Canadian Conservation Institute
Institut canadien de conservation

CCI Notes 10/8

Framing a Painting

Introduction

Framing paintings is important both aesthetically and as a measure in preventive conservation. A frame protects and supports a work during handling, storage, and display. In addition, a frame may carry a protective glazing (glass or acrylic). To ensure the safety of a painting, it is essential to use correct framing techniques.

Always consider the aesthetic and historical importance of the frame. In some cases, the original frame was chosen or prepared by the artist, and must therefore be considered an integral part of the work. Furthermore, many frames carry vital information in the form of labels, inscriptions, and stamps. For these reasons, the frame must be respected as an essential part of the technical history of a painting.

Whether framing is undertaken by museum or gallery staff or by a commercial framer, a number of guidelines should be followed. The basic procedure for framing paintings on canvas attached to auxiliary supports (stretchers or strainers) is outlined below, followed by special considerations for paintings on wood panels, rigid hardboards, and rigid cards.

Examination

Before proceeding with framing, examine the painting, the auxiliary support, and the frame to ensure that they are structurally stable and in good condition.

The frame must be strong enough to safely support the weight of the painting. If the frame has an inner liner, ensure that it is adequately attached to the outer frame.

Ensure that all keys (wooden wedges) in the corners of the stretcher are present and well secured. Damage can result if a key falls between the lower stretcher bar and the canvas.

Replacing and Securing Keys

Replace damaged, broken, or missing keys. It is difficult to remove keys that are wedged tightly into their slots. If keys cannot be removed using your fingers, leave them in place and consult a conservator for assistance.

Make new, replacement keys when necessary, using an original key as a guide. New keys of pine or basswood, usually 3 mm to 7 mm (1/8" to 1/4") thick, should be cut along the grain to fit into the key slots (Figure 1). Round off the corners by sanding.

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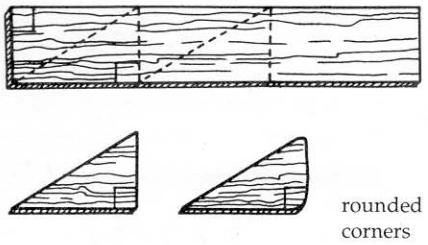

Figure 1. Cutting replacement keys.

Gently slide a protective card (2- to 4-ply matboard) between the canvas and the stretcher bar as temporary protection for the canvas while working with the keys. When inserting and removing the card, avoid exerting pressure against the canvas.

Insert the key into the slot using gentle thumb pressure so that the edge of the key cut across the grain is adjacent to the stretcher bar (Figure 2). This will help to avoid breaking the keys during keying out.

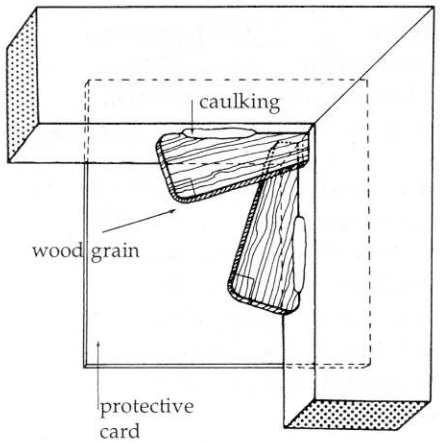

Figure 2. Using silicone caulking to secure keys.

If keying out is necessary, refer to CCI Notes 10/9, *Keying Out of Paintings*.

Keys are usually secured to stretchers with string or with silicone caulking. The latter is recommended because it is a simple procedure and involves less tampering with the painting.

With the protective card in place, use a small tube of silicone caulking to apply a line of caulking neatly along the joint between the key and the stretcher (Figure 2).

Allow the silicone to cure for at least 24 hours before attaching the backing board.

Protective Edge-Strips

Edge-strips have an important function in preventive conservation. If a permanent frame is not available, adding edge-strips to the tacking edges of the auxiliary support (stretcher or strainer) will prevent damage to the painting during handling, display, storage, and transportation. When used with a frame, edge-strips prevent the rabbet from abrading fragile paint surfaces (Figure 3). If the edges of the painting are not particularly fragile, padding the frame is usually preferable and is more convenient.

