

Matting and Hinging of Works of Art on Paper



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Foreword

Matting and Hinging of Works of Art on Paper is a comprehensive review of some conservation techniques used at the Library of Congress and elsewhere and is intended to serve as a standard reference tool in the field. It is directed to practicing paper conservators, custodians, and curators in libraries and archives who wish to utilize the latest methods for matting and hinging important works of art on paper.

The preservation of library materials has long been a major concern not only of the Library of Congress but of research libraries across the nation, and, indeed, throughout the world. To meet the need for coordination of preservation efforts within the United States, the Library of Congress established the National Preservation Program Office in 1977.

One important function of the office is to communicate to the rest of the library and archival community important preservation information developed by those who work on the Library's own collections. *Matting and Hinging of Works of Art on Paper* is the second in a series of publications to be produced under the auspices of our National Preservation Program as a continuing contribution to a cooperative national preservation effort.

PETER G. SPARKS
Chief, Preservation Office

Introduction

In the Western Hemisphere, the mat has become one of the most popular primary housings for paper art works. It is accepted as such by a wide variety of users because it can provide adequate protection and support while also enhancing the appearance of the art work. This form of housing has been adopted by the majority of American paper conservators, especially since high quality mat board has become generally available.

The Library of Congress has in its collections well over three hundred thousand drawings, prints, maps, manuscripts, and photographs for which the favored storage and handling arrangement is the mat. These collections present the full range of problems concerning protection and support that a mat must solve before the original work can be safely housed and served to the public in one of the Library's reading rooms. The mat for an oversize print by the American artist Jim Dine is constructed from far different materials and very different techniques are used than for a much smaller print by Mary Cassatt. Because it is drawn on vellum, a rare manuscript map of European trade routes requires a different form of mat structure and hinging technique from a similar map done on paper, although when exhibited both mats would appear to be much the same. Within some individual collections, relatively disparate forms of original works must be stored together for historical or artistic reasons. Thus Alfred Stieglitz's *The Steerage*, a gravure mounted on board, must be housed with other photographs that are printed on much lighter weight paper without the gravure's brittle mount board causing or receiving damage. Within the Library of Congress, mats not only provide protection and support; they also impose a standard size and format upon a wide range of materials, provide a safe, yet intimately connected surface for annotation, and present works in a traditional and aesthetic manner.

The conservation community has long identified a need for materials of archival quality, and during the past ten years some mat board manufacturers have raised the quality of their products to meet this need. Therefore, it is now possible to purchase fade-resistant mat board that is made from cotton or highly purified wood pulps which have been treated with alkaline salts to increase their resistance to acid deterioration. The terms acid-free rag board and museum-quality rag board are familiar to users of this material. Traditionally, the term rag referred to papers and boards made from linen rags. To our knowledge, all rag board and rag paper manufactured at the present time are made from cotton. The qualifiers acid-free and museum-quality are general, and do not necessarily mean that the material is top quality. For example, so-called acid-free mat board may be a product with an actual pH of between 6 and 7. If there are no residual alkaline salts in the board, it will become increasingly acidic in due course. Therefore, if the purchaser desires archival-quality mat board, he should specify that it be loaded at the pulp stage with an alkaline earth carbonate such as calcium carbonate. Such boards will usually have a pH of about 8.5, and an alkaline reserve of approximately 1 to 3 percent.

Since the mat may lie in direct contact with the art work, only those materials that are manufactured and tested to archival standards are acceptable for use in its construction. The following specifications will indicate to a manufacturer what the purchaser means by archival quality. These specifications are currently used by the Library of Congress Preservation Office staff when ordering mat board. In the future, we hope to add other manufacturers' specifications, including, for instance, those that define standards for dimensional stability and fiber density. To date, boards made from 100-percent cotton rag or from highly refined wood cellulose that is lignin free are the only ones that meet our requirements.

1. Alkalinity Must contain a total alkalinity, expressed as a percentage of calcium carbonate (CaCO_3), of 1 to 3 percent.
2. Fading Resistance Shall not change more than five points of brightness, measured by TAPPI brightness method t452-os-77, when exposed thirty-six hours in a standardized Atlas Fadeometer with carbon arc.
3. Defects All boards must be free of bent corners, delamination of plys, specks, foreign matter (such as dust, dirt, or insects), and scarring or incising of the board surface.

This publication does not cover all forms and variations of matting and hinging. The designs and methods of construction presented are those currently used in the Restoration Office and are an outgrowth of its "Conservation Workshop Notes on Evolving Procedures" series which was prepared by its staff as instructional material for new members and for seminars provided for outside groups.

As new information and techniques evolve, it is our intention to revise this publication, which is designed to provide current and useful data to the serious conservator.

The text was prepared by Marian Dirda, Heather Wanser, Barbara Gould, Norvell Jones, Shirley Riddick, Merrily A. Smith, and Theodore Stanley of the Restoration Office. Helpful contributions came from Anne F. Clapp, Katherine Eirk, Gary L. Frost, Mary Todd Glaser, Herbert Hanna, Antoinette King, Janet E. Ruggles, and Marilyn Weidner.

Standard Mat

The standard mat is made from two pieces of mat board of the same size, hinged together along one edge. It consists of a backboard to which the art work is hinged and a front, or window, board in which an opening is cut to display the art work (Figure 1). The grain (machine direction) of the board should run parallel to the longer dimension of each piece. The most aesthetically pleasing mat size should be chosen. However, standard mat sizes are often established for large collections to simplify storage and display. The dimensions of these mats are usually dependent upon the sizes of commercially available drawers and print storage boxes. Boxes can also be made to order, as they are for the Library of Congress. Standard mat sizes used at the Library are 14 by 18 inches, 20 by 24 inches, 22 by 28 inches, and 28 by 40 inches.

The most aesthetically pleasing dimensions should also be chosen for the window opening. The only rule is that one should not cover any part of the image or printing plate mark. Many art works have blank paper borders. A window mat that overlaps these borders will restrain the art work, thus providing a more secure housing. However, as in the case of an art work with an image that extends all the way to the edges of the paper, it is sometimes desirable to cut the window large enough for the entire art work to "float" in it with all its edges exposed.

Whether or not the art work floats in the window opening, the window board must be thick enough to ensure that the art work does not touch the glass or acrylic sheet, if and when it is framed. Contact between the art work and glazing can result in ferrotyping at the point of contact, or in

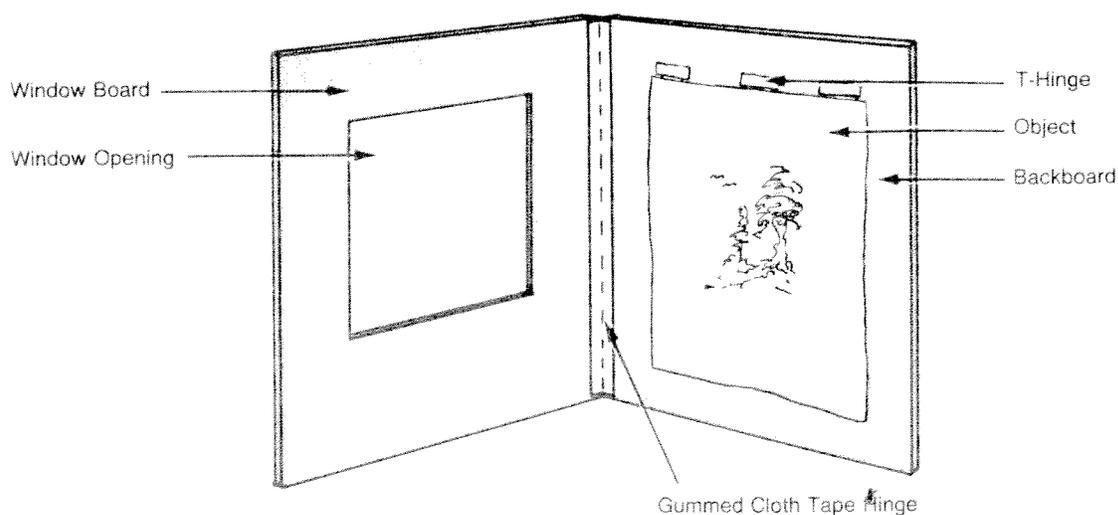


Figure 1 Standard mat

staining, mold growth, or adhesion of the art work to the glass if condensation develops. Four-ply board is thick enough to protect most art works, although particularly large or cockled art works may require six- or eight-ply board. Art works with a design executed in friable media—such as pencil, charcoal, or pastel—or art works with a fragile surface—such as photographic prints—must never be touched by the glazing.

A variety of instruments, ranging in complexity from a heavy-duty hand-held knife to expensive machines that guide a blade along tracks, is available for cutting the window opening. The edges of the window opening can be cut at a simple right angle or beveled to 45 degrees. Once the window opening is made and the cutout removed, the edge of the sharp bevel that rests against the art work should be blunted slightly with a bone folder to prevent possible damage.

When the window opening is completed, the backboard and window board are hinged together on the inside with 1-inch wide gummed cloth tape. The tape is always applied along one of the longer sides, parallel to the grain, because a hinge in that location produces the sturdiest structure. If a mat is wider than it is high, it is hinged along the upper edge; if it is higher than it is wide, it is hinged along the left edge so it opens from right to left like the cover of a book.

Hinging the Art Work

The art work is hinged into the completed mat with handmade Japanese paper and cooked rice or wheat starch paste, both of which are nondamaging materials (Figure 2).

The handmade Japanese tissue functions particularly effectively as a hinge because it is thin and flexible, and also has long, strong fibers that are compatible with both Eastern and Western papers. Stamp hinges and glassine tapes, although frequently used to hinge art works into mats, are not suited for that purpose because they are not strong enough for even the lightest papers. Gummed kraft or linen tapes are also unsuitable as hinges because they are too strong and inflexible, and have sharp, potentially cutting, edges that could injure brittle or delicate papers. In addition, they could stain the art work. Presently available pressure-sensitive tapes are totally unacceptable for hinging, as are rubber cements, white synthetic glues, and spray adhesives. These materials leave ugly residues and stains that in time become difficult or impossible to remove. Even shortly after application, they can only be removed safely with organic solvents by a procedure that requires specialized equipment and skills. The material most favored by conservators as an adhesive for hinging is cooked starch paste. If properly applied, it should be reversible and nondamaging.

There are many variables to consider in the process of hinging, and decisions regarding the number and type of hinges required for a specific art work are governed by two basic rules: first, one should use as few hinges as possible, while still providing the requisite support for the art work; second, the stiffness of the hinge should never exceed that of the paper to which it is applied.

The exact size and number of hinges, their location on a particular art work, and the weight of the paper from which they are made are governed by the size, weight, condition, and anticipated use of the art work. Consider the hypothetical case of an art work in the Library of Congress

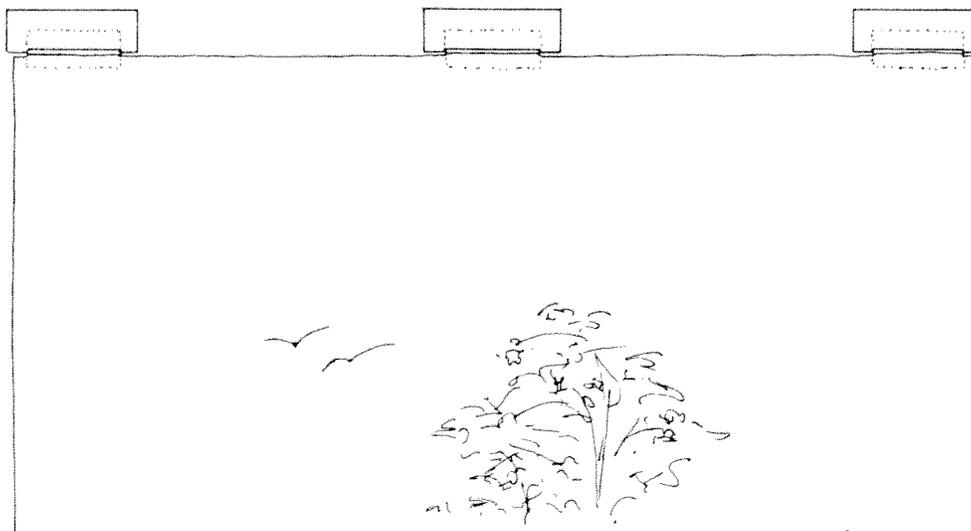


Figure 2 *Hinged work of art*

that is executed on a piece of medium weight 14- by 18-inch pastel paper, such as Ingres paper. The design is vertical, and the paper is in good condition. Because the Library's collections are study collections, the matted picture will be stored unframed and will probably be handled relatively frequently by curators and scholars. It may also be loaned to other institutions as part of a traveling exhibition. The top edge (14 inches long) of this art work will be hinged into its mat with medium-weight Japanese paper hinge tabs that are 1½ inches wide and ½ inch high. The long edge of the hinge will be attached to the art work. Depending on the decision of the individual conservator, three or four hinges will be used. One will be located at the top of the art work close to the left edge, and another close to the right edge (see Figure 2 for proportions). The other hinge(s) will be located equidistant from the first two.

