

# Support Trays and Storage for Arrows

Ford Conservation Center

## Acknowledgements



Storage conditions have long been recognized by museum professionals as important factors in the long-term survival of artifacts. Although all materials deteriorate over time, stable environment, controlled lighting, careful handling, and the use of appropriate housing materials are strategies developed to slow the rate of degradation.

The housings found within this packet were developed by Jessica Waite and Tina Koeppel with assistance from the staff of the Ford Conservation Center, a division of

History Nebraska as part of a larger project, funded in part with a Save America's Treasures grant, to improve the storage conditions for the History Nebraska Native American collection.

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The collection of more than 3000 Native American objects was at risk due to inadequate storage space that caused ongoing damage to objects; space constraints that made safe access to artifacts nearly impossible; and toxic pesticide contamination. Staff members developed a project to remove or reduce these threats by increasing storage space and accessibility through the addition of safe, high-density compactor storage units; testing for harmful residues; cleaning and conserving each artifact; and rehousing each artifact in a protective archival housing. At the same time, each artifact was cataloged, photographed, and entered in to the collections management database. This greatly improved access to information and artifact images for staff, researchers, and the public.

## Support Trays

Trays are used to provide adequate support and handling of various types of objects and may also be used as space saving tools by stacking multiple trays in one box. The size of the box, the height of the box and the weight of the objects will determine whether or not a single, double, or triple tray will be required.

The trays were made using pH neutral, corrugated blueboard. Trays may be covered with



ethafoam and soft-structure Tyvek for additional cushioning or padding. The trays are designed to fit in standardized or custom boxes.

## Directions

### Single Layer Tray

- 1) Determine the dimensions of the storage box and the objects that will be stored in the box (length, width, height). The height of the objects and the height of the box determine how many trays may be placed in the box.
- 2) Draw the tray according to the diagram (Fig. 1)
- 3) Cut out the tray with a sharp utility knife. Change the blade often.
- 4) Cut the corners at an angle to help lift the tray out of the box.

### Double Layer Tray

- 1) Determine the dimensions of the storage box and the objects that will be stored in the box (length, width, height). The height of the objects and the height of the box deter-

### Materials Needed:

- 1/8in or 1/4in Ethafoam
- Variable heat hot glue gun
- Glue Sticks
- Metal straight edge
- Soft-structure Tyvek, cut to size
- pH neutral blueboard, 1/4 inch thick
- Utility Knife

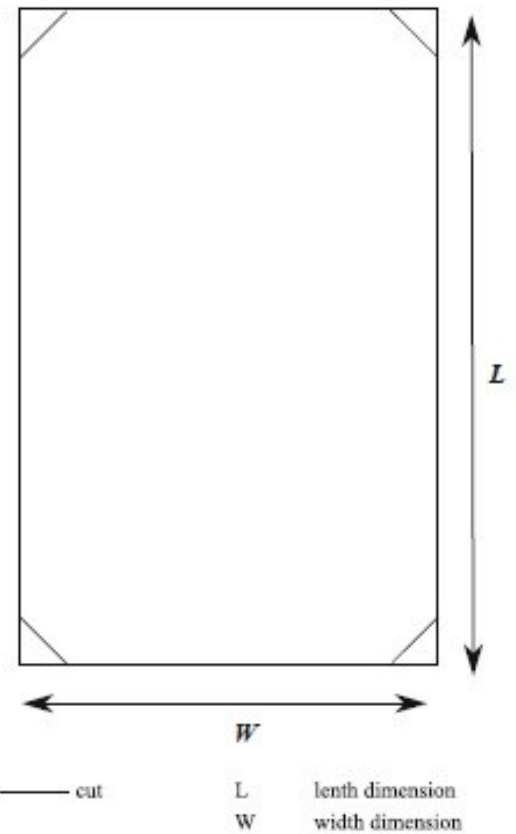


Fig. 1

mines how many trays may be placed in the box.

- 2) The length and width of a box and the weight of the objects determines the need for a double tray. If a single tray bends as it is lifted, a double layer tray is required.
- 3) A double tray requires two trays glued together with the corrugated blueboard at right angles to adjacent layers for strength (Fig. 2).
- 4) Draw the first tray according to the diagram in Fig. 1 with the flutes running lengthwise.
- 5) Cut out the tray with a sharp utility knife. Change the blade often.
- 6) Draw the second tray according to the diagram in Fig. 1 so the flutes of the blueboard are running at right angles.
- 7) Cut out the tray with a sharp utility knife. Change the blade often.
- 8) Using the hot glue gun on high setting, adhere the two trays together.
- 9) Cut the corners at an angle to facilitate lifting the tray out of the box.

