

Treatment and Housing Techniques for Pastel Paintings on Paper: Case Studies

INTRODUCTION

Pastel paintings mounted on wooden stretchers are vulnerable to tears and punctures. On the other hand, those adhered to paperboard can warp or become vulnerable to breakage over time. In both cases, pastel works are generally prone to scratches, abrasions, mold damage, and water damage if not properly housed. This paper presents case studies dealing with various pastels mounted on wooden stretchers and paperboard. The object of the paper is to present various approaches for unique treatment and housing situations that may be applicable to other types of pastel works. The first half of the paper discusses various treatment techniques used on pastel works by Micah Williams. The second half discusses a variety of housing solutions developed for works by Micah Williams, Edgar Degas, and Mary Cassatt. The techniques described are the result of the cumulative efforts and experience of many conservators and technicians at the Conservation Center for Art and Historic Artifacts (CCAHA) and of others in conservation who have contributed to the current knowledge about treatment and housing standards and methods for pastels.

PART 1: TREATMENT OF MICAH WILLIAMS'S PASTEL PORTRAITS

This discussion of the treatment of pastels focuses on the pastel works of Micah Williams (1782–1837). This focus owes to the unique format of Williams's pastels, which presents particularly challenging treatment issues. During the past 10 years, conservators at CCAHA have also gained collective insight into Williams's pastels by treating many them in preparation for the 2013 exhibition, *Micah Williams: Portrait Artist*, at Monmouth County Historical Association.

Micah Williams was an American folk artist, mostly known for his pastel portraits of New Jersey and New York

residents. He was originally a silver-plating craftsman, but after a series of misfortunes with his business, he sought out a second career as a self-taught portrait artist (Rogoff 2013). His pastel works were composed with materials that he could afford as an itinerant artist between 1815 and 1835. Williams used wove or laid paper as his primary support for painting, loosely lining it with a secondary support of local newspaper. He glued both supports onto a simple half-lap-joint wooden stretcher. He prepared his paper panels before making trips and used the panels within approximately one year of making them (Rogoff 2013). His use of newspaper as a secondary support is interesting. For Williams, newspaper was an easily accessible and inexpensive material; for later scholars and collectors, it is an important resource for studying the provenance of each painting.

PREPARATION FOR TREATMENT

During treatment, Williams's pastel paintings are usually unframed vertically on a slanted easel, working from the verso. Both the top and bottom of the frame are wrapped with strips of *Vólara* (a flexible closed-cell polyethylene foam) when fastened into the easel. This improves the grip and ensures that the frame does not get scratched on pressure points of the easel. Any shims between the wooden stretcher and the frame are also carefully removed before taking the stretcher from the frame.

Although this is not ideal, when there are tears to mend from the verso, the Williams pastels mounted on wooden stretchers are placed face-down on a horizontal table surface. Because both the primary and secondary supports are constructed from fragile old paper, there is no other safe way to work from the verso. These pastels were also already in direct contact with glass in the frame, and parts of the soft media may already be transferred or compacted to some degree. To minimize further media loss during treatment, a sheet of Bondina (a very smooth, nonwoven polyester release material) is placed between the pastel surface and the table when placing the object face-down. Glassine is a poor substitute for Bondina since glassine can be locally wrinkled or distorted

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from body heat and moisture transmitted to the object during treatment. Such wrinkles and distortions in the glassine can cause unnecessary damage to the media. After gently laying the pastel and its stretcher face-down on the Bondina, the wooden stretcher is secured by placing heavy weights against (not on top of) its four members, ensuring that the pastel does not shift sideways during treatment.

When the pastel must be treated from the recto, a temporary supporting insert is placed underneath the painting. This insert matches the inner height of the wooden stretcher, providing a flat and firm surface to work against when inpainting or performing other surface work. The insert can be made of two or three layers of corrugated board with a sheet of silicone-release polyester film as a facing. If needed, an armrest that bridges the pastel is built from a Plexiglas strip raised on weights. This gives the conservator a place to safely brace her arm while inpainting distant areas of the pastel.

MENDING

Three different kinds of adhesive are used to mend the different areas of Williams's pastels. If tears in the primary support are not approachable from the verso, the newspaper lining is cut and opened in order to mend the primary support, and the cuts in the newspaper are mended with very thin mending strips afterwards.