T-Hinge (Hanger)

The T-hinge, also known as T-hanger, is the hinge most commonly used at the Library of Congress to attach paper art works into mats. It is the hinge that would have been applied to the hypothetical picture described above. Each T-hinge consists of two rectangles of Japanese paper, one larger than the other. They are put together in such a way that the larger rectangle overlaps part of the smaller, creating a T shape (Figure 3). This hinge is very strong and is routinely applied to those art works whose edges will be covered by the window board of a mat.

To construct a T-hinge, select a Japanese handmade paper of the weight and color desired. First prepare the smaller rectangle or tab that is to be attached to the art work. This paper forms the stem of the T. The edges of this paper tab should not be cut with scissors. Tearing, or "feathering," so that the long fibers are left extending out along the edges is usually preferred, and is essential for use on thin or brittle art works that could be damaged by the relatively sharp edge of a cut tab. Feathered edges are unnecessary on the larger rectangle of paper that forms the crosspiece of the T, since this part of the hinge does not touch the art work.

There are several techniques for preparing hinge tabs with feathered edges, each of which begins with placing a cork-backed stainless steel or wooden straight edge on the Japanese paper parallel to the grain direction (Figure 4). When the straight edge is in position, (a) simply tear the Japanese tissue against the straight edge; or (b) score lightly along the straight edge with a dissecting needle, then tear the paper along the scored line; or (c) draw a thin line of water along the straight edge with a small ruling pen or brush, run a bone folder over it to better define the point of separation, then tear the paper gently apart along the water-weakened line. Of these methods, the third (c) produces edges with the longest fibers.

The feathered tabs are then covered with cooked starch paste that has been thinned with water to the consistency of

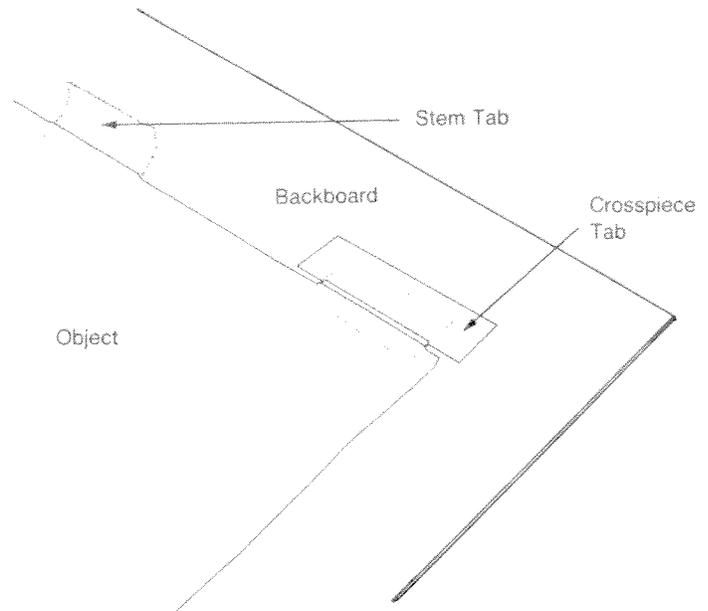


Figure 3 T-hinge

cream and attached to the art work. Many of the difficulties that are encountered in the use of starch paste are due to poor control of the high moisture content in this adhesive. Care must be taken in applying as well as drying the paste. Too much moisture in the paste will cockle or stain the art work. Excessive paste on the hinge tab will pull or pucker the surrounding paper as it dries. Later, when the paste has dried, it could also cause a stiffness in the area of the hinge that might result in the splitting or tearing of the surrounding, weaker paper.

One procedure for securing an art work in a mat with T-hinges follows:

1. Place the art work face down on a smooth, flat, clean surface.
2. Lay the smaller hinge tabs (stems) part way over each other on a smooth blotter so that a portion of the long side of each tab, not to exceed one half, is exposed. Cover the top tab with waste paper so the same amount is exposed as on the other tabs. When determining the portion of the stem tab that is to be pasted, remember that each stem tab should overlap the edge of the artifact only enough to ensure that the attachment will be sufficiently strong to support the art work securely as it hangs in the mat. Apply the paste to the tabs with a small brush and even strokes from the center to the edges. When the paste is first brushed on, the surfaces of the hinges glisten. The disappearance of this glistening indicates that excess moisture has been absorbed by the underlying blotter and the hinges are ready to be placed on the art work.

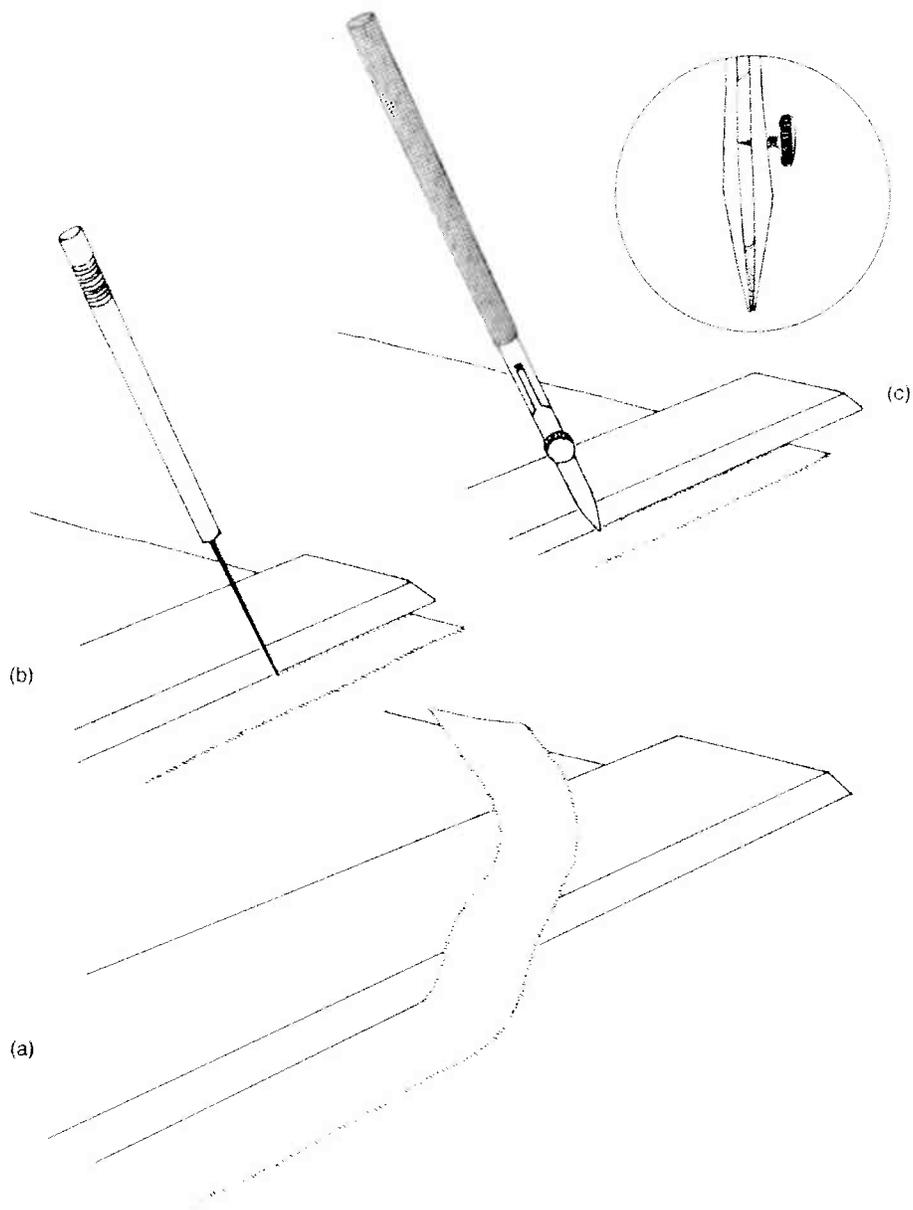


Figure 4 Feathering techniques

3. Place the pasted stem tabs onto the back of the art work at selected points along the top edge.
4. To ensure a strong bond, gently rub the damp hinge through a piece of silicone release paper. If desired, enclose the hinge in a sandwich of smooth polyester web and blotters, and cover with a piece of rigid acrylic and a light weight. Exercise caution when weighting a hinge on lightweight paper. This kind of paper expands readily in the presence of the slightest moisture, and creases can result if weights are used. Cockling (wrinkling) can also develop if moisture is allowed to build up in the blotters. To avoid this difficulty, change the blotters frequently.
5. When the hinge tabs are dry, place the art work on the backboard with the image correctly positioned in the window opening. Hold it in place with one or two light weights, cushioned by blotters.
6. Apply paste to the entire surface of each of the second, larger tabs (crosspieces) of Japanese paper. With fingers or forceps, place them over the free ends of the stem tabs in order to stick them down to the backboard, thereby forming the T shape from which this hanger construction derives its name. Weight carefully, if desired. The crosspiece tabs should be centered over the stem tabs laterally, at a distance from the top edge of the art work

that is equal to or slightly greater than the thickness of the art work. The crosspiece tabs are correctly placed if (a) the art work is free to flex on its hinges so that the verso is accessible for examination, and (b) the object is held in the mat securely enough that it will not shift if the frame is jarred. The stem tabs attached to the art work are never pasted directly onto the backboard. They are therefore able to move slightly as the art work expands and contracts in response to fluctuations in the environment, and thus reduce the stress that is placed on the art work.

7. Close the window board when the hinges are thoroughly dry.

V-Hinge

When an art work is to be floated in the window opening so that all edges are exposed, V-hinges are used to secure it into the mat. The V-hinge consists of a single rectangle of Japanese paper that is folded back on itself lengthwise, then attached to the art work and mat so that it is invisible from the front (Figure 5). The structure of the V-hinge is much weaker than that of the T-hinge. To compensate for this weakness, the hinges are reinforced with a crosspiece on the backboard similar to that employed in the T-hinge.

To construct a V-hinge, first select a handmade Japanese paper of the weight and color desired, then determine what size hinge is needed and prepare several rectangular tabs with feathered edges (see page 4 for feathering techniques). A description of one of many possible methods of attaching art works into a mat with V-hinges follows (Figure 6). This method is only appropriate for art works whose top edge is straight.

1. Position the art work as desired in the window opening of a completed and closed mat. Hold it in place with one or two light weights, cushioned by blotters.
2. Open the mat. With a pencil, lightly mark on the backboard the exact position of the upper corners of the art work.
3. Turn the art work over on an imaginary axis along its top edge, and place it face down so that the two upper corners are above the penciled marks. Weight it lightly in this position, making sure that the weights rest entirely on the backboard. If they were to overlap the backboard's upper edge, the pressure could create a crease in the art work.
4. Gently lift the corners of the art work and erase the pencil marks.
5. Place hinge tabs on a smooth blotter and cover the entire surface of each hinge with paste.
6. Position the pasted hinge tabs on the back of the art work at selected points along the top edge. Make allowances for the reinforcing crosspieces by locating the hinge tabs far enough in from the outside edges of the art. A

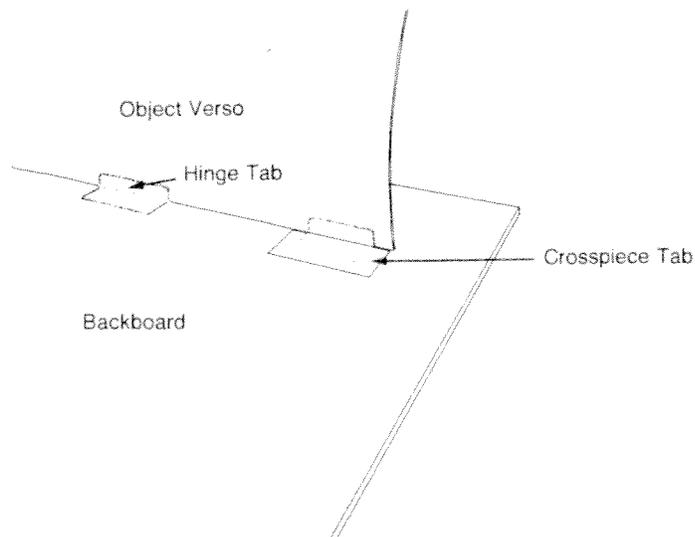


Figure 5 V-hinge

portion of the pasted hinge tab, not to exceed one half, should be attached to the back of the art work, and the remainder should be attached to the backboard. To ensure a strong bond, gently rub the damp hinge through a piece of silicone release paper.