#### *Triple Layer Tray*

- 1) Determine the dimensions of the storage box and the objects that will be stored in the box (length, width, height). The height of the objects and the height of the box determines how many trays may be placed in the box.
- 2) The length and width of a box and the weight of the objects determines the need for a triple tray. If a double tray bends as it is lifted, a

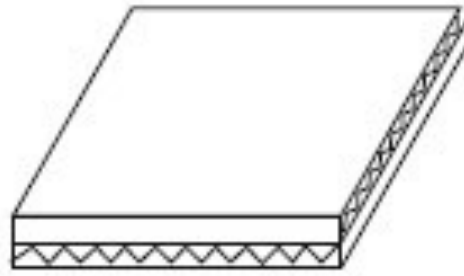


Fig. 2

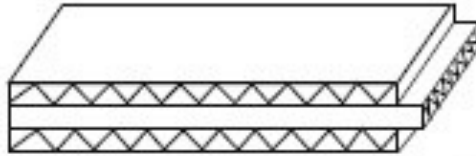


Fig. 3

- triple tray is required.
- 3) A triple tray requires three trays glued together with the corrugated blueboard at right angles to adjacent layers for strength (Fig. 3).
  - 4) Draw the first tray according to the diagram in Fig. 1 with the flutes running lengthwise.
  - 5) Cut the tray with a sharp utility knife. Change the blade often.
  - 6) Draw the second tray according to the diagram in Fig. 1 with the flutes running widthwise.
  - 7) Cut the tray with a sharp utility knife. Change the blade often.
  - 8) Draw the third tray according to the diagram in Fig. 1 with the flutes running lengthwise.
  - 9) Cut the tray with a sharp utility knife. Change the blade often.
  - 10) Using the hot glue gun on high setting, adhere the three trays together.
  - 11) Cut the corners at an angle to

“Do not use the hot glue gun on high setting for it will melt the ethafoam.”

facilitate lifting the tray out of the box.

*Cushion or Padding*

- 1) Some objects require rigid support mounts, such as trays, but also additional soft support to prevent further damage. Determine if the objects need additional cushioning.
- 2) If the objects need cushioning, cut out 1/8in or 1/4in ethafoam according to the diagram in Fig 1, using the tray's dimensions.
- 3) Using the hot glue gun on low setting, adhere the ethafoam to the tray. Do not use the hot glue gun on high setting for it will melt the ethafoam.
- 4) Cut out the same number of ethafoam pads as the number of trays.

*Cover*

- 1) Trays may also be covered with soft-structure Tyvek to prevent movement.
- 2) To determine the dimensions of the Tyvek cover, add 1.5in to the length and width of the tray.
- 3) Cut out the Tyvek cover with a sharp utility knife. Change the blade often.
- 4) Using the hot glue gun on low setting, adhere the Tyvek to the underside of the tray.

*Stacking Tray*

- 1) Stacking trays is a great way to maximize space. The amount of space between each tray should be enough to prevent flattening, abra-

sion, or other damage to the objects from the tray above.

- 2) Determine the height of the tallest object on the tray. Add 1/2in to the height to determine the height of the rigid tray supports. Tray supports can be made from ethafoam (for light weight objects) or blueboard (for medium to heavy weight objects).
- 3) The number of tray supports is determined by the size of the tray and the weight of the objects. The trays should remain rigid and not

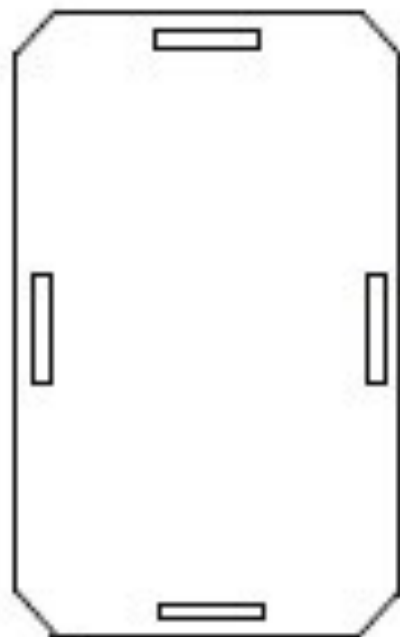


Fig. 4

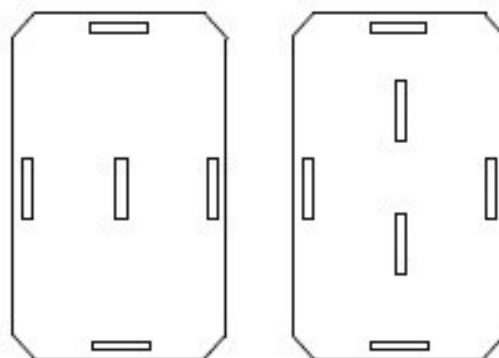


Fig. 5

“Stacking trays is a great way to maximize space. The amount of space between each tray should be enough to prevent flattening, abrasion, or other damage to the objects from the tray above.”

