



1. Remove flaking, chalking, cracking, blistering and otherwise failing paint to next sound layer using light and gentle hand scraping methods. Complete paint removal is acceptable but may not be needed unless there are deep cracks or severe blistering and peeling down to bare wood level. If paint is to be entirely removed, or windows are to be removed, written specifications on method must be reviewed and approved by HPO in advance. If window sashes are removed, each window must be marked and numbered to a corresponding number on floor plans prior to removal to ensure that windows are reinstalled in correct openings.
2. Old putty should be removed using hand tools, and in cases where glass is remaining, careful efforts should be taken to minimize glass breakage. Paint removal methods may require additional refinement when window contains leaded, stained or other decorative glass.
3. The window repair project should holistically address the windows - sills, jambs and sashes should be repaired or replaced in kind; no "partial" window projects unless omitted items (i.e., jambs) are in good to excellent repair, and the HPO concurs.
4. Exterior frames for windows should be repaired and remain in place if at all possible. If frames are weak, they should be disassembled and reassembled with glue and pins.
5. All wood window sashes, frames and components should be dry prior to beginning repairs or painting.
6. Wood components should be gently hand-sanded, patched and primed with appropriate wood compounds and fillers to be smooth, and in historic original condition and matching original profiles. Any cracks or voids shall be glued, filled and/or consolidated to match using semi-rigid epoxies appropriate for wood, with new parts of sashes or frames spliced in when consolidation methods are ineffective. No mechanical/abrasive, chemical stripping or thermal paint removal methods should be used without testing and HPO prior approval.
7. Entire sash and exterior frame replacement should be avoided. Any replacement of complete sashes or frames requires HPO advance approval and a building permit.
8. Sash should tightly fit jamb, maintaining minimal to no air gap.
9. If new glass is to be installed, use clear or close-to-clear glass with Visible Transmittance Rating (VTR) or Visible Light Transmittance (VLT) of .65 or 65% or higher. Historic windows may be retrofitted with thicker single pane glass, hard coat Low E glass, or dual pane glass provided that the historic exterior profile is maintained, and glass is clear. If existing glass is to remain, glass should be cleaned and all paint manually removed from glass.
10. Before reinstalling glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal glass. Wood should be brushed with linseed oil and primed prior to installing glass. The final glazing compound or putty should be applied and beveled to complete the seal. Remove any old caulk between exterior window jambs and exterior wall surface, and re-caulk.
11. If sashes are to be operable, ropes should be replaced or repaired as needed, and window should operate smoothly and easily once work is completed. If sash cords or chains are not be reinstalled and windows are to be reinstalled in fixed position, window sashes should be installed in original staggered position, and HPO should approve method of fixing window prior to implementation.
12. Historic hardware should be retained, and cleaned. New matching hardware should be replicated to match existing.
13. Replace/provide damaged/missing stops in-kind.
14. All wood components must be dry, clean, and free of chalking and dirt- and mildew-free prior to re-painting. All wood components of the windows should be primed and painted with high-quality exterior

paint or stain/sealant if unpainted on exteriors and interiors. If old paint layers remain, new products must be compatible and adhere tightly to earlier paint layers (which are typically oil-based). Apply paint onto glass about 1/8" to seal glazing compound.

15. Install weather stripping between rails, sash and jambs to reduce infiltration.
16. Clear window films with a Visible Transmittance Rating (VTR) or Visible Light Transmittance (VLT) of .65 or 65% or higher may be applied to glass to reduce solar heat gain.

*For more information, refer to National Park Service Preservation Briefs 9 and 10 available at:*

<http://www.nps.gov/history/hps/tps/briefs/brief09.htm> & <http://www.nps.gov/history/hps/tps/briefs/brief10.htm>