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Build an Eight Frame, Two Hive Migratory Pallet

Eight frame hive body users tend to get forgotten or left out. I was approached by Don Cole to design an eight frame two hive pallet that he could be easily moved with a modified hand dolly. We negotiated the requirements, and this is the result. Included at the end is a picture of the hand dolly that Don uses to move his pallets.
The main requirements for the pallet was durability – It had to last for many years of rough use. As with all hobby-oriented bee equipment, it had to be relatively easy to make and inexpensive.
I based the new pallet design on my old ten-frame migratory pallet design.
Don plans on building sixteen pallets before next spring.
Note: Dan Cole can be contacted at: honey@backfortybees.com.
Note: All pictures are courtesy of Don Cole

Parts (Thickness x Width x Length) – 8 frame 2 hive - migratory pallet
2" x 4" x 22⅜" – ground standoff supports (3) – pressure treated
½" x 22¾" x 27½" – hive bottom boards (1) – CDX plywood
¾" x ¾" x 27½" – bottom board back rim (1)
¾" x ¾" x 20" – bottom board side rim (2)
¾" x 2" x 18⅜" – bottom board center rim (1)
¾" x 1½" x 9" – bottom board front rim (1)
1" x 4" x 27½" – standoff stabilizers (2) - pressure treated
Hive clips (2) – Mann Lake # HD-649 – "W"
Construction adhesive – one tube – exterior wood to wood adhesion
Dry wall spackle - optional

Note: The ¾" extensions of the standoffs protect the bottom board from forklift operators (sometimes).
Note: An assumption of ½" width center section of the "W" hive clip. **(To be verified by ED)**
(I will measure one once I get to the shed later this week. It may throw the width off by ¼" if my assumption is incorrect.)
Note: The narrower width of 27 ½" may not work with a standard pallet lifter that has fixed tine locations.

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Construction

Although a two-hive pallet is smaller and lighter than a four-hive pallet, during construction you still need space to manipulate the unit. As parts are added to the pallet it becomes increasingly heavy and unwieldy. But once they are finished, they are meant to be moved with a hand dolly or a skid loader.

Forewarned: The hive clips (parts 8) are available in 2 designs. The "U" design forces you to have your hive body sides touching each other. Consequently, the migratory tops are touching. The "W" design provides for a space between the hive bodies and allows you to manipulate the hives a little easier. The decision is yours.

Step 1: Cut the three standoffs (parts 1). These are made from pressure treated wood that when stood on edge, provide the space under the hive bottom boards for the dolly or forklift to slip its lifting tines into.

Step 2: Cut the bottom board (part 2) from ½" cdx plywood. Paint one side of the bottom boards at this time. The painted side will become the bottom (underside) of the bottom board. Two thick coats of paint help ensure a longer life for the pallet.

Hint: Some home improvement stores will cut wood for you at no extra cost. I can no longer manipulate a 4' x 8' sheet of plywood, so it comes in handy to have the sheets cut to manageable sizes.

Hint: Free paint is usually available at the local recycling center. It is available in individual cans or in five-gallon pails. A pail is usually marked as to the type of paint and color.

Step 3: Lay the standoff supports cut in step #1 on a flat surface. Place them on edge and mark a ¾" line from each end of each board. This is the setback to the front of the bottom boards. By allowing ¾" of the supports to extend in front and back of the bottom boards you provide a little protection from overzealous forklift operators.

Hint: If you are building multiple pallets, consider making a jig to hold the standoffs in position. I used the an old 4' x 4' sheet of plywood and screwed in positioning cleats to hold the standoffs on alignment while I added the bottom boards.

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Step 4: Place the bottom boards painted side down on the standoffs, two standoffs on the outside edges and one in the middle. When positioned and everything looks square, remove the bottom board and lay a bead of construction adhesive (part 8) on the standoffs. Replace the bottom boards and put a screw or staple in the outside corners of the bottom board. Remember to keep the ¾" setback from the edge of the standoffs. After making sure the pallet is square, finish attaching the bottom board.