Klucel-G Pre-Coated Paper

Tears located in the inner areas of the pastel painting (i.e., areas that are not in contact with the wooden stretcher) are mended with thin strips of Klucel-G pre-coated paper from the verso. For this use, Klucel-G has several advantages over other adhesives. First, it adheres only by evaporation of ethanol and does not require the use of weights; secondly, it does not shrink as it dries; and thirdly, it is tacky enough to hold the tears but weak enough to hold together very fragile paper supports without causing tension.

The Klucel-G mending tissue is prepared using the following process, which is a modification of a procedure developed for other adhesives (Brückle 1996):

1. Lay a sheet of polyester film on a table.
2. Lay a sheet of inert plastic screen mesh material over the polyester film.
3. Apply a lump of 3–5% Klucel-G in ethanol to the screen mesh and evenly distribute the adhesive through the screen mesh using a rubber or plastic squeegee.
4. Slowly lift the screen mesh, tilting it from one side to the other before lifting so that the Klucel-G layer is not disturbed and remains even.
5. Hold a sheet of mulberry paper at opposite corners, slowly laying it down on the Klucel-G layer from the center out.
6. Completely air-dry the adhesive.

7. For mending, cut the prepared tissue into narrow strips. As needed, peel them from the polyester film and reactivate the adhesive by rolling a swab soaked with ethanol over it. Apply the mend to the verso of the tear with minimum pressure and let it dry.

Inexpensive, variously gauged black screen mesh for insect-proofing is readily available at most home-improvement centers. The gauge of the screen mesh affects the thickness of final Klucel-G layer; the wider the mesh, the thicker the adhesive layer will be and the stronger the bond it will provide. Also, the percentage of Klucel-G in ethanol affects the final bonding strength. When mixed to 3% in ethanol, Klucel-G makes for somewhat weak bonding, whereas 5% Klucel-G may be quite strong, and 4% appears generally versatile in terms of bonding strength and reversibility.

Wheat Starch Paste

Tears in the support located around the edges of the wooden stretcher are mended with wheat starch paste and lightweight mulberry paper strips. These tears require physically strong mends since they have to wrap around the wooden stretcher. Once the mends have been applied, they are quickly dried with the aid of a warmed metal spatula over silicone-release polyester film, so weights are not necessary. The mending strips are guided underneath the primary support with thin strips of polyester film. If the areas are too tight to allow a mending strip to be inserted, a very thin face mend can be applied to the top surface as a last resort.

Lascaux 498 HV Pre-Coated on Tengujo

Tears in the secondary support or newspaper lining are mended with Lascaux 498HV pre-coated on tengujo and activated with ethanol. Klucel-G cast on lightweight mulberry paper can be used instead, but the result is less transparent, as Klucel-G is harder to cast on tengujo. The preparation of Lascaux 498HV pre-coated tissue and its application methods are described in detail in the article "Practical Application of Lascaux Acrylic Dispersions in Paper Conservation" (Sheesley 2011).

INPAINTING

Pastel paintings may exhibit a wide variety of surface characteristics, even on a single object: some areas are dense and flat, while others are fluffy and soft. Such variation is often intended by the artist to create various effects. As a result, several inpainting materials and techniques are needed to effectively address these surface characteristics. Inpainting can be used not only to fill losses in the pastel media but to cover untreatable stains of various sorts (mold stains, foxing stains, water stains, etc.), since aqueous treatment options are extremely limited.

Ground Pastels Mixed in Ethanol

Soft pastel sticks are rubbed with sandpaper, and the resulting powder is mixed with ethanol to form a solution. This solution is then applied to the surface of the pastel with a double-zero brush. If the applied pastel solution appears dense and solid, the spot is gently touched with the tip of a silicone-tipped blending tool to soften the surface. This action changes the texture and color of the inpainting. In addition, ground pastels mixed in ethanol can help hold down surrounding flaking media when the original pastel is severely desiccated and flaking.

Ground Pigments Mixed in Ethanol

For very fine scratches or for very flat surfaces, ground pure pigments can work better than ground soft pastels because their body is leaner, with no added binder or filler. Ground pure pigments are mixed with ethanol and applied with a double-zero brush.

Pastel Pencils

Pastel pencils are mildly abrasive, and are thus useful when the pastel surface is too hardened and burnished by previous water damage to effectively receive any of the inpainting media described above. In these areas, pastel pencils can be applied in short vertical lines in a manner similar to *tratteggio*.

Blending Tools

Pointed, silicone-tipped blending tools are useful for softening the applied inpainting media to help blend with their surroundings. The blending tool can also be used to gently touch certain stains, effectively creating just enough change in the surface texture and color of the stain that the need to add extra inpainting media is eliminated.

