Tray and Box Construction

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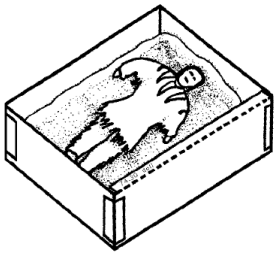

Illustrations: Figures 1-3, 7 and 9: Nancy Davis
Figures 4-6 and 8: Karen Ackoff after sketches by Nancy Davis

Purpose

Archival boxes and trays are commercially available but are expensive and come in a limited number of sizes. To protectively house artifacts of varying sizes, to maximize storage space, and to cut down on costs, it is often desirable to produce in-house, tailor-made boxes and trays. Trays allow excellent visibility and the outer boxes provide protection from light and dust. Trays are also useful for carrying artifacts.

Description

Stackable trays and boxes are made from alkaline buffered corrugated paper board. The sides are folded up and held in place with pH neutral linen tape. Trays can be stacked inside a box with a removable lid for maximum storage efficiency (Fig. 2).

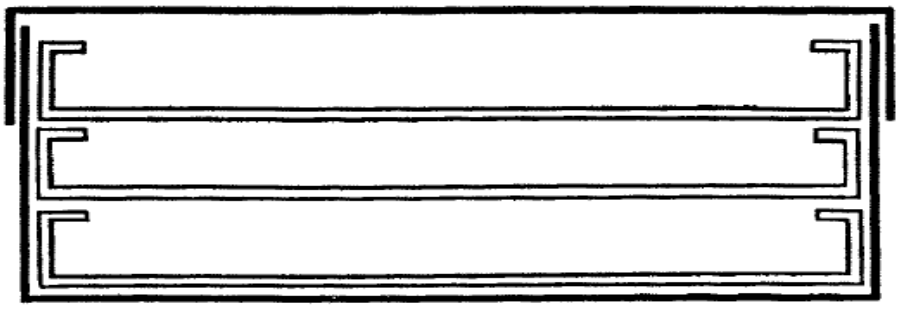

Figure 2: Cross section showing stacking trays inside a box.

Materials Tools Supplies

- 100% cotton terry cloth
- Alkaline buffered paper board, corrugated, 1/4in double wall or 1/8in single wall or pH neutral paper board, corrugated,
  or corrugated polyethylene board
- Ceramic water wheel to moisten tape
- Clothes pins, wooden
- Glue gun and hot melt adhesive
- Metal straightedge
- pH neutral linen tape, gummed, 1-11/2in
- pH neutral paper, lightweight tissue
- Polyethylene foam sheeting
- Polyvinyl acetate emulsion
- Scalpel with #11 blades
- Utility knife

Construction

Trays with sides

1. Following the diagram (Fig. 3), measure the board to the desired dimensions.
2. Cut the board on the outer lines with utility knife and a metal straightedge.
3. Score the board on the dotted lines by cutting part way through the thickness.
4. Fold up the narrow sections to form the sides. The board will bend easily in the direction opposite the scoring.
5. Hold the corners together with strips of pH neutral, gummed linen tape.
6. Bend the small section on figure 3 to form a lip that can be used to write the object identification number.

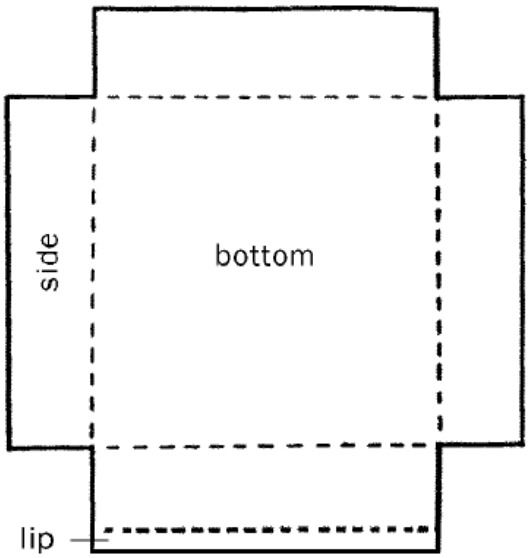

Figure 3. Pattern for tray construction.