7. Immediately apply paste to the entire surface of each crosspiece tab. With fingers or forceps place a crosspiece over that portion of the hinge tab that is attached to the backboard. Center a crosspiece laterally over each hinge, with the top edge a fraction from the edge of the art work. The crosspieces should not show when the art work is viewed from the front.
8. Cover the reinforced hinges with polyester webbing (to prevent sticking) and blotters, and weight carefully until dry.
9. When the hinges are thoroughly dry, turn the picture right side up, so that it hangs from the hinges, and close the window board of the mat.

The procedure described above for constructing V-hinges cannot be used if the art work that is to be secured in the mat has an irregular or curved top edge. In that case, the following method is suggested:

1. Place the art work face down on a smooth flat surface.
2. Place the hinge tabs on a smooth blotter and paste them up as described for the T-hinge (Step 2).
3. Position the hinge tab on the art work so that the line of paste is a fraction lower than the top edge of the paper. When dry, the hinge will be folded along this line. The fold line must be close enough to the edge of the art work so that the art work can be easily lifted for examination of the verso, but not so close that the edge of the hinge is visible from the front. Make allowances

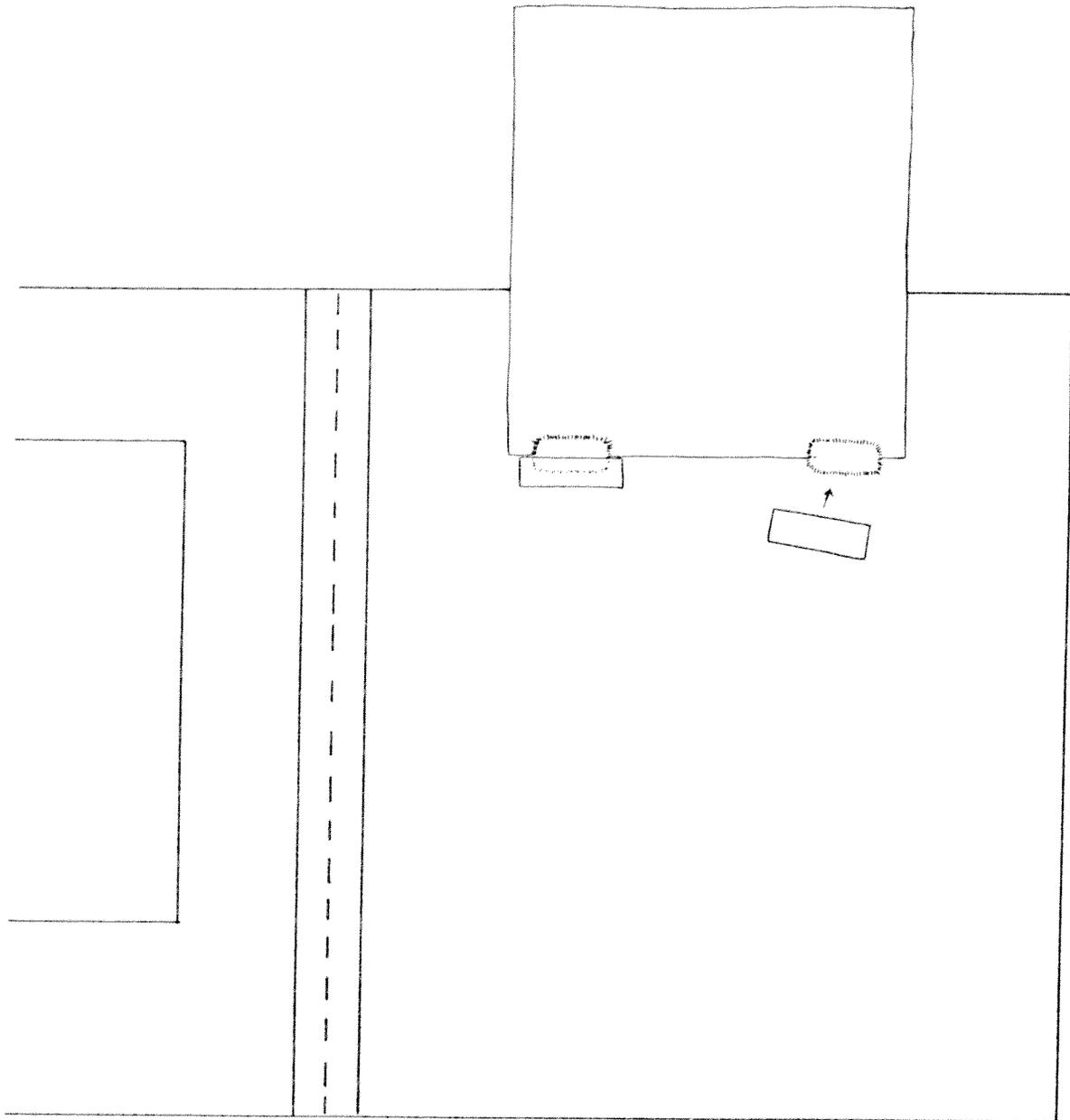


Figure 6 Attaching a V-hinge

4. Weight to dry, as described for the T-hinge (Step 4).
5. When the tabs are dry, turn them back to the paste line, and crease them along the folded edge.
6. Turn the art work over and position it as desired in the window opening of the completed and closed mat. Hold the art work in place with one or two light weights, cushioned by blotters.
7. Open the window mat.
8. Unfold the hinges and place a single strip of blotting paper under them. Position a sheet of waste paper on

- the top of the art work along the folds of the hinges. The waste paper protects the art work and also ensures a straight paste line. Apply paste to the hinges, brushing from the waste sheet onto the Japanese paper.
9. When the excess moisture has been absorbed into the blotter, lift the top edge of the print and slip a single strip of heavyweight polyester webbing or polyester film under the art work. The purpose of this strip is to prevent off-set sticking as the paste dries. The polyester should be positioned so that it covers the attached portions of the hinge tabs. To facilitate its removal later, it should be long enough to extend beyond one

side edge of the art work or wide enough to extend under the top third of the art work. Reposition the weights to hold it in place. Fold the pasted hinges around the polyester. For better adhesion to the backboard, press lightly from the front of the art work through a sheet of release paper with a bone folder. Weight carefully until dry, if desired.

10. When the hinges on the backboard are dry, reinforce them with the Japanese paper crosspieces. Apply paste to the entire surface of each reinforcing tab. Lift the bottom edge of the art work and place the pasted crosspiece tabs over the portion of the V-hinges that is attached to the board. Center a crosspiece laterally over each hinge, with one edge butted into the crotch of the V. Place the crosspieces so that they do not show when the art work is viewed from the front. To prevent sticking, slip a strip of polyester webbing or film between the art work and the tabs as described in Step 9.
11. Do not close the window board until the crosspieces are thoroughly dry.

Two-Ply Insert

The two-ply insert consists of a piece of two-ply mat board that is slightly larger than the art work and is attached with 1-inch wide white gummed cloth tape hinges to the backboard of a standard mat (Figure 7). The practice of attaching frequently exhibited or particularly delicate art work to an insert eliminates the need to remove old hinges from the art work and apply new ones every time the mat is changed. Instead, the insert itself can be removed and reattached to another mat without disturbing the art work. Thus, unnecessary wear and tear along the upper edge of the art work from repeated application and removal of hinges can be avoided. In addition, since hinge removal is time consuming for the conservator, the cost of rematting can be reduced.

One method for constructing a two-ply insert follows:

1. Construct a standard mat from two pieces of four-ply mat board.
2. Cut a piece of two-ply mat board that extends 1 inch beyond the perimeter of the art work. The grain of the board should run parallel to the long side of the mat.
3. Attach the art work to the two-ply mat board with Japanese paper T-hinges (hangers) or V-hinges. The choice of hinges depends on whether or not the art work is to be floated in the window opening.
4. Place the insert in the closed mat so that the image is located as desired in the window opening. Hold it in place with one or two light weights, cushioned by blotters.
5. Open the window board.
6. Attach the two-ply insert to the backboard of the mat with as many gummed cloth T-hinges as are necessary to hold it securely in place. For each hinge, cut two pieces of 1-inch wide white gummed cloth tape, one piece 1-inch long (stem tab) and the other 2 inches long (crosspiece tab). Wet the adhesive on the stem tab and slip it, adhesive side up, under the upper edge of the two-ply board. Position it so that half the tab is attached to the verso of the insert. Wet the adhesive on the crosspiece tab and place it, adhesive side down, across the upper extension of the stem tab. Rub it down firmly and allow it to air dry. Repeat this procedure for each hinge.

Slip Sheets

If the matted art work is not to be framed immediately, a smooth and archivally permanent slip sheet should be inserted under the window mat to protect the art work from dirt and abrasion. The Library of Congress generally uses clear, uncoated polyester film for slip sheets because it is

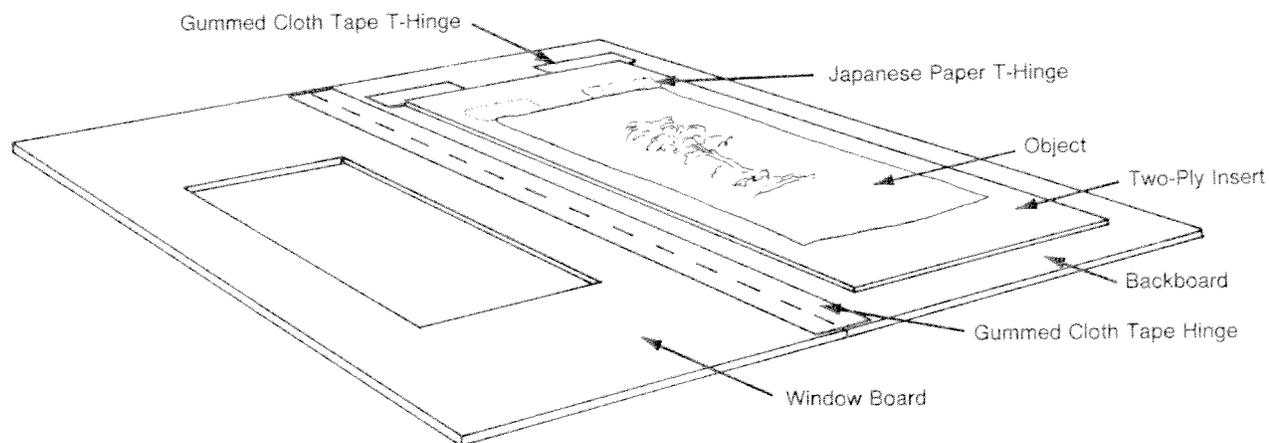


Figure 7 Two-ply insert

strong and flexible, and offers a type of protection that is consistent with reader use. It is one of the most stable and inert of the many different kinds of films now available, and also the one least subject to manufacturing variations. It is available in rolls that vary from .25 to 14.0 mils in thickness and up to 120 inches in width. Any polyester film that will come in contact with paper art works must be of archival quality. In addition, it must be clear and uncoated, and must contain no plasticizers, ultraviolet (UV) inhibitors, or absorbents. It must be guaranteed to be nonyellowing at ambient temperatures with natural aging, dimensionally stable, and resistant to moisture, abrasion, and most chemicals. Further, its quality must match that of Mylar, Types D, A, or S; Melinex, Type 516; Scotchpar Industrial Grade Polyester Film; or the equivalent of any of these. Finally, it must meet U.S. government specifications L-P-00670B(2) and L-P-377B.

The transparency of polyester film eliminates the need for a scholar to open the mat for anything except critical examination of the art work, and its strength prevents damage to the art work even when sharp or rough objects are dragged across the window opening. These qualities make polyester film slip sheets the logical choice for protecting the majority of graphic art works at the Library of Congress. Institutions whose collections are less frequently used and who do not require a transparent protective sheet may prefer slip sheets made from some other stable material. Before the adoption of uncoated polyester film, the Library's slip sheets were made from cellulose acetate. This material is chemically less stable than polyester film and its use for slip sheets was abandoned by the Library in 1972 when it was found to cockle and tear easily with the passage of time.

Polyester film slip sheets should not be placed against any art work executed in fragile or friable media, including unfixed pastels, charcoals, or pencil drawings, because it has an electrostatic property that can lift the pigments off the paper. The static pull of the plastic also tends to draw lightweight papers away from the backboard as the mat is opened, which can damage thin or delicate supports such as Japanese tissue. In situations where polyester film slip sheets are unsuitable, carefully selected silicone release paper, buffered tissue paper, or acid-free glassine are usually substituted. These materials are thought to be nondamaging, though no extensive tests have been conducted at the Library of Congress to determine their suitability for slip sheets.