Materials

Edge-strips
- strips of basswood, pine, or 3-ply plywood that are 3 mm (1/8") thick; or thin aluminum moulding

Coating (optional)
- matte, non-smudging, black paint (brush or spray application); or polyurethane varnish for wood

Attachment
- brass or stainless steel screws, 1.5 cm to 1.8 cm (1/2" to 3/4") in length

Procedure

Cut strips of wood or metal to the required dimensions. These edge-strips should project 3 mm to 5 mm beyond the surface of the painting. Sand the strips to produce smooth, rounded edges.

Brush or spray the edge-strips with the desired coating. Allow them to dry completely.

Pre-drill and, if possible, countersink holes in the edge-strips. Keep the number of holes to a minimum, but use enough attachment points to prevent the strips from bowing between screws.

Attach edge-strips to the tacking edges of the painting using brass or stainless steel screws. Pierce the canvas with an awl before inserting the screws.

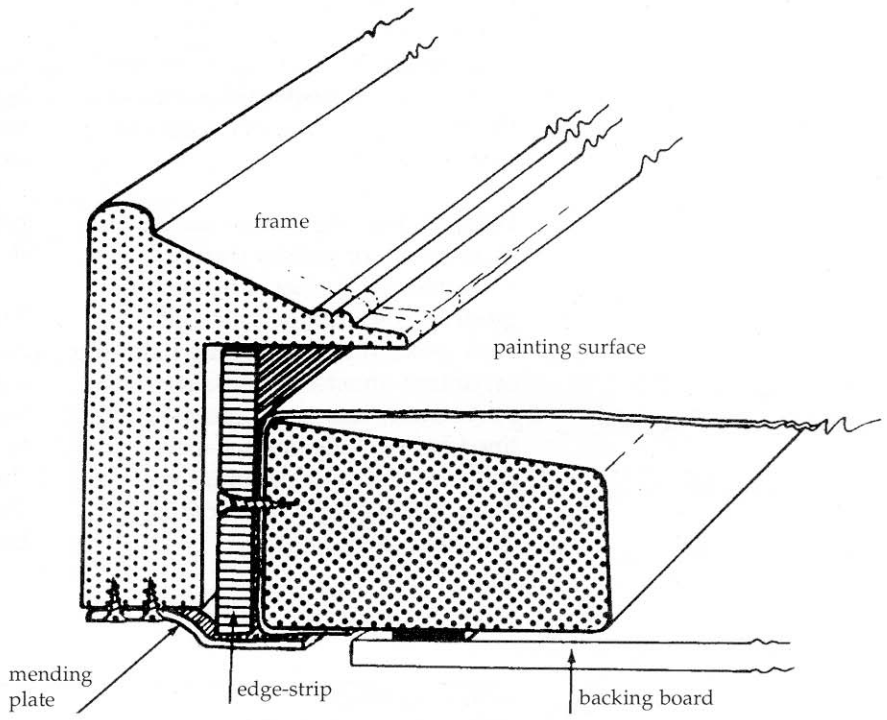

Figure 3. Protective edge-strips (cross-section view).

Padding the Rabbet

It is very important to prevent the paint surface from coming into direct contact with the frame. If edge-strips are not present or are not appropriate, pad the rabbet. This should be undertaken after confirming the fit of the painting in its frame and after making any necessary modifications to the frame.

Apply a colourfast, nylon velvet ribbon or synthetic felt to the rabbet using white glue, such as Bondfast or Elmer's (Figure 4).

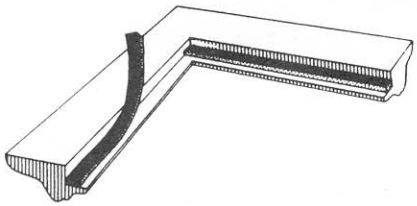

Figure 4. Padding the rabbet.

Wait 24 hours before placing the painting in the frame. This will allow the glue to dry completely and the acetic acid vapours from the glue to dissipate.

Deccofelt 3308, a synthetic felt coated on one side with a pressure-sensitive adhesive, is also recommended as a cushioning material, and is easy to use.