Step 5: Turn the pallet over and using construction adhesive and screws add the standoff stiffeners (parts 7) to the bottom of the pallet. In addition to stabilizing the standoffs they provide the support when a pallet is stacked on top of another set of hives. These stiffeners are set back from the front of the standoffs and provide extra stability to the pallet.

Step 6: Turn the pallet right side up and add the rims (parts 3 thru 6) to the bottom board. Use construction adhesive and screws, nails or staples that are long enough to penetrate the rim, the bottom board and still extend into the standoffs. Turn the pallet over and staple or nail through the bottom board into the back rim where stapling from the top would leave exposed fastener points.
Note: From experience – Staple and nail or screw points hurt when grabbed by your hand.

Step 7: Test fit but do not install the hive clips (parts 7). Make sure the hive bodies fit correctly and are able to be tilted for inspection. Set the clips aside for later installation.

Note: The beveled edges of the hive clips face the front and back. This provides for easier positioning of the hive body and allows you to tilt the hive body to look at the underside of the frames.

Step 8: Now is the time for two more liberal coats of paint to the top of the bottom boards. Be sure to coat the edges of the bottom board. Moisture getting in here will separate the plywood laminates.
Note: Before painting the base, smooth spackle on the exposed plywood edges. Then sand it smooth. Painting is much easier when you do this and hopefully the paint will help protect the plywood.

Step 9: Add the hive clips (parts 7) at this time. They are positioned on the center rim just inside the back and front rims. Before screwing them down, make sure a pair of hive bodies will be able to fit in them and align correctly with the front and back bottom rim.

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Step 10: Paint your identifier on the pallet where it is clearly visible. If you are small like we are and consigning your hives to a company for wintering, they usually require that all your equipment be identified.

Conclusion

This smaller lighter weight pallet should last a long time. Being smaller and easier to move than a four-way pallet, you should be able to position it with a modified hand dolly.

Note: By changing the width of the pallet it would work for a ten-frame hive bodies.

DON ----------

Hand dolly and hand dolly in use goes here!

Additional sales information for your company goes here.

All the pictures are place holders and suggestions for pictures. You decide.

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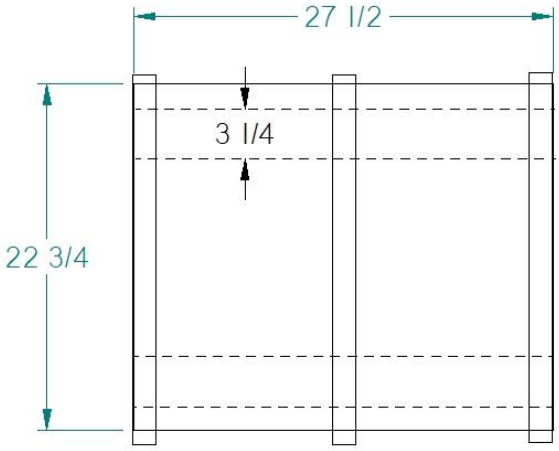
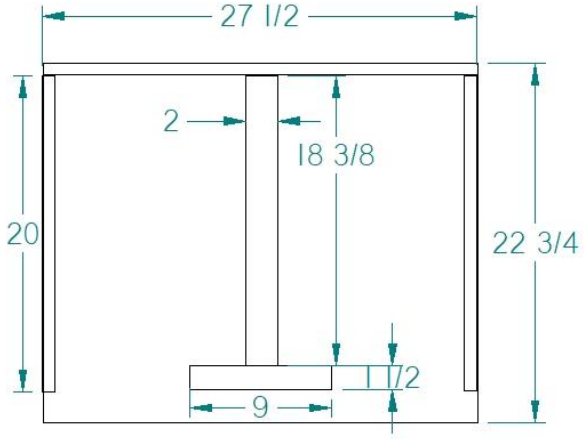
Drawings



2 Hive pallet
8 Frame base - 13 7/8" x 19 7/8"



2 Hive pallet
8 Frame - Bottom board

Plywood Bottom Board Cutting Layout.