Unlike glass, polyester film is not totally impervious to water and gases. Because of its smoothness and relative resistance to moisture, however, some conservators worry that contact between it and the surface of a paper art work could result in effects similar to those observed with glass. Specifically, the concern exists that in certain environments condensation could occur, which would encourage the subsequent development of mold growth. Also, ferrotyping,

the development of shiny areas, could occur on art works with fragile or hygroscopic surfaces, such as photographs or water colors. However, in the seven years that polyester film slip sheets have been used for art works in the controlled climatic conditions of the Library of Congress, no moisture-related damage has been observed. No definitive research has been conducted on the suitability of polyester film slip sheets in mats that are to be stored in an environment that is not air-conditioned, and where extremes of heat and humidity prevail.

To prevent the polyester film from shifting inside the mat and possibly damaging the art work, it should be attached to the verso of the window board. The Library of Congress uses Scotch Brand Double-coated Tape No. 415 for this purpose. This tape is one of many kinds of pressure-sensitive, double-coated adhesive tapes that the Library has investigated. It was selected because it met handling requirements and was found to remain remarkably stable during accelerated aging studies. The tape consists of a 0.5 mil polyester film that is coated on both sides with an acrylic resin. When used to join sheets of polyester film, it is not subject to either cold flow or bleeding at temperatures as high as 520°F (the melting point of polyester film). After exposure for over sixty days to accelerated aging conditions of 90°C and 50 percent r.h., the tape remained flexible and retained much of its original adhesive tack. Similar results were obtained when the tape was aged over sixty days in a dry oven at 100°C. In both cases, slight darkening of the adhesive was observed, although this discoloration was less than had been anticipated. No other pressure-sensitive tape should be used for constructing the polyester sling unless it can be proven to have the same archival qualities as Scotch Brand Double-coated Tape No. 415.

One procedure for attaching the slip sheet follows:

1. Cut a sheet of two- or three-mil clear polyester film that is slightly smaller than the outer dimensions of the window board.
2. Apply a strip of 3M Scotch Brand Double-coated Tape No. 415 along each of the shorter sides of the film, placing it ¼ inch away from the edges. Do not remove the brown protective paper from the tape.
3. Open the mat. Center the sheet of polyester film, tape side down, on the verso of the window board. Rub it lightly with a cloth until it clings in place.
4. Lift one side of the film and strip the protective paper from the adhesive. Drop the plastic, with the exposed tape, onto the window board and rub along the tape with the cloth for maximum adhesion.
5. Lift the opposite side of the polyester film and again remove the protective paper from the double-coated tape. Keeping the film in the air, pull it smooth and taut, then lower it onto the window board. Rub along the tape with the cloth.

Standard Mat with Wrapper

Unframed art work with fragile design layers, such as charcoals or unfixed pastels, require protection from dirt and abrasion but cannot tolerate contact with any type of protective slip sheet. A board that is hinged to the backboard and covers the window board of a standard mat avoids direct contact with the art work while still protecting it from dust and damage. This cover is called a wrapper board because it can be swung out of sight behind the backboard when the art work is framed for exhibition (Figure 8.) Since it is sturdier than polyester film or paper, the wrapper deflects scratches and protects an art work from punctures better than slip sheets can. In addition, it helps keep the window board of the mat clean.

One method for constructing a 14- by 18-inch standard mat with wrapper follows (Figure 9):

1. Cut three pieces of mat board the same size. Four-ply board provides the requisite protection for most art works, although large art works may require thicker boards. The window board must be thick enough to ensure that the wrapper does not touch the surface of the art work. Two-ply board is too flimsy to be used for this mat structure.
2. Cut an opening in the window board. The art work may float in the opening, or its edges may be covered.
3. Hinge the window board and backboard together with white 1-inch gummed cloth tape, as for the standard mat.

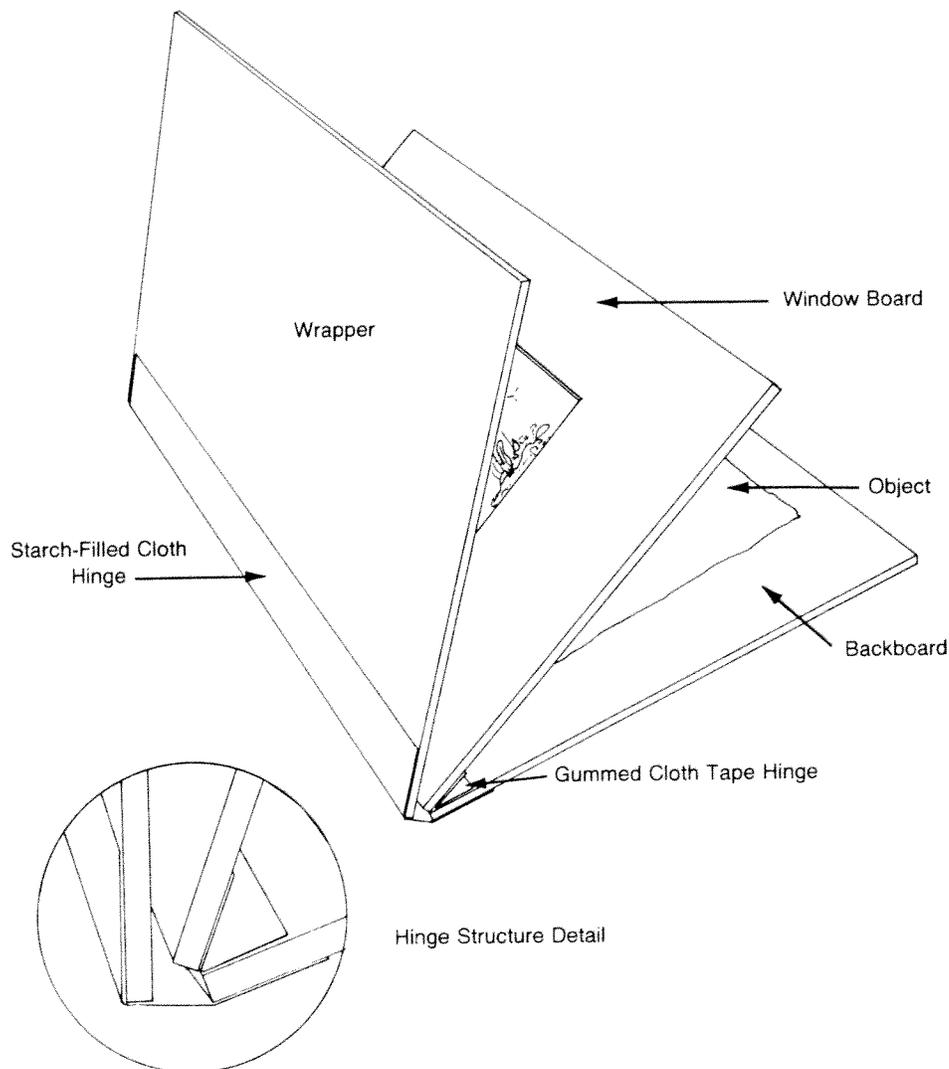


Figure 8 Standard mat with wrapper

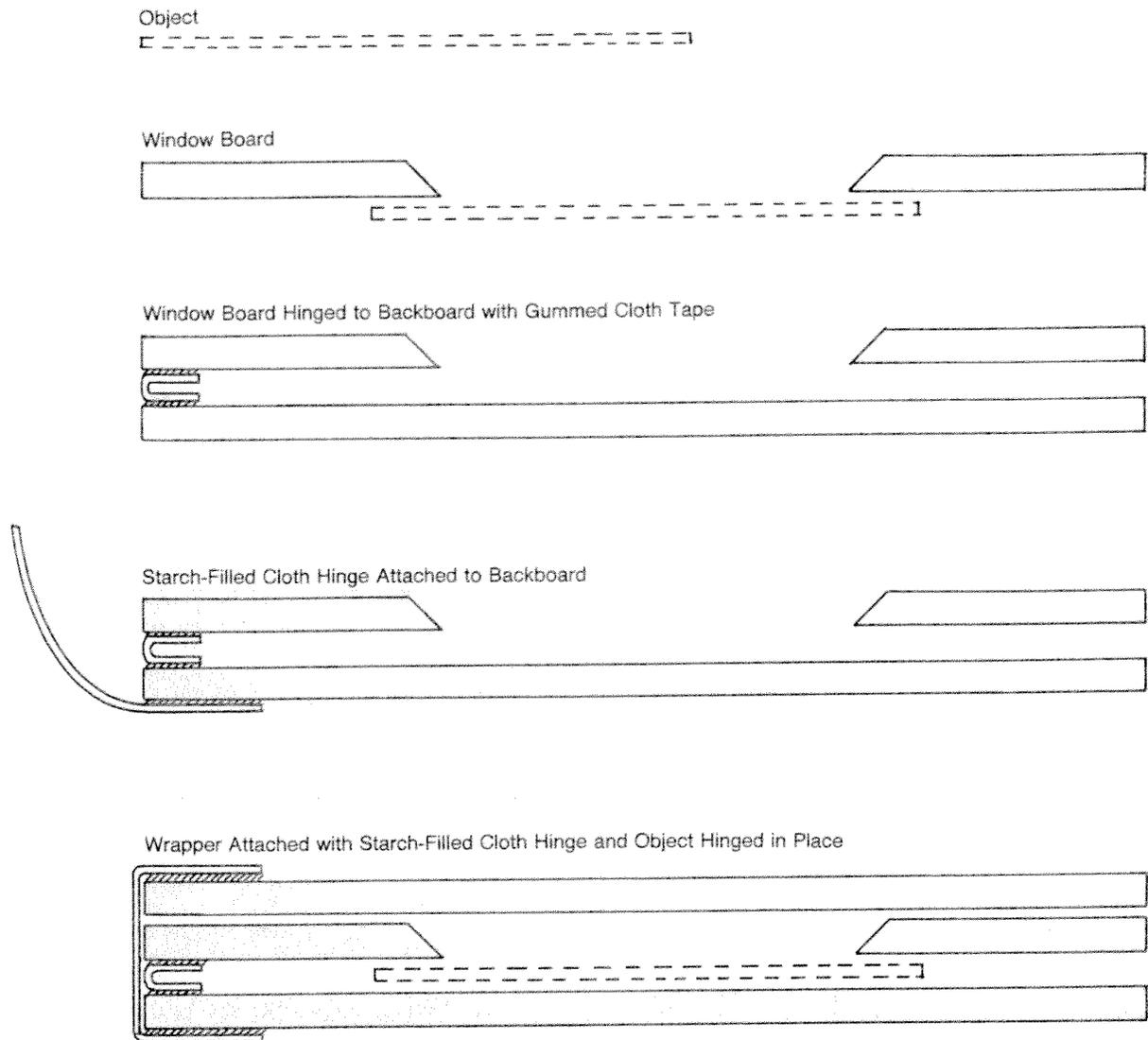


Figure 9 Standard mat with wrapper. Cross section of construction

4. Cut a strip of white starch-filled reinforcing cloth equal in length to the longer dimension of the mat and 2 inches wider than the combined thicknesses of the window board, backboard, and wrapper board. This width enables 1 inch of cloth, the minimum necessary for sturdy attachment, to be attached to each of the joined boards. The buckram overlap must be proportionately greater than 1 inch per board on larger mats. The grain of the buckram should run parallel to its longer dimension.
5. Since the cloth overlap is to be 1 inch, draw a pencil line on the back of the cloth strip that is 1 inch from the longer edge of the strip.
6. Apply polyvinyl acetate (PVA) emulsion adhesive to the

entire back of the cloth strip. For best results, the adhesive should be thinned to the consistency of very heavy cream. If the glue is too thick, it cannot be applied evenly and it will also set too quickly. If it is too thin it will not stick and the excess moisture in it will cause the boards to warp. If too heavy a layer of adhesive is applied, whether thick or thin, it will squeeze out around the edges of the strip as the cloth is pressed into place with a bone folder.

7. Lay the glued cloth, adhesive side up, on a clean work surface. Position the backboard of the closed mat on the 1-inch wide portion of the cloth strip so that the hinged side of the mat lies along the penciled line. Press down gently with your fingers.

8. Align the wrapper board over the window board of the mat and hold it in position with one or two weights.
9. With a bone folder, turn the cloth up over the edges of the backboard, window mat, and wrapper board and then onto the surface of the wrapper board. Make sure there are no gaps or puckers in the cloth. To prevent the development of a burnish mark on the cloth, rub it through a clean waste sheet.
10. Turn the mat assembly over and rub down the cloth overlap on the backboard, also through a clean waste sheet.
11. Turn the mat assembly face up again and immediately open the wrapper. The cloth will be attached to the edges of all three pieces of mat board. Pull it gently away so it is free to act as a hinge. Close the wrapper again and allow the cloth to air dry.

Standard Mat with Wrapper (Variation)

The following method of constructing a 14- by 18-inch standard mat with a front wrapper is designed to protect art works with an image that has heavy impasto. In this structure, the window board consists of two pieces of mat board joined together. Sandwiched between them are two white reinforcing cloth hinges, one for attaching the wrapper and the other for attaching the backboard (Figure 10).