Fitting and Modifying the Frame

Place a ready-made frame, face down, on a clean, padded surface or on padded blocks (see CCI Notes 10/2, *Making Padded Blocks*).

Place the painting in the frame and examine the fit. The painting should not fit tightly. Allow 3 mm to 6 mm on all sides between the frame and the painting to permit the wood components to expand when relative humidity (RH) increases.

The rabbet may need to be enlarged in width or in depth to accommodate the painting.

The width can be increased with a rabbet plane or with the careful use of a chisel (Figures 5a, 5b, 5c).

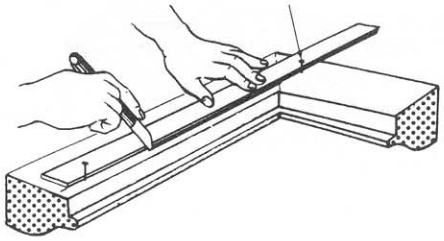

Figure 5a. Insert two finishing nails into the frame with a pin punch. The nails serve as a guide to hold the straight edge in place. Using a metal straight edge and a sharp knife (e.g., chip carving knife), score a line to mark the desired width of the rabbet. Do not attempt to remove more than 0.5 cm of width at a time. Do not remove more than is necessary.

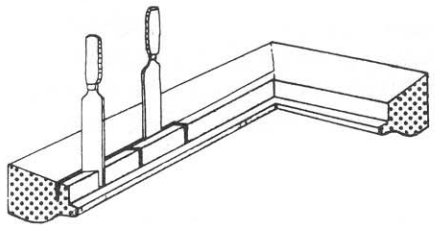

Figure 5b. The cut can be deepened by successive scoring with a knife, as shown in Figure 5a, or by using chisels. Diagonal cuts with a chisel should be made to facilitate removing the wood in sections.

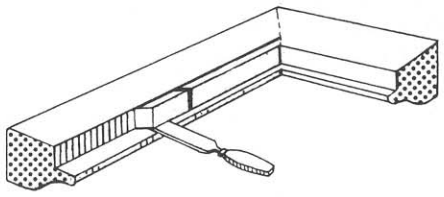

Figure 5c. Using the chisel or a veneer saw horizontally, remove the loose wood or remaining splinters from the plane of the rabbet. When finished, the rabbet should be even and smooth.

The depth of the rabbet can be increased by adding wood strips secured with glue or with wood screws to the back of the frame (Figure 6). If necessary, seek assistance from a local cabinet-maker or framer for these procedures.

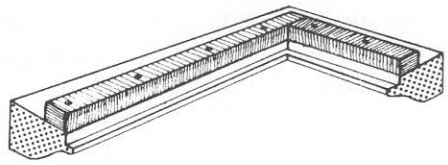

Figure 6. Increasing the depth of the rabbet.

To prevent the painting from slipping in the frame, fill space in excess of 3 mm with small strips of Ethafoam or cork. These materials compress, and will permit some expansion of the wood when RH rises. It is not necessary to have these strips extend the entire length of the rabbet; shorter lengths may be used. Glue the strips to the side of the rabbet to keep them in place.

Replacing or Adding a Protective Backing Board

All paintings should have protective backing boards (Figure 7) (see CCI Notes 10/10, *Backing Boards for Paintings on Canvas*).

Securing the Painting in the Frame

Never use nails when framing a painting. Use brass mending plates, screws, and cup washers to secure the painting in the frame. Metal mirror clips can also be used, but it may be difficult to obtain the required size and shape.

It may be helpful to make a paper template of the contour required for the mending plates. Mark the location of the bends on each plate. Using pliers or a hammer and vice, bend the mending plates to follow the contour of the painting and frame (Figures 3, 7, 9).

Use two screws to secure each mending plate **to the frame only**. The mending plate should exert only slight pressure against the back of the stretcher or backing board.

Hanging Devices

Affix a suitable hanging device to the frame (see CCI Notes 10/1, *Environmental and Display Guidelines for Paintings*).

Glazing

If glazing is used, **never** permit the glass or acrylic sheet, (e.g., Plexiglas) to touch the paint surface. The frame must be designed to hold the glazing away from the paint surface (Figure 8).