OR

1. Cut and score 1/8in single wall paper board according to figure 4.
2. Using a scalpel blade #11, cut the corrugation and inner layers of paper away from corners shaded in figure 4.
   Figure 5 shows the paper tabs that will be formed.
3. Fold up the sides of the box, and wrap the paper tabs around each corner. Adhere the tabs in place with polyvinyl acetate emulsion, using clothes pins to hold the tab in place while the adhesive dries. (Fig. 5)

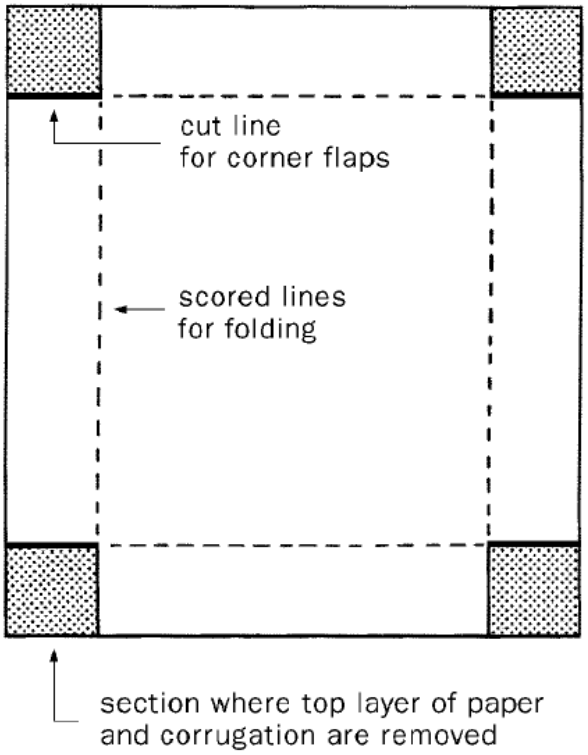

Figure 4. Pattern for alternate box showing sections where top layer of paper and corrugation are re-moved to create a flap to wrap around the corner.

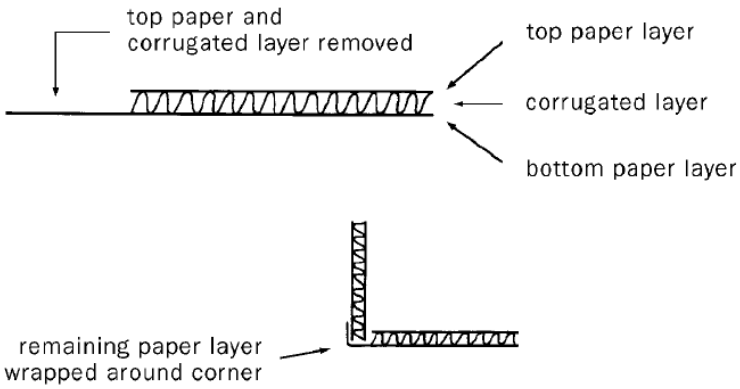

Figure 5. Cross section of corner construction

Boxes with Removable Lids

This type of box is made following the same procedure as for the tray construction. The box bottom is measured and cut according to the diagram in Figure 3 or 4. Cut the lid slightly bigger on all four sides to overlap the bottom. (Increase the sides by 1/8in for single wall board and 1/4in for double wall board.) The lid is cut to half the size of the sides of the box to permit easy removal .

Figure 6. Side view cross section of corrugated box.

Stacking Trays with Sides

This tray design works very well when fragile or crushable artifacts must be stacked in a box (Fig. 2).

1. Draw a tray pattern so that the depth of the tray is slightly greater than the highest artifact.
2. Include a flap on all four sides of the box pattern (Fig. 7). Follow instructions for tray with sides.
3. Trim the lips at each corner so that the four lip sections are flush.
4. Bend over flaps on all four sides to form lips. The lips provide a support onto which the next tray will rest.
5. Add twill tape handles, or cut finger holes in lip or sides so trays can be removed easily when they are stacked.

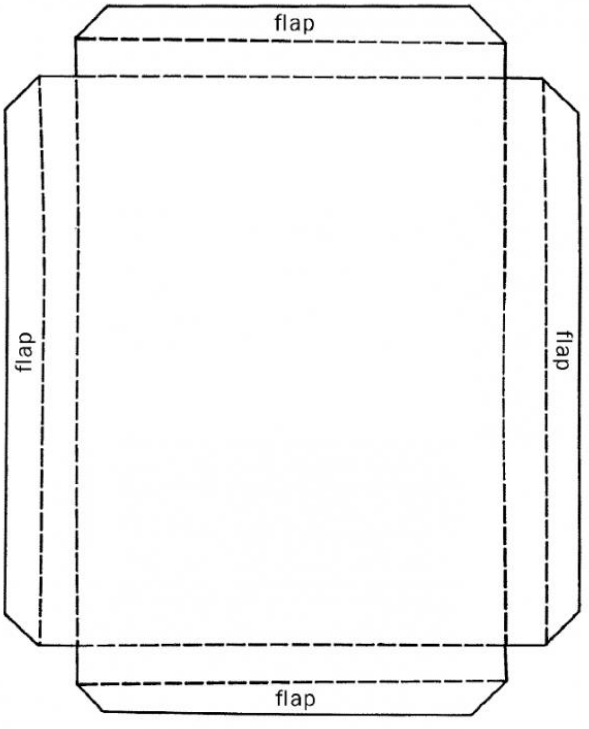

Figure 7. Pattern for stacking tray

Flat trays with Handles

The handles facilitate lifting the tray out of a box or drawer. This tray is much simpler to construct than the sided trays, however, the flat board design does not permit stacking (Fig.8).