1. Cut four pieces of mat board the same size. The two pieces that make up the window board must be the same thickness. Similarly, the thickness of the wrapper board must equal that of the backboard.
2. Cut an opening in one of the window boards. The art work may float in the opening, or its edges may be

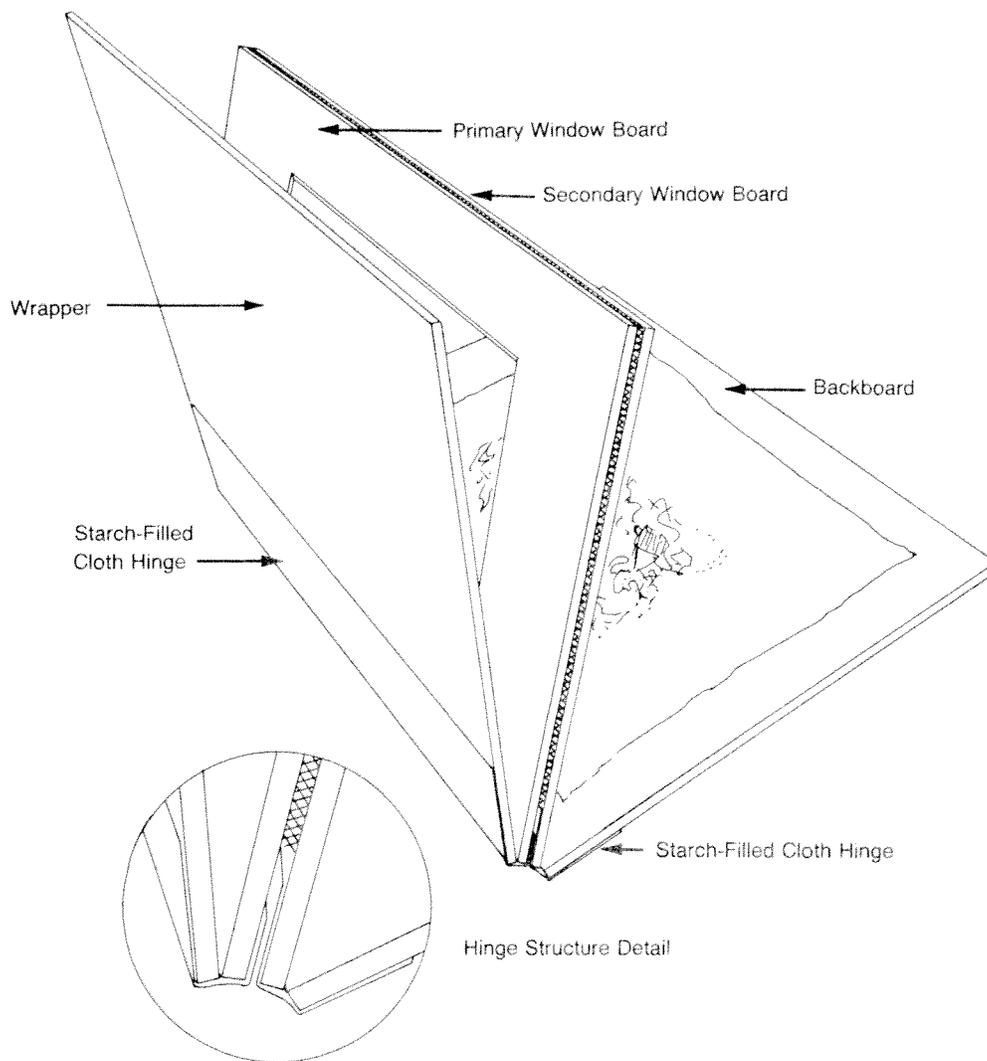


Figure 10 Standard mat with wrapper (variation)

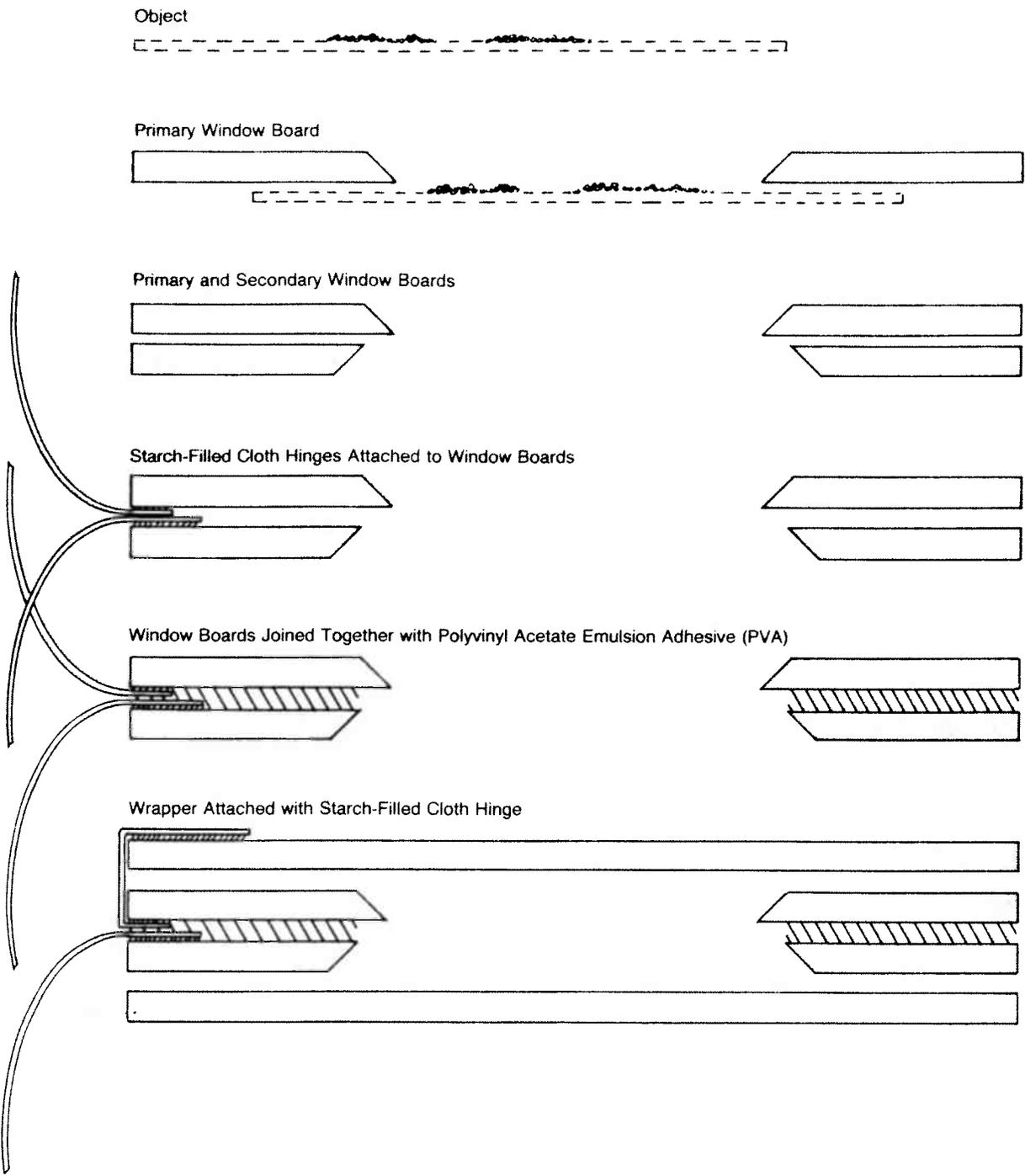
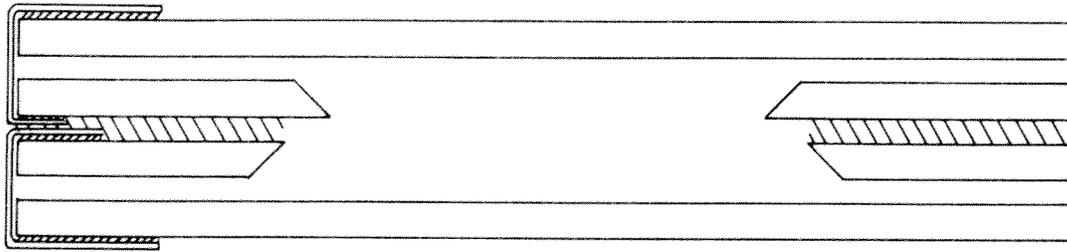


Figure 11 Standard mat with wrapper (variation). Cross section of construction

Backboard Attached with Starch-filled Cloth Hinge



Object Hinged into Completed Mat

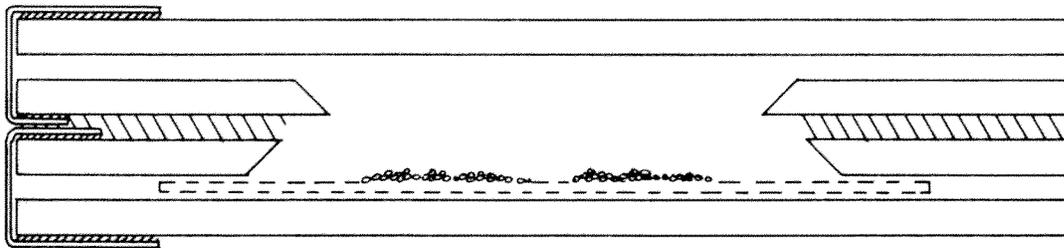


Figure 11 Continued

covered (Figure 11). Cut a slightly larger, but otherwise identical, opening in the second window board. This secondary window board will be hidden beneath the primary window board in the completed mat. The inside surfaces of the boards will be joined together in the completed mat. To avoid confusion, mark these surfaces.

3. Cut two strips of white reinforcing cloth 3 inches wide and equal in length to the longer dimension of the mat. The grain should run parallel to this longer dimension.
4. Place one piece of cloth face down on a clean waste sheet. Cover it with another waste sheet so that a 1/2-inch wide strip is exposed along the long side of the piece. Apply PVA emulsion adhesive to the exposed cloth by brushing it from the waste sheet onto the cloth.
5. Attach the glued cloth to the inside surface of the primary window board along the edge that corresponds to the mat hinge (the hinging edge). Rub it with a bone folder through clean waste paper to ensure even adhesion.
6. Repeat the procedure outlined in Step 4 for the second piece of cloth, leaving a 3/4-inch strip of cloth exposed. The attachment of the cloth strips to the window boards is staggered to soften the ridge formed by the thickness of cloth.
7. Attach the glued cloth to the inside surface of the secondary window board along the hinging edge. Rub with a bone folder through clean waste paper to ensure even adhesion.
8. Apply PVA to the entire inside of the secondary window board, including that portion of the cloth strip that is attached to the board.

9. Making sure that all edges are aligned, attach the glued secondary window board to the inside surface of the primary window board. Cover it with a pressing board and heavy weights. Allow it to dry thoroughly.
10. The two cloth strips should now project from between the layers of the window board assembly, along the hinging edge. With a blade and a straight edge, trim both pieces of exposed cloth to a width that is equal to the thickness of one window board, plus the thickness of one outside board, plus a minimum of 1 inch. This width allows 1 inch cloth, the minimum necessary for sturdy attachment, to extend onto the surface of the wrapper board and onto the surface of the backboard. The cloth overlap must be proportionately greater than 1 inch per board on larger mats.
11. Align the wrapper board with the top of the primary window board. Hold it in place with weights. Slip a sheet of waste paper between the two cloth hinges and apply PVA to the upper hinge by brushing it from the hinge onto the waste sheet. Remove the waste paper. With a bone folder, turn the cloth up over the edge of the wrapper board and onto its surface. Make sure that the cloth is attached smoothly, with no gaps or puckers. To prevent the development of a burnish mark on the cloth, rub it through a clean waste sheet.
12. Remove the weights. Turn the mat over and repeat Step 11 to attach the backboard to the mat assembly.
13. Immediately open the mat. Check to see that the cloth hinges have not stuck to the edges of any of the pieces of mat board. If they have, pull them off gently. Close the mat again and allow the cloth to air dry.