Glazing gives additional protection from accidental damage and provides some air-tightness, which reduces the effects of dirt, dust, air pollutants, and environmental fluctuations. Glass is readily available and will not scratch easily, but it is prone to breakage. For this reason, a clear acrylic sheet may be the best glazing material for a painting that will travel. Acrylic sheet materials, however, should not be used for objects with a powdery or friable surface, such as pastel or chalk; an electrostatic charge may tend to build up, and may attract loose particles to the acrylic.

Glass treated with an optical coating to reduce reflections is available (e.g., Denglas). Contact a local gallery, framing shop, or CCI for information on suppliers.

To incorporate glazing, the frame must be strong and rigid. Place the glazing in the frame; it should not fit tightly. Place an inner wood frame, secured at its corners, against the glazing to act as a spacer between the glazing and the paint surface. Pad this inner frame where it contacts the paint surface, using the procedure described previously.

Special Cases

Wood Panels or Rigid Hardboards

Many panel paintings — particularly those with pronounced warps or curvatures, or panels that are very large — require framing methods tailored to their needs. In these cases, contact a conservator for advice.

Undistorted wood panels and hardboards, such as Masonite, also require special framing procedures to accommodate their size, weight, and dimensional changes when RH fluctuates. It is extremely important to provide space within the frame for the expansion of wood panels or hardboards during periods of high RH. For the same reason, nothing should be secured to the panel itself. Local restraint will result in the

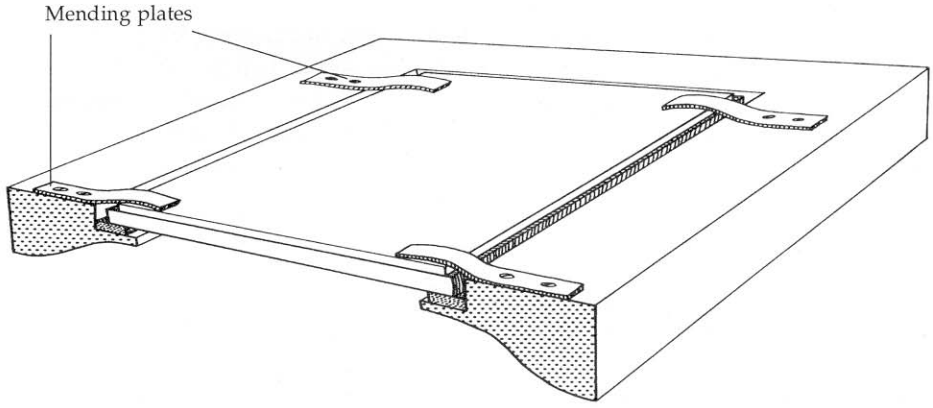

Figure 7. Painting with attached backing board in the frame (cross-section view).