TREATMENT EXAMPLES

Tears Along the Edges

Tears often occur in the paper around the edges and corners of the wooden stretcher. These tears were mended with thin mulberry paper strips and wheat starch paste. When it was impossible to insert a mending tissue below the tightly wrapped edges, a thin face mend was applied to the top surface as a last resort (figs. 1a, 1b).

Mold Damage

Mold deposits were reduced as much as possible using a kneaded eraser molded to a fine point. The remaining stains were inpainted by applying ground pastels in ethanol with a brush (figs. 2a, 2b).

Water Damage and Flaking Media

Water-damaged areas were inpainted with ground pastel mixed with ethanol, as well as with pastel pencils. Ground pastel mixed with ethanol also worked well for inpainting the

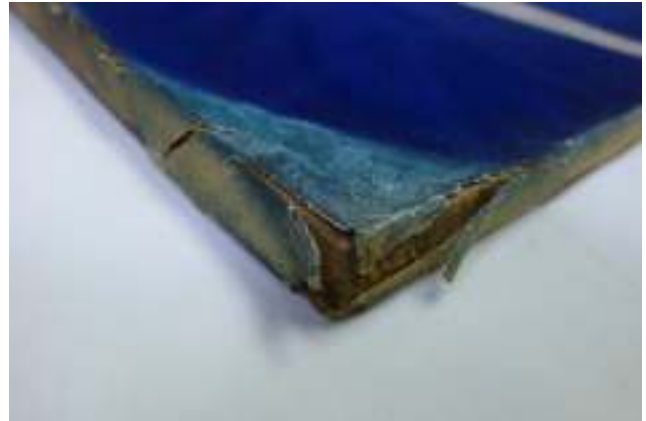


Fig. 1a. Tears around the corner of the stretcher before treatment



Fig. 1b. Mended tears around the corner of the stretcher after treatment

flaking brown media used in the girl's hair. The ground pastel functioned as both an inpainting medium and as a consolidant for the surrounding loose particles (figs. 3a, 3b).

Complex Tension Tears

This painting (viewed under raking light in fig. 4) suffered long, complex tears solely as the result of a fluctuating environment. As described in the book *Paper and Water*, paper that expands and contracts repeatedly eventually shrinks in size in result (Banik and Bruckle 2011). In this pastel painting, the edges of the paper were firmly glued to the strainer, while the free-standing areas shrank in the repeatedly fluctuating environment, eventually causing the weakest points to rupture. The tears were all in the primary support, and none in the loosely lined secondary support. The tears primarily occurred along the design of the girl's dress, where Williams used rather sharp pastel sticks to depict an elaborate lace design. The severely distorted surface of the paper in the torn areas made it impossible to mend the tears flat in their present condition.



Fig. 2a. Mold damage before treatment



Fig. 2b. Mold damage after treatment

Removing the pastel from the wooden stretcher was briefly considered, but it was determined that the possible gains from this approach were outweighed by the potential risks. CCAHA conservators had treated several Williams pastels in which prior removal procedures had resulted in over-manipulation and severe damage to the artworks. It was decided to find a way to mend the complex tears in situ.

To figure out an effective way of mending this distorted area, a mockup was created using a blank sheet of paper. Several cuts were made in the blank paper, mimicking the tears in the pastel painting, after which the paper was wetted with water and blown dry while the edges were weighted down. The tears sprang open, creating the same kinds of distortions present in the painting. In figure 5, the painting is face-down with the newspaper lining partially removed for treatment; the mockup sample is next to it, with similar tears. In testing, it was discovered that making three small incisions to connect the parallel tears effectively released the distortions



Fig. 3a. Water damage and flaking media before treatment. Private collection



Fig. 3b. Stain reduction and consolidated media after treatment. Private collection



Fig. 4. Complex tears viewed under raking light before treatment. Collection of the Monmouth County Historical Association



Fig. 5. Left: pastel face-down with newspaper temporarily removed. Right: paper mockup replicating complex tears



Fig. 6a. Recto of pastel after treatment. Collection of the Monmouth County Historical Association



Fig. 6b. Verso of pastel after treatment. Collection of the Monmouth County Historical Association

in the paper support, enabling the tears to lie flat for proper mending. The incisions in the pastel painting followed the contour of the existing design. After cutting the support, the tears lay flat, and they were mended with Klucel-G pre-coated mulberry paper and ethanol from the verso.