bend or buckle when loaded with objects and placed within the box. The size of the tray and weight of the objects determines the number of tray supports needed as well as the type of support needed. Small trays should have four supports at the edge (Fig 4); medium trays should have four edge supports with one to two supports in the center (Fig. 5) and large trays should have four to six edge supports with two to three supports in the center (Fig 6).

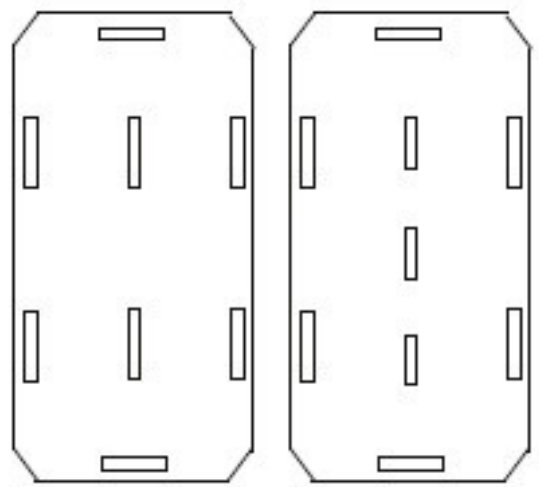


Fig. 6

- 4) Tray supports made of blueboard can be made into triangular or rectangular supports. Triangles should be used for heavier objects. The dimensions of the supports are determined by the person making the housings.
- 5) For triangle blueboard supports, refer to the top diagram in Fig. 7. Cut along the solid lines only using a sharp utility knife.
- 6) Score along the dashed lines using the utility knife or a bone folder. Be careful not to cut through the underside of the blueboard.
- 7) Fold the blueboard along the scored lines. Using the hot glue gun on high setting, adhere the

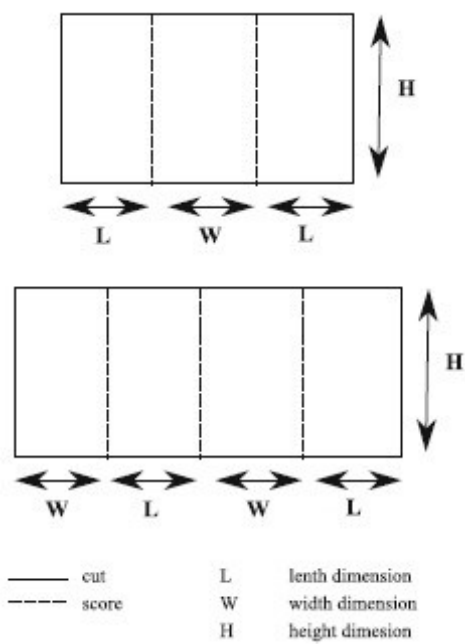


Fig. 7

two sides together.

- 8) For rectangular blueboard supports, repeat steps 5-7 using the bottom diagram of Fig. 7.

## Storage of Arrows

These trays were developed to provide adequate support and storage of the arrow collection at the Nebraska History Museum. The arrows were originally piled

atop each other in a box with no support. This storage system led to damaged fletching, broken feathers, and loose points. The tray is made using pH neutral corrugated blue-

board and the arrows are supported with notched ethafoam planking or tri-rod.



## Directions

### Materials Needed:

- Medium polyethylene tri-rod or 2 inch ethafoam planking
- Variable heat hot glue gun
- Glue Sticks
- Metal straight edge
- pH neutral blueboard, 1/4 inch thick
- Utility Knife

- 1) Determine the dimensions of the storage box (length, width, height). A standard box of 18in x 40in x 6in is best for arrow storage. One box can hold two to three trays of arrows.
- 2) Using the directions from the section “Support Trays,” follow the instructions for cutting out stacking double tray.
- 3) Cut two pieces of ethafoam or tri-rod to fit the tray according to Fig. 1.
- 4) Using the hot glue gun on the low setting, adhere the cut foam to the tray.
- 5) Using the sharp utility knife, notch the tri-rod at predetermined intervals. The tri-rod can be notched into a “V” or “U” shape (see Fig. 2). The size of the notch should be the same size as the arrow shaft. Too much room can cause movement while too little room can cause abrasion.
- 6) Place arrows in notches, alternating fletching to point.