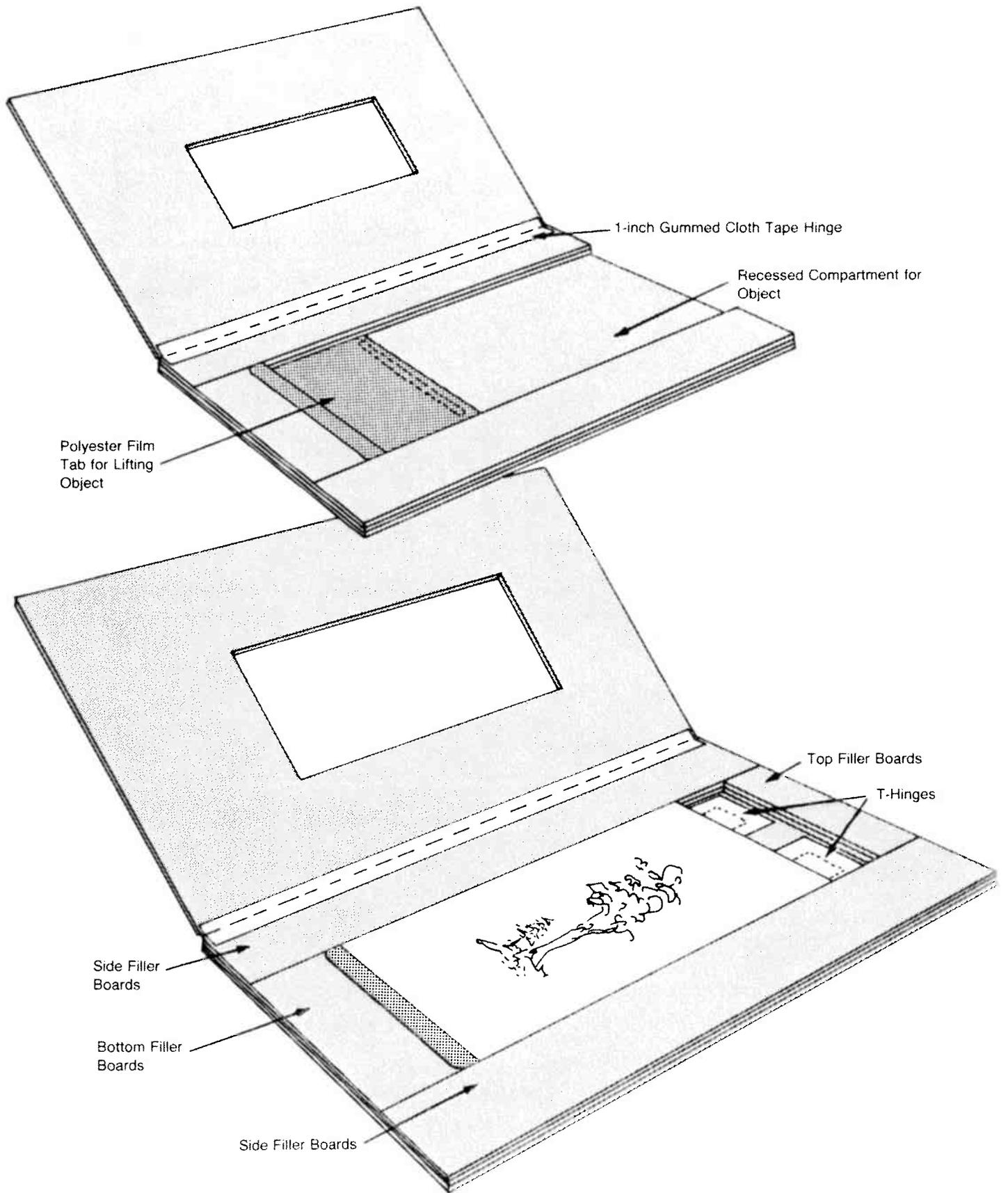


Figure 12 Sink mat

Sink Mat

The sink mat, a variation of the standard mat, is designed to support and protect flat art works that are thicker than a single sheet of paper (see Figure 12). These include such items as drawings executed on four-ply bristol or water color board, oil sketches on canvas board, and some mounted photographs. The mat consists of a backboard onto which the art work is hinged and a window board in which an opening is cut to display the design area. This structure is augmented with filler boards built up from the backboard around the perimeter of the art work. The thickness of the filler boards equals the thickness of the art work. The window board of the mat is hinged to, and rests on, these built-up edges.

The sink mat accommodates art works whose bulk and weight present problems that cannot be solved by housing them in the standard mat. In the standard mat, for example, a thick art work causes the window board to bulge in the center and droop at the edges instead of lying parallel to the backboard as it should. This condition is aggravated by any pressure exerted on the front of the mat, which can occur when items are stacked. Pressure can force the window board into the empty space around the art work, thereby creating ridges over its outer edges. The sink mat eliminates distortion by imposing a uniform thickness of material between the window board and the backboard.

The standard mat also provides insufficient support for the weight of a thick art work. If the standard mat is used, this weight places considerable stress on the mat's hinges when the art work is placed in an upright position. The filler boards in the sink mat relieve this stress by providing extra support along the bottom of the art work. Because they fit more or less snugly up against the art work, the right and left filler boards perform a similar function by limiting any lateral movement of the art work. Without this confinement, the art work would be free to bounce up and down or swing from side to side if the mat were jolted during travel or

through rough handling. Such motion can easily break the hinges.

Finally, thick paper art works, especially early photographs on their original mounts, frequently become warped and brittle with the passage of time. When matted and framed in the standard mat they are often subjected to enormous pressure in an effort to make them appear flat. In the sink mat, the filler boards are built up to the greatest height of the warped art work so that the window board will be flat and lie parallel to the backboard, without exerting pressure on the art work. The distortion or warping of the art work is less apparent and it looks attractive without being subjected to stress.

In order to construct a sink mat correctly, several facts must be kept in mind. First, the filler boards must be measured and cut *precisely* so that they are flush with the edges of the mat and with each other, both on the outside and inside borders. Second, the filler boards are meant to contain the art work, not constrict it, so they should be as close as possible to the art work while still allowing it to move freely when flexed on its hinges. Finally, it is rare to find an art work with edges that meet each other at exactly 90° angles; it is even rarer to find one which, when correctly positioned in the window opening, has edges that are exactly parallel to those of the mat. Therefore, each set of filler boards has to be custom-made for a specific art work.

One technique for constructing a sink mat follows. This technique is suitable for use on all but exceptionally large and thick art works.

1. Cut two pieces of four-ply mat board the same size.
2. Cut the window opening in one piece, making sure that its edges overlap the art work by at least $\frac{1}{8}$ inch on all sides. Art works cannot be floated in a sink mat. The second piece will serve as the backboard.

3. Paste the stem tabs of the T-hinges to the verso of the upper edge of the art work and allow them to dry. If the art work is warped, attach the tabs to those portions of the upper edge that naturally come in contact with the backboard as the art work rests on it.
4. Align the backboard, art work, and window board over each other exactly as they will be positioned in the completed mat.
5. Immobilize the art work in place with a weight, then, without disturbing the art work, set the window board aside.
6. Secure the art work to the backboard by pasting crosspiece tabs across the top of the stem tabs to form T-hinges.
7. Determine the number of thicknesses of mat board needed to equal either the thickness of the original art work or, if the art work is warped, its highest point.
8. Right side filler boards. Cut a strip of mat board so that it extends along the backboard from the top edge to the bottom edge, and from a fraction to the right of the art work to the right edge of the backboard. Check to see that the strip has been cut precisely to butt the edges of the backboard and extend within a fraction of the side of the art work. Cut whatever additional filler strips are necessary to the same exact size.
9. Place at least two lengths of Scotch Brand Double-sided Tape No. 415 on the back of each strip. The tape should be placed so that there is a ¼-inch space on all sides, and it should extend along the longer dimension of the strip. Assemble the strips, aligning them perfectly, to form a block. Position the block carefully against the backboard and press it firmly into place.
10. Left side filler boards. Repeat Steps 8 and 9 to fill the space between the left edge of the art work and the left edge of the mat.
11. Bottom filler boards. The bottom filler boards fit under the art work between the right and left filler boards, butting up against their inside edges and extending from the bottom of the art work to the bottom edge of the mat. The same fraction of space should be left between the art work and the bottom filler boards as is left between the art work and the side filler boards. Before placing the bottom block of filler boards in position, attach a short piece of polyester film to the backboard so that it extends out from under the art work. This strip, held in position with double-sided tape, should extend across the entire width of the art work. It serves as a tab to be used for safely lifting the art work out of the well that has been created by the sink construction (see Figure 12).
12. Upper filler boards. The upper filler boards differ from the others in that they neither support the weight of the art work nor prevent its movement in the mat. They fit between the side fillers, extending from the upper edge of the backboard to the top of the cross tabs on the hinges. The hinges are left exposed so that they can be replaced at a later date, if necessary (see Figure 12).
13. Hinge the window board with 1-inch gummed cloth tape to the top of the filler boards along the longer dimension of the mat.

Double-Sided Mat

The double-sided mat is designed to house an art work so that both sides may be viewed without handling (Figure 13). It consists of two window boards hinged together along one edge. This construction makes the double-sided mat suitable for displaying letters, manuscript leaves, art works that have images on both sides, and items with inscriptions on the verso. It is not suitable for art works that must float on both sides. When there are window openings on both the front and back boards, the art work is vulnerable to puncture and must be protected. Therefore, this mat structure should either be supplemented with protective wrappers or used in conjunction with a frame or a Plexiglas enclosure.

One method for constructing the double-sided mat follows:

1. Cut two window boards with openings that reveal the desired images or information. Save the cutouts.
2. Hinge the two boards together along one of the longer sides with 1-inch gummed cloth tape.
3. To position the art work so that it is correctly aligned in both the front and back window openings, lay the closed mat on the work surface with the cutout replaced in the back window opening. (If one window opening is smaller than the other, it should be considered the back.) Position the art work in the front window, as desired. Then replace the cutout from that window over the art work. Carefully turn the entire sandwich over, lift the back cutout, and check the location of the image through the back window. Adjust the art work as necessary until it is suitably positioned from both front and back views.
4. When the art work is correctly positioned, place the mat, face up, on the work surface with the back cutout in place below the art work. Weight the art work in the center.

5. Carefully open the mat without moving the back window board or the weighted art work.
6. Secure the art work in the mat. When both window openings are smaller than the art work, it is appropriate to use T-hinges. If one window is larger than the art work and the other is considerably smaller, float the item in the larger window with V-hinges attached to the board that has the smaller opening.

Double-Sided Sink Mat with Wrappers

The double-sided sink mat is designed to house a thick art work so that both sides of it may be viewed without handling. It differs from the standard sink mat in several ways. First, it consists of two window boards instead of one. Second, the filler boards that separate these windows surround the perimeter of the art work on all four sides. Third, neither window board can be opened to allow examination of the edges of the art work because each is held in place against the filler boards with Scotch Brand Double-coated Tape No. 415.

An advantage of this structure is that there are no hinges which might break under the stress of supporting a heavy art work. Instead, the art work is supported and held in place entirely by the surrounding filler boards and the two window boards.

Art works cannot be floated in this type of construction because both window boards must overlap the edges of the art work by at least $\frac{1}{4}$ inch. This feature constitutes the major disadvantage of the mat, in that the edges of the art work are permanently hidden from view. On the other hand, the edges of art works executed on brittle pulp board supports may benefit by being so well protected from mishandling.