After mending, the gaps between the edges of the tears were substantial, almost 1/16- to 1/8-inch wide in some areas. Cellulose powder mixed with methylcellulose was tested as a medium for filling the gaps, but this filler was too stiff and bulky to accommodate the surrounding soft pastel media. In the end, it was found that ground pastel mixed with ethanol could also act as filler for the gaps, as it provided enough bulk without causing any stress to the surrounding pastel medium. Finally, the newspaper lining was reattached in its original position with thin mends prepared from Lascaux 498HV pre-coated tissue and activated with ethanol (figs. 6a, 6b).

PART 2: HOUSING

This section of the paper shares the approaches used to house four pastels by different artists. There were four goals in creating each of the following housings:

- To provide the best possible protection from environmental agents of deterioration while minimizing the amount of maintenance required,
- To minimize disturbance of the friable media,
- To design a stable and supportive enclosure for each type of construction, and
- To utilize the existing frames.

The following examples presented similar challenges but are addressed individually here because of the construction of their supports. Most notably, the spacers for each object were built to accommodate its unique structure while creating the necessary airspace between the glazing and the surface of the pastel.

COMMON HOUSING ELEMENTS: ENCLOSURE

Although the spacers and the attachment of the artworks were unique for each housing design, the remaining components—the glazing, backing boards, and barrier film that create an enclosure within the frame—are common to all of the examples. They were intended to support the pastels physically while buffering them against environmental concerns.

Tru Vue Optium Museum Acrylic was chosen as the glazing for each piece because it offers ultraviolet protection, resistance to breakage, an antireflective coating, and an anti-static coating that will not attract particles of the pastel to the acrylic surface.

The rigid protective backing boards included a sheet of Bainbridge Alphasag Artcare alkaline buffered ragboard with zeolites, directly behind the object, and a sheet of Archivart

alkaline multiuse corrugated paperboard for added rigidity. The alkaline ragboard with zeolites was chosen to aid in neutralizing and absorbing acidic compounds released into the package from the aging of the object itself. Use of this material in housing at the Conservation Center has been informed by the work of Seigfried Rempel (1996) and by Cindy Connelly Ryan's studies at the Library of Congress (2011).

The contents of each housing were enclosed with Marvelseal, an aluminized nylon and polyethylene barrier film. A sheet of this film was wrapped around all layers of the housing and bonded to the surface of the acrylic with Scotch brand #415 tape and heat in a manner similar to that developed by Hugh Phibbs (2002) at the National Gallery of Art in Washington, DC. This method is an effective barrier to dust and insects and helps to passively buffer environmental change.

A private client had four framed packages of this construction—containing pastel portraits on paper stretched on wooden stretchers—in the basement of his home during flooding from Hurricane Sandy. The packages are estimated to have been in water for 72 hours. During that time, two of the framed pastels floated and did not leak and two developed minor leaks. These were successfully treated, rehoused, and returned to the client (Client 2012). These packages are not intended to be waterproof, but the protection offered by this housing method helped to minimize the impact of the damage.

FRAME ALTERATION

The reuse of the existing frames offered a recurring challenge in housing the four examples. In three cases, the previous framing left little room around the pastels, either for the expansion of the paper or for the addition of new housing. Frame alteration proved to be necessary in two of the four cases to retain the use of the original frames.

CASE STUDIES

Pastel on Paper

James Martin's 1818 portrait of Garrison Wright is in the collection of the Monmouth County Historical Association in Freehold, New Jersey (fig. 7). Its primary support is a single sheet of Western paper with irregular edges. Before treatment, the pastel suffered from tide lines due to moisture, abrasions from proximity to the glazing, and buckling from a restrictive frame size. Prior to housing, a paper conservator flattened the pastel and reduced the appearance of the tide lines with pigments in ethanol.

The spacers for this object created the necessary airspace between the surface of the work and the glazing, and minimally overlapped the irregular edges of the paper support. They were created from stacked alkaline multiuse corrugated paperboard that was wrapped with alkaline 100% rag paper containing zeolites. The rag paper was toned with washes of



Fig. 7. James Martin's *Portrait of Garrison Wright* before housing. Pastel on wove paper, ca. 1818. 60 x 45 cm. Collection of the Monmouth County Historical Association



Fig. 8. Diagram of the layers of the housing package for Martin's *Portrait of Garrison Wright*. From top to bottom: glazing, spacers, pastel, rigid backing boards, and barrier film that wraps around to the front of the glazing

professional-grade acrylic paints and attached to the spacers with acid-free double-sided polyester tape. The artwork and the spacers were attached to the backing board with individual sets of mulberry paper and wheat starch paste hinges before the glazing and Marvelseal were added to complete the enclosure (fig. 8).

