

Window Restoration Steps:

- 1) Place Sash in steam box, for 1-2 hours, depending on how fast the glazing compound softens. (Be sure glass is numbered, left to right, top down, sash identification)
- 2) Remove glazing compound. Careful where glass points are, as glass can break easily when you hit a point.
- 3) Remove glass and re-number if the numbers aren't readable.
- 4) Store glass up right, leaning against each other, do not stack on top of one another.
- 5) Remove as much glazing compound from the sash bed while soft.
- 6) Strip paint on the flat surfaces of the sash.
- 7) Allow sash to dry over night, then remove the paint from the interior muntins.
- 8) Fill large holes with 2 part epoxy. If sash needs a Dutchman repair, carpentry will take care of that.
- 9) Allow epoxy to fully dry (1-2 days), then sand the flats with electric palm sander. Hand sand the interior muntins.
- 10) Pre-treat sash with linseed oil.
- 11) Prime sash with interior/exterior oil based primer. Use appropriate colors, light or dark, depending on the final interior and exterior colors.
- 12) Allow sash to dry overnight.
- 13) Clean glass (except the labeled area), bed glaze, secure with points. Glaze.
- 14) Allow glazing compound to skin over. This can take up to 2 weeks, depending on the weather. Check status by gently touching the glazing compound with one finger, if you leave a print, it is not ready.
- 15) When glazing compound is ready, paint first coat. Apply second coat when the first coat is cured (Usually over night). Lightly hand sand in between coats.

NOTE: After priming, check for small holes from nails and such and fill in with MH spackling putty. When sash is complete, use a razor to clean the glass.

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Window Restoration

Standard Practices pertaining to original finishes and materials, TBD

1. **Documentation and Evaluation of Existing Conditions**
 - a. Photograph of window and sash to show condition prior to restoration
 - b. Written condition report itemizing areas of compromise and non-original materials
 - c. Evaluation of existing wood finishes utilizing the gentlest means possible
2. **Removal of Sash, Sash Stops and Hardware for Offsite Restoration**
 - a. Hardware is removed and bagged with notations of window and type, assorted window specific hardware is then placed together in containers for restoration
 - b. Hardware is immersed in solvents (see MSDS) -off site- specific to the corrosion and/or over paint
 - c. Hardware is then cleaned by hand and placed in a tumbler/polisher for final polishing
 - d. No final finish or lacquer is applied unless otherwise specified by owner or owner's agent
 - e. Sash chord will be replaced with #25 or greater bronze sash chain, Phelps Company, Brattleboro, VT
3. **Cleaning and Restoration of Sash and Sash Stops; Interior surfaces, *unpainted***
 - a. Unpainted sash are cleaned with denatured alcohol on the interior surfaces and re-shellacked with 3coats of 3lb clear or 3lb amber shellac (see MSDS), to be decided by owner or owner's agent
 - b. Sash stops are to be treated in the same manner as sash and other unpainted woodwork
 - c. Final coat of butchers wax to be applied as per manufacturer's directions
 - d. Parting stops are to be replaced in kind and stained to match existing woodwork, finished with Butchers Wax brand paste wax (see MSDS)
4. **Cleaning and Restoration of Sash; Exterior surfaces, *unpainted interior***
 - a. Exterior paint and glazing are removed with Peel Away 1 (see MSDS) brand paint remover off site, exterior painted surfaces are then neutralized as per manufacturers directions
 - b. Cleaned and stripped surfaces are then primed with a penetrating alkyd primer, Benjamin Moore brand (see MSDS)
 - c. Painted surfaces are then filled and patched with spackling putty, two part epoxy materials, or wooden Dutchman repairs utilizing the same species of wood as needed
 - d. Existing glass, original and later replacement, is cleaned and reinstalled if sound. Glass panes are bed and finish glazed with Glaze All brand oil glazing compound (see MSDS)
 - e. Following the recommended glazing cure time the previously painted exterior surfaces are re-painted with three finish coats of Benjamin Moore High Gloss Wood & Metal Enamel (see MSDS) color to be determined by owner or owner's agent

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5. **Cleaning and Restoration of Sash and Sash Stops; Interior/Exterior surfaces, *painted***
 - a. Painted sash are stripped offsite, in our shop, utilizing the steam box method. Sash are steamed to soften original paint and glazing compound allowing the removal of paint and glazing from the sash
 - b. Glass is cleaned and numbered and sash are stored to air dry for forty-eight hours or until moisture meter reads 12 percent or less
 - c. Stripped surfaces are then primed with a penetrating alkyd primer, Benjamin Moore brand (see MSDS)
 - d. All surfaces are then filled and patched with spackling putty, two part epoxy materials, or wooden Dutchman repairs utilizing replacement in kind materials
 - e. Existing glass, both original and later replacement, is cleaned and reinstalled if sound. Glass panes are bed and finish glazed with Glaze All brand oil-based glazing compound (see MSDS)
 - f. Following the recommended glazing cure time the previously painted exterior surfaces are re-painted with three finish coats of Benjamin Moore High Gloss Wood & Metal Enamel (see MSDS) color to be determined by owner or owner's agent
 - g. Interior surfaces receive three coats of Benjamin Moore Satin Impervo (see MSDS) unpainted sash sides are linseed oiled and butcher waxed prior to reinstallation
 - h. Parting stops are to be replaced in kind and stained to match existing woodwork, finished with Butchers Wax brand paste wax (see MSDS)