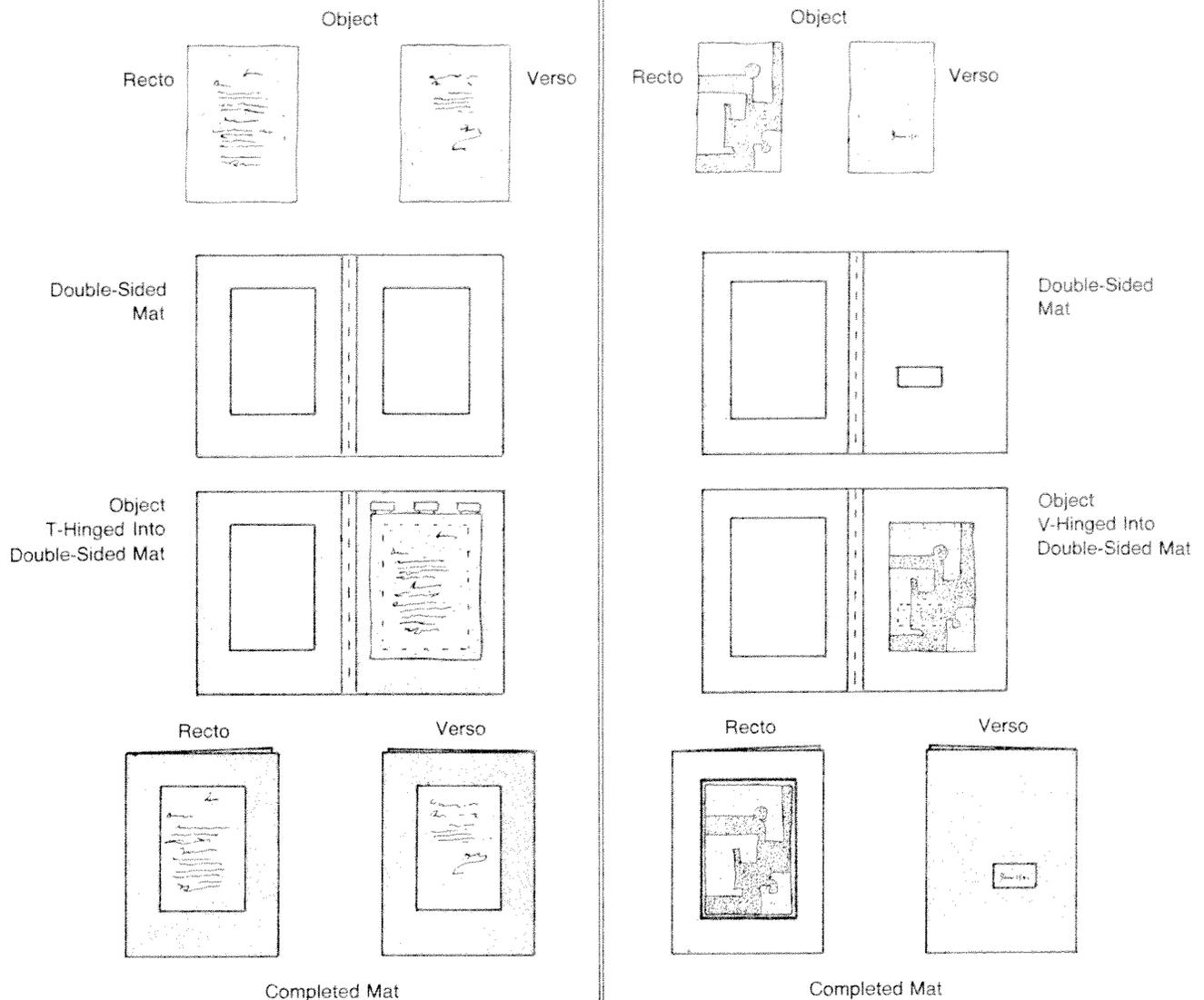


Figure 13 *Double-sided mat*

Window openings on the front and back of the mat leave the art work vulnerable to dirt and punctures. Therefore, front and back wrapper boards must be used on the mat unless the art work is framed immediately after matting. Directions for adding wrappers to the mat have been incorporated below.

One method of constructing a 14- by 18-inch double-sided sink mat with wrappers follows (Figure 14). In the interest of clarity, the mat described and illustrated here is designed to house an unwarped art work that is equal in thickness to a four-ply board.

1. Cut four boards the same size to use as the window and wrapper boards. The two window boards must be the

same thickness, as must the two wrappers. Four-ply mat board provides the required protection for most art works, although large items may require thicker boards. Two-ply board is too flimsy to use as the window or wrapper boards.

2. Cut an opening in each window board that reveals the desired images or information. Each board must overlap the edges of the art work by at least $\frac{1}{4}$ inch.
3. Determine the number of filler boards required. First, measure the thickness of the art work. If it is warped, measure the thickness from its highest point. Next, determine how many plies of mat board are required to equal this thickness. In choosing the appropriate number of filler boards, it must be kept in mind that in the

double-sided sink mat structure the front and back wrappers are constructed so that they will rotate 360° in the finished mat. To allow that degree of rotation, the white reinforcing cloth hinges that hold the wrappers to the mat assembly should be centered between the filler boards. The cloth can only be centered if two conditions are met. First, there must be an even number of filler boards; and second, there must be an equal number of plies of board on each side of the buckram hinge (see Figure 14). For example, assume that an art work at its

highest point is equal in thickness to twelve plies of board. In this circumstance, the filler boards could be made from two four-ply boards and two two-ply boards, but not from three four-ply boards. For an art work that is equal in thickness to a four-ply board, two two-ply fillers are necessary.

4. Cut the required number of filler boards to the same outer dimensions as the window boards and wrappers.
5. Align the front window board over one of the filler

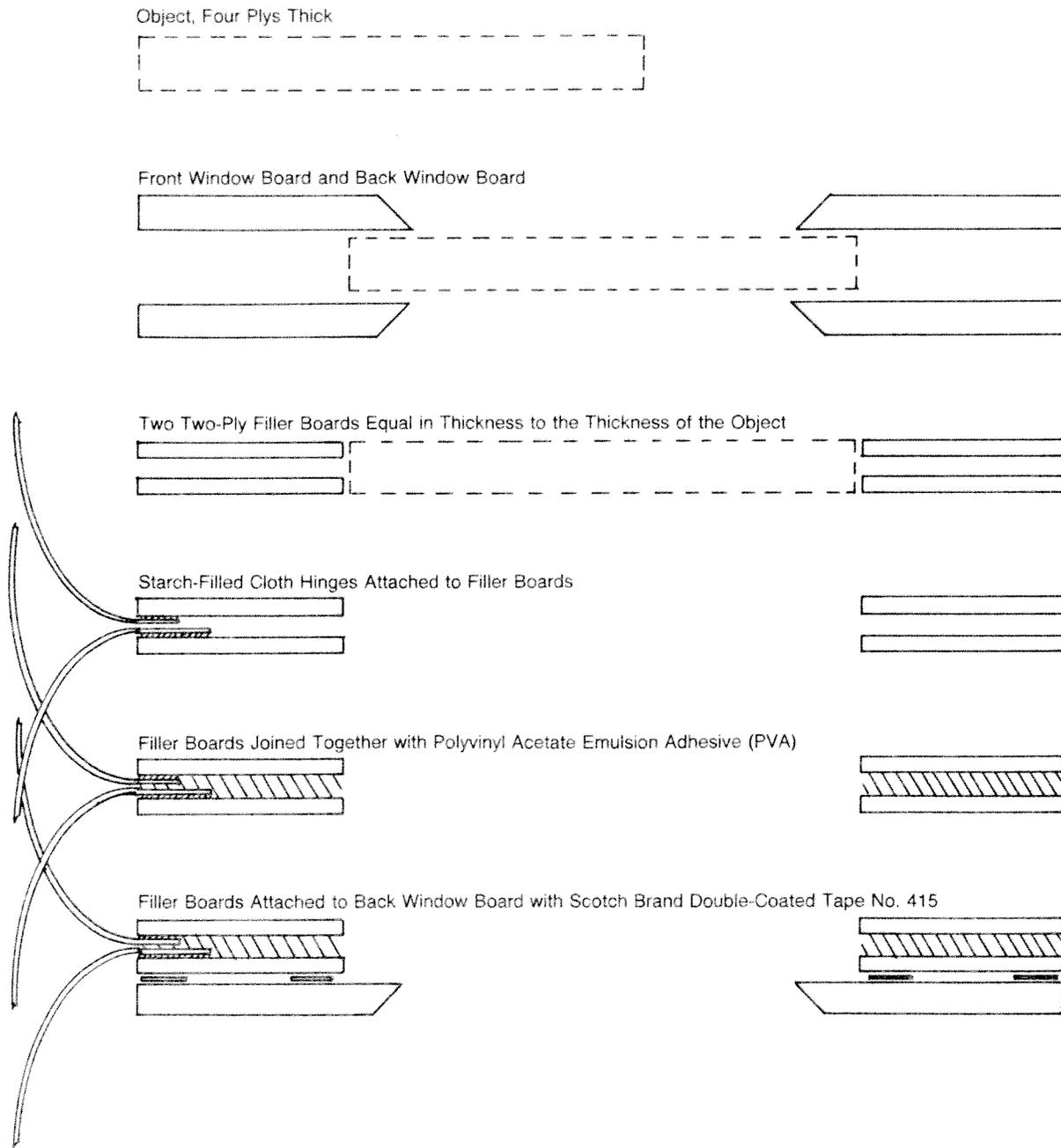


Figure 14 Double-sided sink mat with wrappers. Cross section of construction

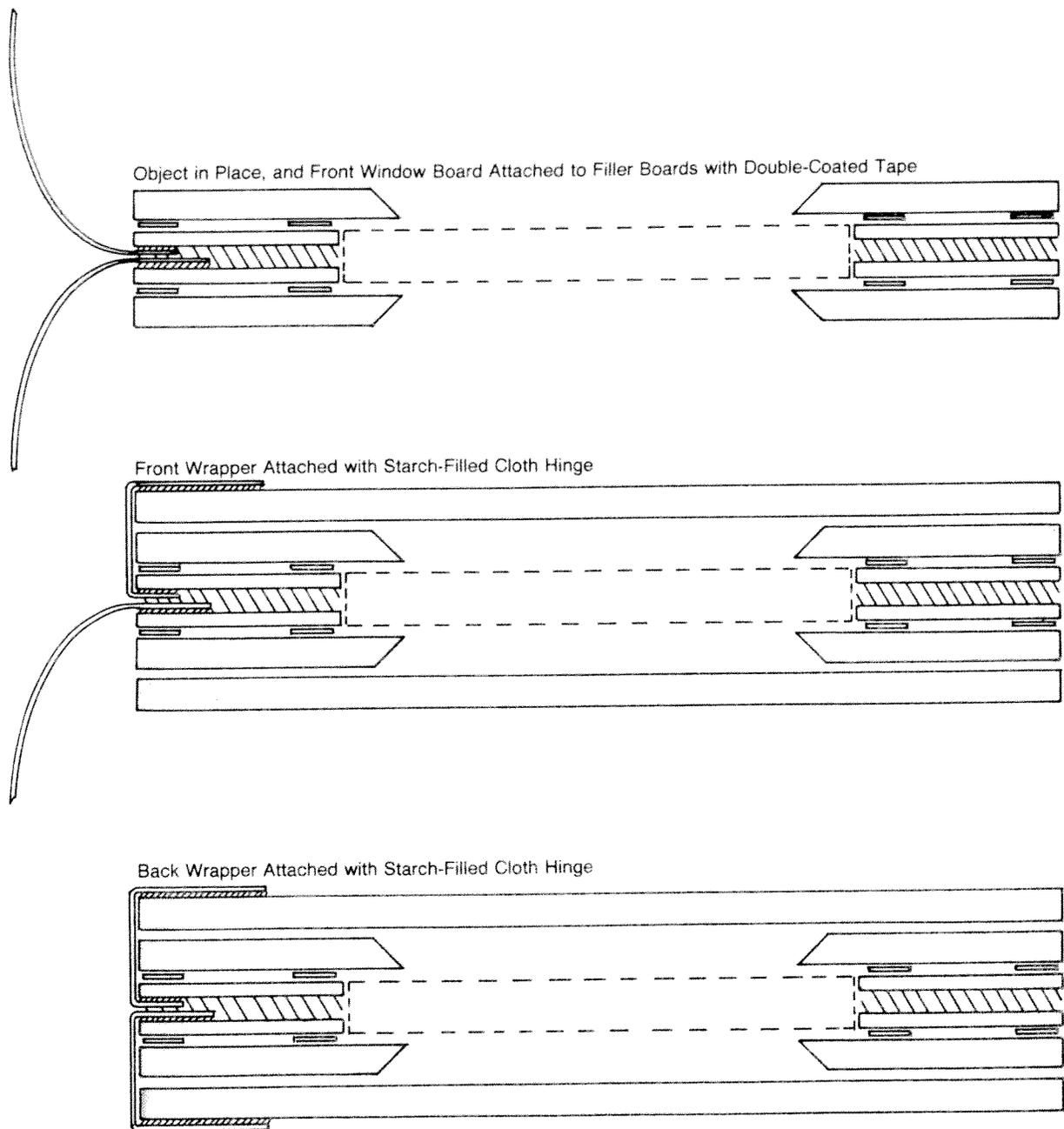


Figure 14 *Continued*

boards and position the art work between them as it is to appear in the completed mat.

6. Hold the art work in place with a weight cushioned by a blotter. Then, without disturbing the art work, set the window board aside.
7. With a pencil and straight edge, draw straight lines around the perimeter of the art work. These lines delineate the edges of the window that will be cut out of each filler. The filler boards are meant to contain the

art work, not constrict it, so the edges of this window should be very close to the art work, but not actually in contact with it.

8. Set the art work aside. Following the penciled line, cut an unbeveled opening in the filler board. As with any type of sink mat, the filler boards must be measured and cut precisely.
9. Cut an opening the exact same size in the other filler board. In the completed mat, the back of the first filler

board will be attached to the front of the second, with the two white reinforcing cloth strips hinged between. Mark these surfaces to avoid confusion. (In cases where the mat is to have, for example, four filler boards, glue the top two fillers together, then glue the two bottom fillers together. Allow the boards to dry thoroughly before proceeding to Step 10.)