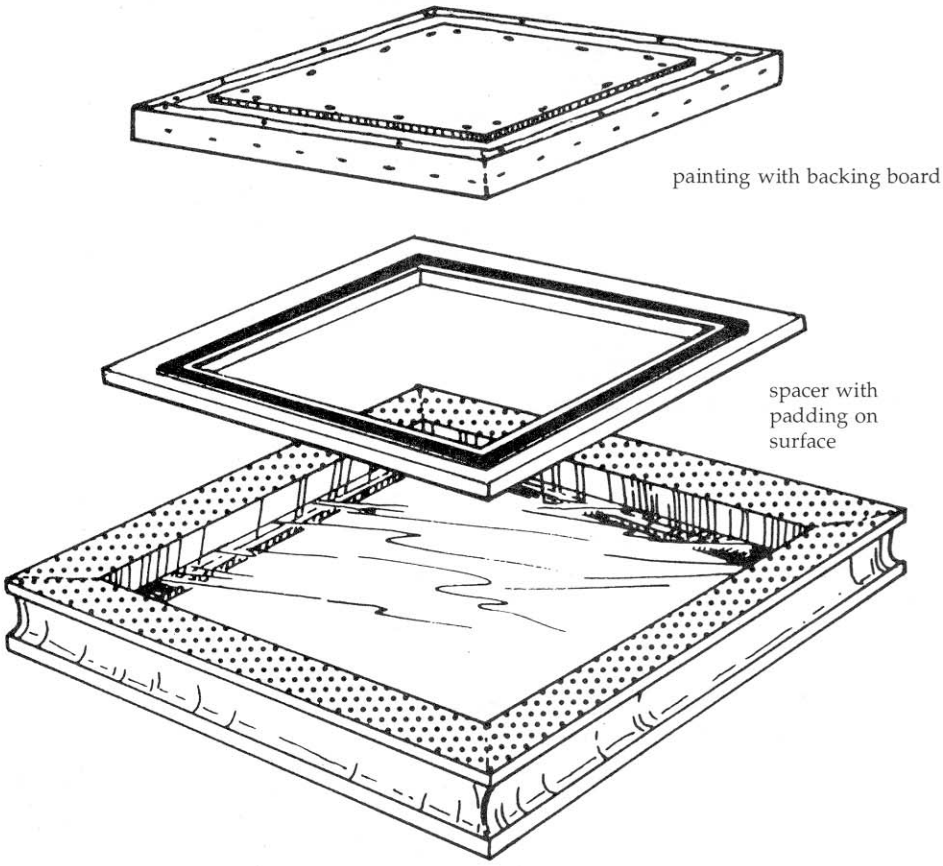

Figure 8. Padded spacer separating painting from glazing.

painted panel warping or splitting as the wood responds to fluctuations in RH.

How the painting will fit in the frame will depend upon the time of year and, in particular, on the RH conditions when the framing is done. If the painting is framed when the RH is at a maximum, a minimum of space is required between the rabbet and the work of art (3 mm to 6 mm). If the framing is undertaken during a period of low RH, allow enough space for swelling in periods of high RH. Use the numbers below as a guide.

Hardboard can change as much as 0.5% in length **and** in width during a 50% change in RH. Thus, when framing hardboards of 60 cm to 120 cm, to be safe, allow a 3 mm to 6 mm space on each side between the rabbet and the work of art.

Solid wood panels can change in dimension up to 3% of the total width with a 50% RH change. The greatest change in dimension will occur in the direction perpendicular to the grain of the wood. The space required to permit unrestricted expansion of the wood across the grain during periods of high RH will depend on the size of the panel. A panel painting one square metre in size will require 1.5 cm of space on each side parallel to the wood grain of the panel. Similarly, a panel painting of 0.5 square metres in size will require 0.75 cm of space on the sides parallel to the wood grain.

If the painting tends to move within this space, a compressible material such as Ethafoam could be used to loosely fill the space.

Out-of-plane dimensional change (warping) may occur with RH fluctuations. Therefore, when glazing is incorporated into a frame, it is important to provide sufficient clearance between the panel and the glazing to prevent contact between the two should warping occur or increase.

Pad the rabbet of the frame using the procedure described previously.

Place the painted panel in the frame, followed by a layer of matboard. Layers of fluted plastic (e.g., Coroplast) cut to the size of the painting can be added until the level is flush with the back of the frame.

Cut a rigid, supporting backing board of wood, hardboard, or Plexiglas so that it overlaps onto the frame. The backing board will hold the painting in the frame, and will seal against dust and dirt.

For small, lightweight panels no larger than half a square metre, corrugated plastic sheeting may be sufficient as a supporting backing board. Place a sheet of acid-free matboard between the painted panel and the plastic sheet to help buffer fluctuations in RH and to give the support additional rigidity.

Hold the backing board in place with brass mending plates. Bend the mending plates as necessary, and use two screws to secure each to the frame only.

The rigid backing board should gently hold the painted panel in place (Figure 9).

Paintings on Rigid Card

Paintings on card supports should not be tightly wedged within the frame. Allow a 3 mm to 6 mm space on all sides between the rabbet edge and the work of art.

Pad the rabbet of the frame, following the procedure described previously. Velvet ribbon, synthetic felt, Deccofelt, or acid-free matboard can also be applied to the side of the rabbet to minimize abrasion of the card's edges.

Place the painting in the frame. Add one or two pieces of acid-free matboard cut to the size of the painting.

Behind the matboard, place a firm, rigid board, such as corrugated plastic sheeting, cut to overlap onto the reverse of the frame (Figure 9).

