the bottom of the box for drainage and air circulation.

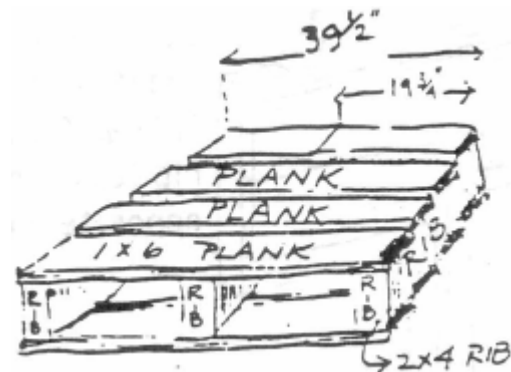
To build the lid, cut the remainder of the 16 food 2x4, into two 51 inch lengths and two 27 inch pieces. Cut lap joints in the corners, then glue and nail the frame together. Center the plywood onto the 2x4 frame and nail with 4d nails. Lay top on ground with plywood touching the ground. Attach hinges to the top and back using the short screws to the top and the long screw to the back. Position hinges so the screws go through the plywood to 2x4s.

PALLET WORM BIN

(DESIGNED BY BOB RUSKAN, SEATTLE, 632-0991)

List of Materials

- 1-2 good pallets yielding
8 planks and 3 ribs (see Diagram A)
- 60 bugle head (drywall) screws, 1-5/8" long
- 4 bugle head screws, 3" long



**Diagram
A**

Tools

hacksaw or metal blade to separate pallet wood

tape measure

hand square or something to draw right angles

skill saw or rip hand saw

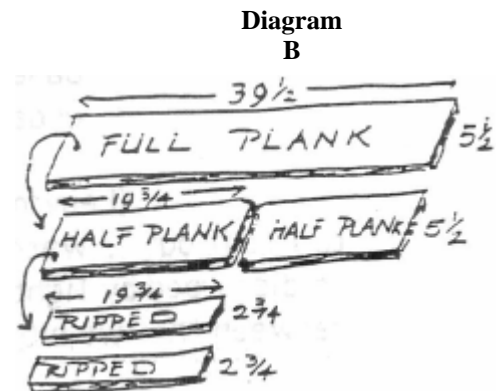
screwdriver (phillips)

drill with 1/8" bit for pre-drilling screw holes
1/2" bit for draining holes

Wear eye and ear protection.

Construction Sequence

1. Separate all lumber. This is the toughest part of the job.
2. Cut the eight full planks in half, making sixteen pieces 19-3/4" x 5-1/2" (Diagram B).



Rip one of these (cut lengthwise) to make two pieces 19-3/4" x 2-3/4" (Diagram B).

You now have two ripped pieces and fifteen half planks. Discard one of the halved planks; you only need 14 of them.

3. Cut the 2x4 RIBS as follows:
For BASE, 2 pieces @ 16-1/2"
SIDES, 4 pieces @ 14"
TOP, 2 pieces @ 14-3/4"

Diagram C

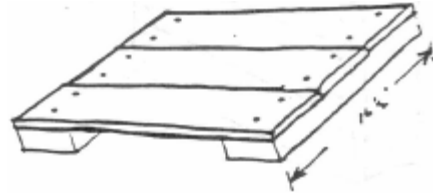
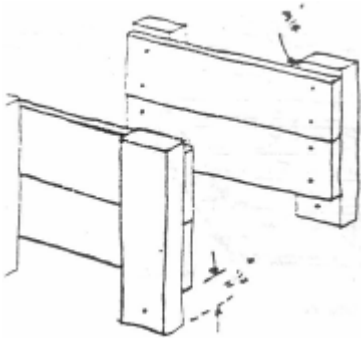


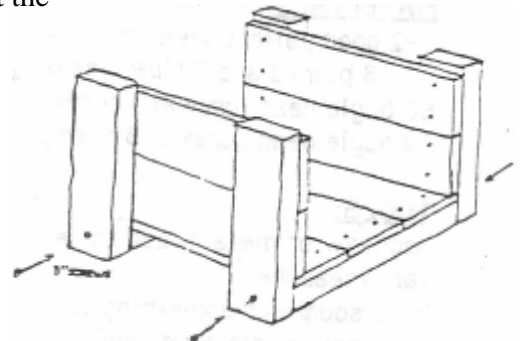
Diagram D



PRE-DRILL SCREW HOLES throughout the following steps.

5. To make SIDES, see Diagram D. Screw two plank pieces to two 14" rib pieces, leaving 3/4" from the top of the rib (so the box lid can fit flush) and 2-1/4" from the bottom of rib (to accommodate base). Repeat for opposite side.

Diagram E



Screw these sides into the base using 3" screws, as in Diagram E

For each of the remaining sides, screw a ripped half plank piece to the top of the 14" rib, and add 2 regular half plank pieces below it. See Diagram F and Diagram H.

Diagram F

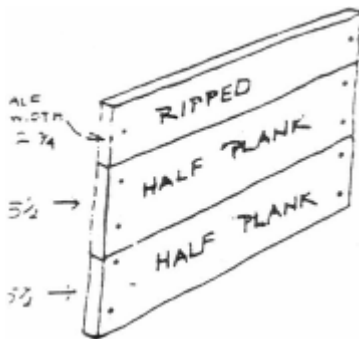
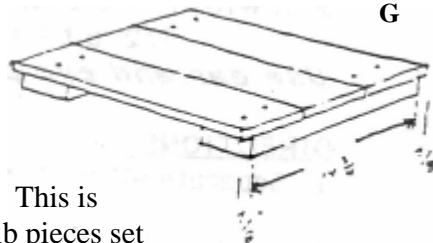


Diagram G



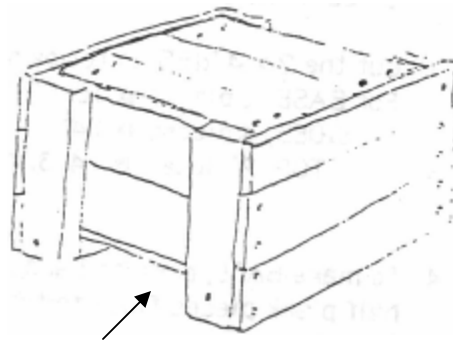
6. To make LID, see Diagram G. This is like the base, but uses two 14-3/4" rib pieces set back 7/8" under the plank pieces to allow lid to close flush.

[Leaving the middle lid plank unscrewed allows children to lift it out to watch worms without opening the lid. Worms won't be disturbed by light if red cellophane (gift-wrap) is stretched between the two rib pieces before screwing in the other planks.]

7. Drill four or six 1/2" holes though the bottom of the box for drainage.

Diagram H





Completed worm bin

Drill drainage holes in
bottom

BENCH-SIZE BIN: Follow the same directions, keep ribs the same size throughout, keep the sides in Diagram F the same size. Substitute 10 full uncut planks (39-1/2" long) for half planks needed in the BASE, LID, and the sides seen in Diagram E. You'll need 4 pallets, 15 planks in all, 3 ribs.