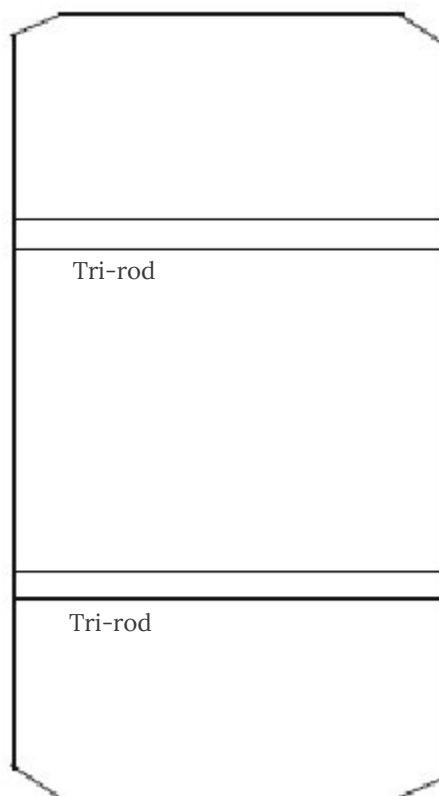


Fig. 1

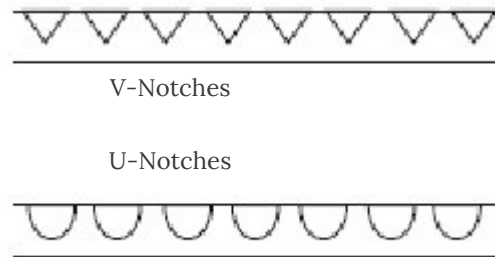


Fig. 2

## Consulting a Conservator

If you have any concerns about the care of your object, consult a conservator in your area for further guidance. A conservator will be able to assess all the issues relating to its condition and long-term care. Conservators can also provide structural repairs, aesthetic compensation, and protective coatings for a range of materials.

## Additional Resources and References

Minnesota State Historical Society, <http://www.mnhs.org/preserve/conservation/index/html>

National Park Service, Conserv-O-Grams, [http://www.nps.org/museum/publications/conservation/cons\\_toc.html](http://www.nps.org/museum/publications/conservation/cons_toc.html)

Odegaard, Nancy and Alyce Sodongei, eds. *Old Poisons New Problems<sup>8</sup>Information and Resource Guide for Contaminated Cultural Materials in Museum Collections*– Altamira Press[<sub>9772</sub>–

Odegaard, N., S. Carroll, and W. Zimmet. *Material Characterization Tests for Objects of Art and Archaeology*. London}Archetype Publications[<sub>9777</sub>

Ogden, Sherelyn, ed. *Caring for American Indian Objects<sup>7</sup>A Practical and Cultural Guide*. St. Paul, MN: Minnesota Historical Society Press, 2004.

Rose, C.L. and de Torres, A.R., editors. *Storage of Natural History Collections<sup>7</sup>Ideas and Practical Solutions<sup>3</sup>* Society for the Preservation of Natural History, 1992 (reprint 2002)

## Conservation Suppliers

### Conservation Resources International

5532 Port Royal Road  
Springfield, VA 22151  
Toll free: (800) 634-6932

[www.conservationresources.com](http://www.conservationresources.com)

*Archival housing/storage supplies, photographic supplies, general*

### Gaylord Archival

P. O. Box 4901  
Syracuse, NY 13221-4901  
Toll Free: (800) 448-6160

[www.gaylord.com](http://www.gaylord.com)

*General conservation supplies, housing supplies*

### Hollinger Metal Edge, Inc.

6340 Bandini Blvd  
Commerce, CA 90040  
Toll Free: (800)-862-2228

[www.hollingermetaledge.com](http://www.hollingermetaledge.com)

*Archival housing/storage supplies*

### Light Impressions

100 Carlson Road  
Rochester, NY 14610  
Toll Free: (800) 975-6429

[www.lightimpressionsdirect.com](http://www.lightimpressionsdirect.com)

*Photographic supplies, housing, matting and framing supplies*

### University Products

517 Main Street  
P. O. Box 101  
Holyoke, MA 01041  
Toll Free: (800) 628-1912

[www.universityproducts.com](http://www.universityproducts.com)

*General conservation supplies, housing and matting supplies*

### Talas

330 Morgan Ave  
Brooklyn, NY 11211  
Telephone: (212) 219-0770

[www.talasonline.com](http://www.talasonline.com)

*Conservation supplies, photographic supplies, general*



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