6. **Window Surround Preparation for Sash Installation**
 - a. Window surround to begin at exterior sash stops and to include all surfaces to the interior sash stops (see attached)
 - b. Exterior surfaces to include stops, jambs, and window well, shall be stripped to the substrate utilizing infrared heat removal and standard heat guns on the lowest setting
 - c. All previously painted surfaces will be primed and top coated with Fiberlock Lead Barrier Compound encapsulating coating, three coat minimum to insure manufacturers recommended thickness

7. **Reinstallation of Sash and Hardware**
 - a. Sash chord will be replaced with bronze sash chain, (Phelps Co.) #25, 80lb or #45, 160lb load limit, dependent upon the sash weight, original sash weights will be preserved
 - b. Spring steel sash balances will be restored/maintained and reinstalled
 - c. Upper sash will be installed
 - d. New parting bead/stops will be installed
 - e. Lower sash will be installed
 - f. Sash stops will be reinstalled with original non-adjustable screws and washers
 - g. Alternatively; Phelps Co. Stop Bead Adjusters Model #SBA62 will be installed as per manufacturers recommendations, finish to be determined

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Window Restoration

Standard Materials pertaining to restoration work, MSDS attached for submittal

OFF SITE SHOP MATERIALS

1. Solvents
 - a. Denatured alcohol; Max.VOC 792g./l
 - b. Mineral spirits; Max.VOC 815g./l
 - c. Lacquer thinner; Max.VOC 689g./l
 - d. Boiled linseed oil; Max.VOC 500g./l

2. Adhesives
 - a. Wood glue; water resistant
 - i. Titebond II brand; Max.VOC13.7g./liter
 - b. Two part epoxy
 - i. West Marine brand
 - ii. Advanced Repair Technologies brand

3. Putties and fillers
 - a. Micro balloons
 - i. West Marine brand
 - b. Wood filler, spackling putty
 - i. Zinsser MH brand spackling paste; Max.VOC 146 g./liter
 - c. Window glazing compound
 - i. Glazol brand glazing compound; Max.VOC 32g./liter

4. Coatings
 - a. Primers and paints
 - i. Benjamin Moore and Co. alkyd penetrating primer; Max.VOC 350g./liter
 - ii. Benjamin Moore and Co. alkyd Satin Impervo interior paint; Max.VOC 380g./liter
 - iii. Benjamin Moore and Co. alkyd High Gloss Metal and Wood int/ext paint; Max.VOC 380g./liter
 - iv. Fiberlock Industries lead barrier compound; Max.VOC 88g./liter

 - b. Clear coat protective finishes
 - c. Generic linseed oil, boiled and raw; Max.VOC 500g./l
 - i. Zinsser 3lb shellac, clear and amber; Max. VOC 730g./liter
 - ii. Butcher Co. paste wax; Max.VOC 791g./liter

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ON SITE EXTERIOR MATERIALS

1. Solvents
 - a. Mineral spirits; Max.VOC 815g./l
 - b. Boiled linseed oil; Max.VOC 500g./l
2. Adhesives
 - a. Two part epoxy
 - i. West Marine brand; Max.VOC N/D
 - ii. Advanced Repair Technologies brand; Max.VOC N/D
3. Putties and fillers
 - a. Wood filler, spackling putty
 - i. Zinsser MH brand spackling paste; Max.VOC 146 g./liter
 - b. Window glazing compound
 - i. Glazol brand glazing compound; Max.VOC 32g./liter
4. Coatings
 - a. Primers and paints
 - i. Fiberlock Industries lead barrier compound; Max.VOC 88g./liter

MAXIMUM VOC GRAMS PER LITER

Denatured alcohol; Max.VOC 792g./liter
Mineral spirits; Max.VOC 815g./liter
Lacquer thinner; Max.VOC 689g./liter
Boiled linseed oil; Max.VOC 500g./liter
Titebond II brand; Max.VOC 13.7g./liter
Glazol brand glazing compound; Max.VOC 32g./liter
Zinsser MH Spackling & Patching Compound; Max.VOC 146 g./liter
BM & Co. alkyd penetrating primer; Max.VOC 350g./liter
BM & Co. alkyd Satin Impervo interior paint; Max.VOC 380g./liter
BM & Co. alkyd High Gloss Metal and Wood int/ext paint; Max.VOC 380g./liter
Fiberlock Industries lead barrier compound; Max.VOC 88g./liter
Zinsser 3lb shellac, clear and amber; Max. VOC 730g./liter
Butcher Co. paste wax; Max.VOC 791g./liter