Hold the backing boards in place under gentle pressure with brass mending plates secured to the frame only. As an alternative, paintings on rigid card can be matted using a sink mat, and can then be framed. The sink mat is described in Merrily Smith's *Matting and Hinging of Works of Art on Paper*, p. 15 (see Further Reading).

Enclosed Case Design

Specially designed enclosed frames or cases provide superior protection against dirt, abrasion, spills, air pollutants, and sudden fluctuations in temperature and RH. A basic design incorporates glazing (which is held away from the paint surface) and a

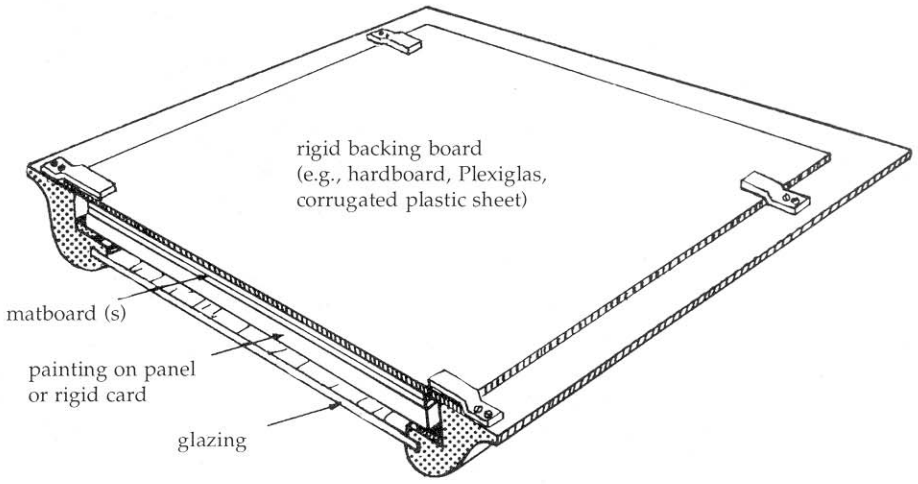

Figure 9. Framing a painting on panel or rigid card (cross-section view).

backing board, both of which are sealed to the frame (see McKay 1990). Maximum protection against the deteriorating effects of fluctuating environmental conditions, particularly RH, is afforded by incorporating a humidity-buffering agent, such as silica gel. Silica gel within an enclosed space absorbs and releases moisture as necessary to minimize changes in RH (see CCI Technical Bulletin No. 10, *Silica Gel*).

An enclosed frame or case design is recommended for paintings exhibited in areas that lack adequate RH control. It is particularly useful for paintings on supports, such as ivory or wood, that are prone to defects resulting from the support material shrinking and swelling in response to environmental fluctuations. For more information on enclosed case design, contact the Canadian Conservation Institute.

Suppliers

Silicone caulking/sealant (Clear Silicone seal, Silicone II, Canadian General Electric):
building supply stores;
hardware stores

Backing boards, i.e., hardboard (Masonite), synthetic rigid boards, corrugated or fluted plastic (Coroplast, Cor-X):
lumber or plastics suppliers

Acid-free (neutral pH or buffered) matboard:
local art and drafting supply stores;
framing shops

Nylon velvet ribbon:
fabric stores

Balsa wood:
hobby stores

Deccofelt 3308 (with pressure-sensitive adhesive, black):
Deccofelt Corporation
555 South Vermont Avenue
P.O. Box 156
Glendora, California 91740
(213) 963-8511

Brass mending plates:
Brainerd Manufacturing Co.
#417 1/2" x 2"
#418 1/2" x 3"
Available on special order from Home Hardware stores. Instruct dealer to place the order with Brainerd Manufacturing Co., East Dorchester, NY 14445, on a Home Hardware order form. The dealer should specify that the order be packaged and tagged separately, and that it be shipped with the next warehouse shipment (allow eight weeks for delivery).

Brass screws, cup washers, mirror hanging brackets:
hardware stores

Ethafoam:
Ethafoam is distributed through various local packaging firms. Contact the sales office of Dow Chemical Canada Inc. in Vancouver, Calgary, Regina, Winnipeg, Toronto, Montreal, Halifax, or St. John's.

Further Reading

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Copies are also available in French.

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