The tight original frame had caused the paper support to buckle when it expanded naturally in response to elevated humidity. As a result, alteration of the existing frame to facilitate its reuse was discussed with the curator. A frame conservator routed out the rabbet of the frame, removing a section of wood behind the lip, to allow for more interior height and width. He then added a second wooden frame to the back, which increased the available depth of the rabbet and offered support for the increased thickness of the new housing (fig. 9).

Pastel on Paperboard

Group of Dancers by Degas is in the collection of the Barnes Foundation in Philadelphia (fig. 10). It was created on three pieces of wove paper that were mounted to a paperboard secondary support. Before housing, a paper conservator consolidated small breaks in the paper fibers along the edges of the artwork and minimally retouched some areas of pastel where it had been disturbed by the previous housing.

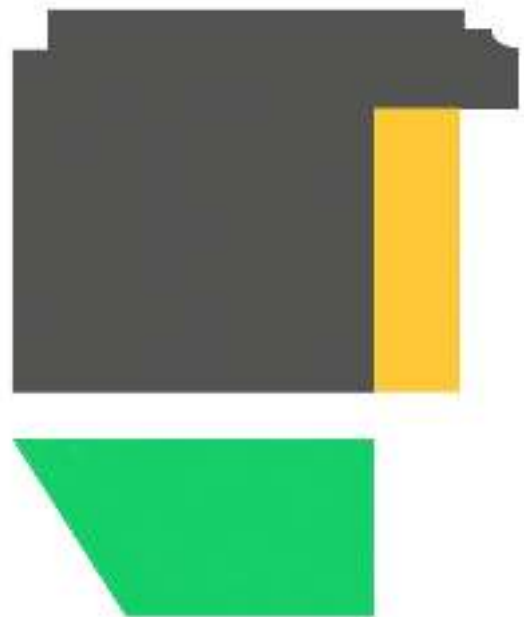


Fig. 9. Diagram of frame profile and alteration for Martin's *Portrait of Garrison Wright*. The section below the lip of the frame was removed and a wooden buildup was added to the back.



Fig 10. Edgar Degas's *Group of Dancers* after framing. Oil pastel on wove paper mounted to paperboard, ca. 1900. 57.8 x 41 cm. Collection of the Barnes Foundation

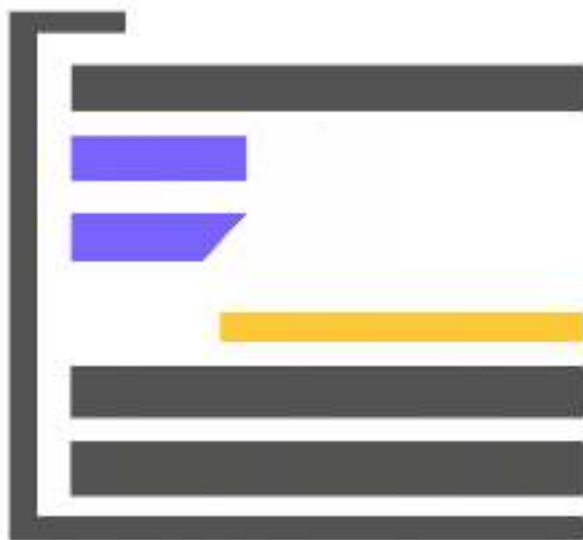


Fig. 11. Diagram of the layers of the housing package for Degas's *Group of Dancers*. From top to bottom: glazing, spacers, pastel, rigid backing boards, and barrier film that wraps around to the front of the glazing

For this object, a set of shaped spacers was created from stacks of alkaline multiuse corrugated paperboard, each with an angle cut into its base. The angle fits against the edge of the pastel and will hold the paperboard secondary support against the backing boards without disturbing the surface media (fig. 11). The spacers were wrapped with toned rag paper containing zeolites and attached to the backing with mulberry paper and wheat starch hinges. After construction of the spacers, the pastel was also hinged to the backing board and enclosed with the glazing and Marvelseal. Since it had previously been a tight fit, the existing frame was altered by a frame conservator to allow room for the new housing.

Pastel on Stretched Paper

Micah Williams's 1821 portrait of John Samuel Holmes is also in the collection of the Monmouth County Historical Association (fig. 12). As is typical with many examples of this artist's work, the pastel was created on wove paper, lined with newspaper, and mounted on wooden stretchers. It exhibited numerous tears and losses that were treated by paper conservators prior to housing.