1. Measure and cut a piece of corrugated paper board or polyethylene board slightly smaller than the base dimensions of the box or drawer.
2. Form two handles by punching holes with an awl, and threading and knotting lengths of cotton twill tape through the holes. These handles facilitate the removal of the tray from the box (Fig. 8).

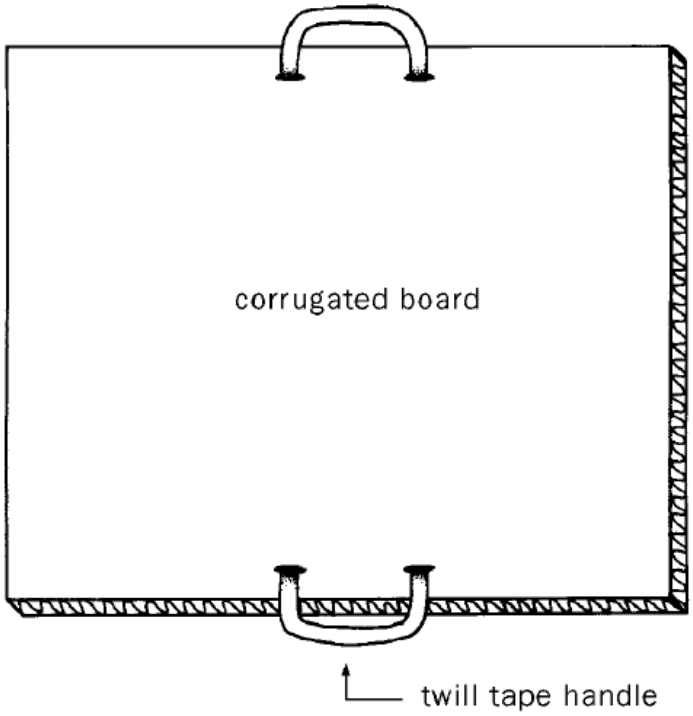

Figure 8. Flat tray with handles.

Comments

The single-wall corrugated, 1/8in board is used for lighter weight and smaller artifacts while the double walled 1/4in board should be used to make sturdier boxes for heavier or larger artifacts.

The corners of larger trays or boxes should be reinforced with a separate piece of board held in place inside the corners with hot melt adhesive (Fig. 9).

For larger boxes, it may be necessary to reinforce the scored and bent edges with lengths of pH neutral linen tape.

The bottoms of trays and boxes should be padded to cushion the objects. Use materials such as pH neutral tissue or polyethylene foam sheeting. Cotton terry cloth also can be used to provide a napped padding. Cover the tray with the terry cloth, and adhere the cloth to the reverse side with hot melt, or polyvinyl acetate adhesive.

When housing protein based materials be sure to use non-buffered, pH neutral board and tissue.

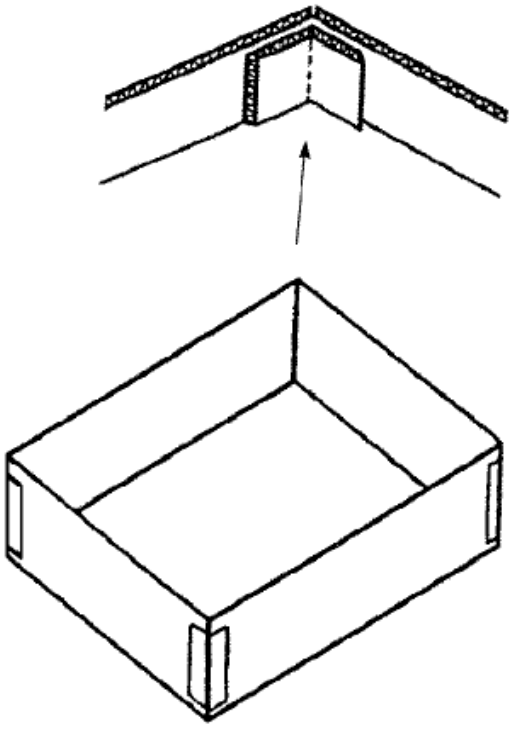

Figure 9. Corner reinforcement for larger trays or boxes.