10. Cut two strips of white starch-filled reinforcing cloth 3 inches wide and equal in length to the longer dimension of the mat. The grain should run parallel to this longer dimension.
11. Place one piece of cloth face down on a clean waste sheet. Cover it with another waste sheet so that a ½-inch wide strip is exposed along the longer side of the piece. Apply PVA to the exposed cloth, brushing it from the waste sheet onto the cloth.
12. Attach the glued cloth to the back surface of the first filler board along the edge that corresponds to the mat hinge (the hinging edge). (For mats that have more than two filler boards, attach the cloth to the back surface of the first, or top, set of boards along the hinging edge.) Rub with a bone folder through clean waste paper to ensure even adhesion.
13. Repeat the procedure outlined in Step 11 for the second piece of cloth, leaving a ¼-inch strip of cloth exposed.
14. Attach the glued cloth to the front surface of the second, or bottom, filler board along the hinging edge. (When there are more than two filler boards, attach the cloth to the front of the second, or bottom, set of boards.) Rub with a bone folder through clean waste paper to ensure even adhesion.
15. Apply PVA to the entire inside surface of one filler board (or set of filler boards), including that portion of the cloth strip that is attached to the board.
16. Join together the two filler boards (or sets of filler boards), making sure that all the edges are aligned.

Cover them with a pressing board and heavy weights. Allow them to dry thoroughly.

17. The two cloth strips should now project from between the two filler boards (or sets of filler boards) along the hinging edge. With a blade and straight edge, trim both pieces of exposed cloth. The width of each strip should equal the combined thicknesses of one filler board (or set of filler boards), one window board, and one wrapper board, plus 1 inch. This width allows 1 inch of cloth, the minimum necessary for sturdy attachment, to extend onto the surface of each of the wrapper boards. The cloth overlap must be proportionately greater than 1 inch per board on larger mats.
18. Place strips of Scotch Brand Double-coated Tape No. 415 on both sides of the block of assembled filler boards. The tape should be recessed ¼ inch from all the edges and should extend around the perimeter and the center opening of the filler boards.
19. Place the filler boards face down on a clean surface. Align the back window board over the filler boards and weight it. While holding the window board in place with one hand, reach under it and peel the brown protective paper from the tape. Press the window board lightly, but securely in place. Note that if the art work is ever removed from the mat, one window board will have to be pried away from the filler boards. Too strong a bond between tape and board will make this task more difficult, thereby increasing the potential for damaging the art work.
20. Turn the mat assembly over so that the back window board is resting on the work surface. Place the art work in the mat. Tape the other window board in place, as described in Step 19.
21. Attach the two wrapper boards to the mat as indicated in Steps 11 to 13 for preparing the Standard Mat with Wrapper (Variation).

Polyester Sling

The polyester film sling, an experimental matting structure presently being developed at the Library of Congress, provides a method of securing an art work into a mat without hinges. It consists of a polyester film support that covers, but is not attached to, the back of an art work (Figure 15). This support is attached to the window board of the mat with 3M Scotch Brand Double-coated Tape No. 415 so that the art work is held in place against the window opening. The sling is usually employed as a temporary housing for art works that are not stored in mats, but require matting for exhibition. If these art works were matted and hinged in the standard way, it would be necessary to remove the hinges attached to them before they could be returned to permanent storage. Repeated application and removal of hinges causes unnecessary wear and tear along the upper edge of the art work. In addition, hinge removal is time-consuming for the conservator and, therefore, expensive. The polyester sling can also be a useful long-term housing for certain photographic prints, especially those done on modern resin-coated papers that are difficult to hinge with conventional adhesives. The polyester sling eliminates the need for mounting, holds the photograph securely without hinges, and is fully reversible.

Three structural features of the polyester sling could lead to damage of the art work if they are not considered. First, it is possible that large, heavy items might move down in the sling and come in contact with the double-sided tape on the lower edge when the mat hangs in a vertical position. Such shifting could also occur when a framed art work is packed and shipped for exhibition, especially if it is jolted or dropped. If the art work does come in contact with the tape, some adhesive transfer could occur. Such transfer has not proven to be a serious problem to date, however. Second, once the art work is secured in the sling, a slip sheet cannot be inserted under the window board to protect

its surface. Third, when the art work is suspended in the window opening by the polyester sling, it is not protected from puncture when the window board is lifted up from the backboard.

The design of the polyester sling requires that the art work be sandwiched between the window board and the sheet of polyester film. Therefore, it is not possible to float an art work in the window opening. Since there must be sufficient space in the mat to lay the tape down around the art work, the mat's dimensions must exceed those of the art work by at least 1½ inches. The size and weight of the art work to be matted govern the thickness of the polyester film selected for the construction of a sling. Thicknesses of 3 and 4 mils are usually chosen for all but the largest and smallest items. If the art work is large, heavy, or thick, the ½-inch wide double-sided tape will make a stronger construction than the ¼-inch wide tape.

One method for constructing a polyester sling follows:

1. Cut a piece of polyester film at least 1 inch larger in every dimension than the art work.
2. Cut two pieces of mat board the same size. They must be at least 1½ inches larger in every dimension than the art work.
3. Cut a window opening in one board so that the edges of the window cover all the edges of the art work by at least ⅛ inch.
4. Hinge the window board and backboard together with 1-inch gummed cloth tape, as in the standard mat.
5. When the mat hinge dries, open the mat and place the art work on the backboard with the piece of polyester film beneath it. Position the polyester film so that its edges are parallel to the edges of the backboard, then close the mat and position the art work in the window opening as it will appear in the finished mat.

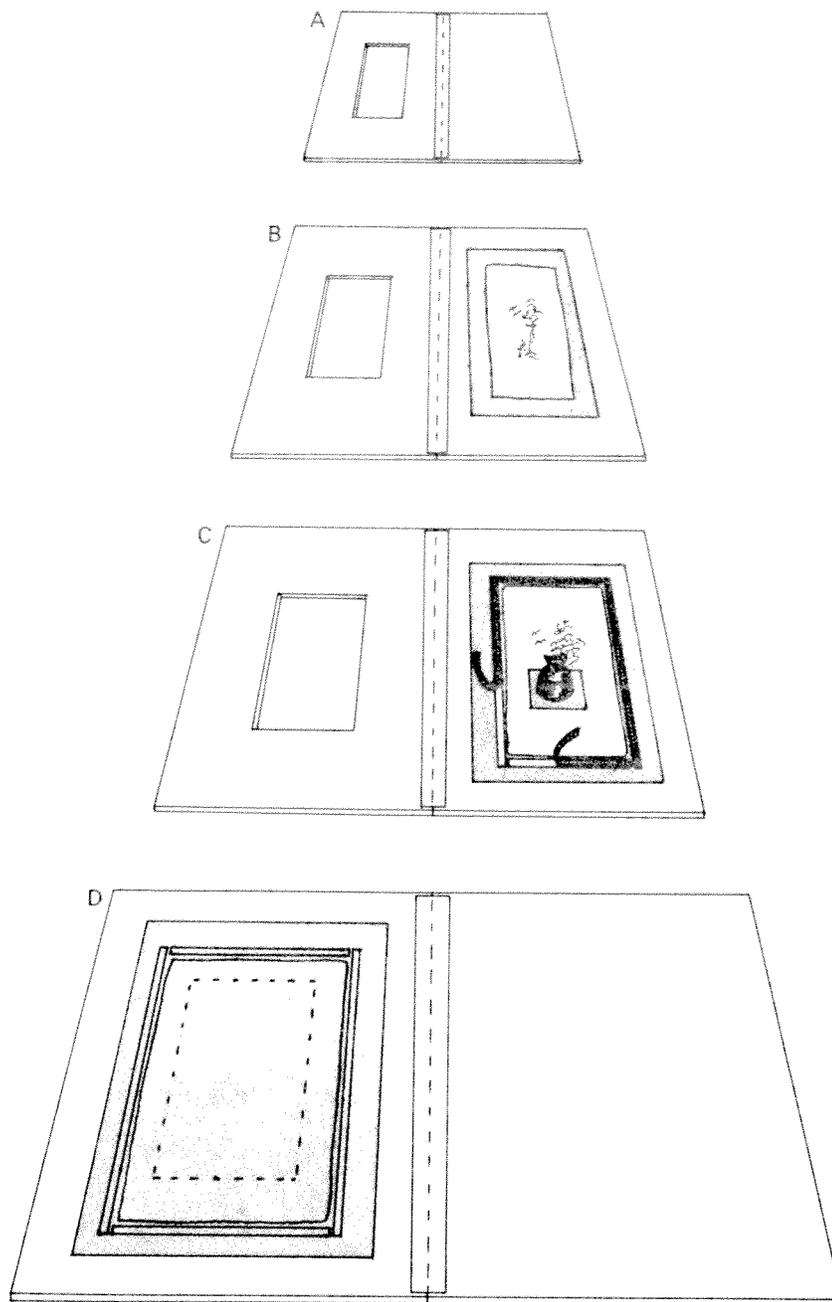


Figure 15 Polyester sling

6. Place a piece of blotter and a weight on a flat area of the art work, being careful not to press out any raised or delicate surface area.
7. Open the mat to expose the entire front of the art work to view.
8. Place four lengths of 3M Scotch Brand Double-coated Tape No. 415, $\frac{1}{4}$ - or $\frac{1}{2}$ -inch wide, on the polyester film around the art work, no more than $\frac{1}{8}$ inch and no less than $\frac{1}{16}$ inch from its edges. Care must be taken to ensure that the tape never touches the art work. The tape should extend beyond each corner of the art work by $\frac{1}{4}$ inch or $\frac{1}{2}$ inch, depending on which width of tape is used.
9. Remove the blotter and weight, then carefully remove the brown release paper from the tape. Close the window board and press gently to attach it to the tape.
10. Open the window board once more and rub down the tape with a soft, antistatic cloth to ensure a solid bond between the tape, board, and polyester film.
11. If the mat is going to be placed in an overly humid



exhibition environment that could cause the window board to curl away from the backboard, the three free sides of the mat should be taped shut with double-sided tape.

One method for dismantling a polyester sling follows:

1. Place the mat on the work surface and open it so that the image is face down and the polyester film is face up. Without covering the polyester film, place weights on the backboard and window board.
2. Cut the polyester film between the tape and the art work on three edges with a sharp scalpel or knife and straight edge. Take care not to cut the art work.
3. Peel back the freed edges of the film and remove the art work. Check all the edges of the art work for any adhesive tape residue. It is usually possible to remove such residue by carefully rubbing a crepe square (also known as an artist's pickup) over the sticky areas.

Glossary

acrylic sheeting

A polymethyl methacrylate plastic that is often substituted for glass in framing. It is available under various trade names—including Plexiglas, Lucite, and Acrylite—is shatter proof, and can be purchased with an ultraviolet filtering capacity.

backboard

The part of a mat, made from a solid piece of mat board, that functions as a protective support for the art work.

cutout

The piece which is removed when a window is cut in a board.

double-coated tape

Tape that has adhesive on both sides; used at the Library of Congress in the construction of mats. Because of its very good aging properties, Scotch Brand Double-coated Tape No. 415 is recommended.

ferrotyping

A gloss imparted to an art work by contact with a very smooth surface, especially if pressure or friction is present.

filler boards

Additional layers of board built into a mat between the backboard and window board that surround the art work. These filler boards are equivalent in thickness to the art work's highest point.

float

To secure an art work in a mat so that all the edges of the item can be seen through the window opening.

glassine

A thin, dense, smooth-surfaced, semitransparent paper.

glue

A protein-based adhesive.

grain

The direction in which most of the fibers in a piece of paper are oriented, and the axis along which the paper tears and flexes most easily. Grain is usually found only in machine-made papers, although it is also present in some handmade oriental papers.

hinges

(1) Flexible paper strips that attach the art work to its mat along one edge, allowing it to be lifted for inspection of its verso; (2) material, usually gummed cloth tape, that joins the window board to the backboard of a mat along one edge, thereby permitting the window board to be opened.

mat

A protective housing for flat art works, usually consisting of two boards hinged together along one edge. In general, one board is solid (for support) and the other has a window cut in it (for viewing).

mat board

Multi-ply paper board from which mats are made. It is available in many grades, only two of which are considered suitable for conservation-quality matting: 100-percent cotton fiber board and chemically purified wood fiber board.

paste

An adhesive composition with semisolid consistency, usually water dispersible. Pastes most commonly used in conservation work at the Library of Congress are cooked wheat or rice starch.

polyester film

A thin, transparent, flexible plastic sheeting made from polyethylene terephthalate and sold under a variety of trade names. When uncoated and untreated with other materials, it is smooth and exceptionally stable.

polyester webbing

A thin, nonwoven fabric made from filaments of polyethylene terephthalate.

recto

The front side of a leaf of paper

silicone paper

A thin, translucent paper impregnated with silicone to render the surface slippery and resistant to sticking.

slip sheet

A smooth, nondamaging protective sheet which is inserted between the window board and art work.

support

The paper, card, vellum, fabric or other material on which the design layer or image is executed.

verso

The back side of a leaf of paper.

window board

A piece of board in a mat in which an opening is cut to allow the art work to be displayed.

window opening

The aperture in the window board.

wrapper board

A solid covering board that is hinged to the mat over the window board to protect the art work beneath, and which may be swung back for viewing.