Two sets of spacers were necessary in this housing design (fig. 13). The first set was constructed from strips of alkaline multiuse corrugated paperboard placed around the perimeter of the wooden stretchers to contain their depth and compensate for any warping. These first spacers also supported the second set, which created space in the housing between the surface of the pastel and the glazing. These were created from hollow acrylic tubing wrapped with acrylic-toned rag paper. As in the previous examples, each set of spacers was attached to the backing board with mulberry paper strips and wheat starch paste. The artwork was held securely in place by the spacers and did not require any further attachment. The housing was then glazed and enclosed with the Marvelseal barrier film.

In this case, the existing frame was a bit large for the piece alone and the artwork had been shimmed into place by the previous framer. The new housing was sized to fit the existing frame height and width to facilitate reframing.

Pastel on Stretched Paper

The Mary Cassatt portrait of Ellen Mary Cassatt titled *The Pink Sash* was brought to the Conservation Center by a private client (fig. 14). The construction of its support was somewhat unique, in that the wove paper primary support was stretched around onto the back of the wooden stretchers and a paperboard panel was glued to the primary support on the verso, covering the hollow formed by the stretchers. Although there was very little space in the frame to accommodate an appropriate housing, it was decided not to alter the existing frame.

Because of the support's construction, wheat starch paste and mulberry paper hinges were attached to the top and sides of the existing paperboard backing, and those hinges were wrapped to the verso of the new backing boards and attached.



Fig. 12. Micah Williams's *Portrait of John Samuel Holmes* after framing. Pastel on wove paper on a wooden strainer, ca. 1821. 66.4 x 56.2 cm. Collection of the Monmouth County Historical Association

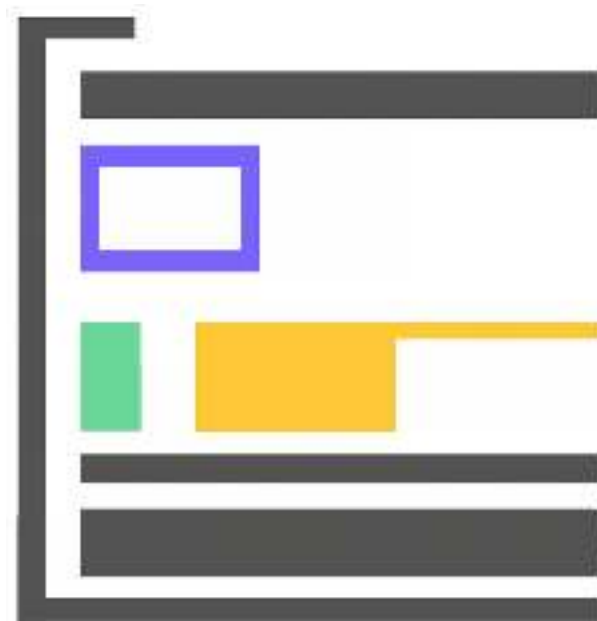


Fig. 13. Diagram of the layers of the housing package for Williams's *Portrait of John Samuel Holmes*. From top to bottom: glazing, spacers, spacers around the pastel, rigid backing boards, and barrier film that wraps around to the front of the glazing



Fig. 14. Mary Cassatt's *The Pink Sash* (Ellen Mary Cassatt) during housing, after construction of the tray and before glazing. Pastel on wove paper on a wooden strainer, ca. 1898. Private collection.



Fig. 15. Diagram of the layers of the housing package for Cassatt's *The Pink Sash* (Ellen Mary Cassatt). From top to bottom: glazing, tray sides around the pastel, rigid backing boards, and barrier film that wraps around to the front of the glazing

This approach will prevent the pastel from moving forward in the housing, towards the glazing. Tall, thin spacers of acrylic-toned Bainbridge Artcare 12-ply alkaline rag board could then be created, which did not cover the edges of the pastel's face and added very little thickness to the overall dimension of the housing (fig. 15). The spacers were attached to verso of the backing boards with mulberry paper hinges, forming a tray that enclosed the object and held the glazing off the surface within the Marvelseal enclosure.

CONCLUSION

Pastels on paper supports are subject to a range of issues that may complicate treatment and housing approaches. Their friable media and fragile supports often make them difficult to work with. They are also vulnerable to condition issues that can arise from handling, storage, and display, which necessitates a variety of treatment and housing approaches based on the nature of the damage and the object's individual construction. These examples of the treatment and housing of pastels with typical condition issues were shared in the hope that they may be applicable to other pastel treatments.

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