PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Appendix 7 – Joint Sealants

.2 Appendix 11 – Heritage Glazing

.3 Appendix 12 – Heritage Painting

1.2 APPROACH TO WORK

.1 The intent of the repairs to existing windows is to make them structurally sound, stable, and smoothly operating whilst conserving the maximum amount of existing fabric and its existing character.

1.3 STORAGE AND HANDLING

.1 Pack, insulate and ship all fabricated units to ensure no damage to the assembly.

.2 Store in safe, dry location in such a way as to prevent site damage prior to, during and after installation but prior to handover.

.3 Deliver all glazing and painting materials to site in original, unopened, labeled and sealed containers, and store between 10 and 25 degrees C., and protect from impact and inclement weather.

1.4 WORKSHOP / WORKING CONDITIONS.

.1 Undertake window repairs at a secure, dry location either on site or at the contractor's workshop.

.2 Maintain the working area between 10 and 25 degrees C., or as otherwise directed by manufacturers.

.3 If work is being undertaken on site, discuss protection requirements with Owner. Mask or otherwise protect surrounding or adjacent historic fabric from all activities associated with this work. Avoid fastening hoarding or other protections to historic material.

.4 For lead paint health and safety requirements, see Appendix xx – Heritage Painting.

1.5 QUALITY ASSURANCE

.1 The work is to be undertaken by a GreenON Heritage Window Restoration Contractor.

.2 Perform work in accordance with Architectural Woodwork Manufacturers' Association of Canada (AWMAC) Custom Quality standard as applicable and as specified.

1.6 TEMPORARY PROTECTION

.1 Provide 13mm (1/2") plywood covering to protect window opening and interiors from the elements and for security during the work. Secured plywood such that fasteners do not damage the historic fabric.

1.7 WARRANTY

.1 The warranty period to be as follows:

.1 Workmanship, including warping, fit and operation for a period of: 2 years.

.2 Hardware: 2 year manufacturer's warranty.

.2 The warranty period commences from date Work is certified as substantially performed. Promptly make good any defects and deficiencies that become apparent with the warranty period.

PART 2 PRODUCTS

2.1 LUMBER

.1 Lumber generally: to CAN/CSA 0141-91 (R1999)

.2 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board, to National Lumber Grades Authority standards.

.3 Use shed stock with maximum moisture content of 12% at time of fabrication.

.4 Repairs to existing windows: To suit existing windows as advised by Heritage Restoration Contractor, heritage architect or building specialist.

2.2 ACCESSORIES

.1 Adhesive: waterproof, synthetic, formulated emulsion adhesive to CSA Standard 0112, 8M - 1977 - Type I and II, "Polyvinyl adhesives, cross linking for wood".

.2 Exterior Wood Filler for repairs and finishing.

.3 Epoxy Wood Consolidant.: Epoxy should be of a type which has regular and proven use for consolidation applications in decayed wood. Epoxy must have low viscosity and be slow curing to allow for maximum penetration and successive applications. When fully cured epoxy must be more flexible than wood at 50o-100o F temperature range.

.4 Epoxy Wood Filler. Epoxy should be of a type which has regular and proven use for patching and filling applications in decayed wood. Epoxy must be easy to apply. When fully cured epoxy must be more flexible than wood at 50o-100o F temperature range.

.5 Wood preservative surface application: to CSA 080M, clear zinc naphthenate solution.

.6 Wood refresher:

2 parts double-boiled linseed oil;

1 part mineral spirits;

0.5 part wood preservative.

.7 Nails: Galvanized finishing nails sized for purpose.

.8 Weather strippin:

.1 Sprung bronze V type; OR

.2 Silicone gasket

.9 Hardware to match existing or best suit existing conditions.

2.3 FABRICATION

.1 Window repair:

.1 Fabricate replacement parts to match existing in length, section and profile. Use as far as possible the original methods of attachment.

.2 Fabricate replacement parts with sharp true profiles, to match existing exactly.

.3 Sand elements lightly and ease corners in preparation for painting.

.4 Use only adhesives and fastenings that develop sufficient strength for intended use, which are non-staining, and are unaffected by the environment to which exposed.

PART 3 EXECUTION

3.1 DISMANTLING

.1 All required dismantling, such as removal of stops, parting strips, sash, and hardware shall be done with extreme care, taking appropriate precautions not to damage adjacent material or window components themselves.

.2 Take care with tools to avoid marring, crushing or splitting components. If necessary, nails which have to be removed should be snapped off on the back of the component rather than driven back through the face.

.3 All components, including hardware, which are being dismantled shall be labeled and retained for the duration of the job.

.4 Labels shall consist of gasket paper, marked with a waterproof marker, and attached to the component on a hidden surface in a secure manner. For smaller components such as hardware, place in a sealed plastic bag with the label visible within the bag.

.5 Sash or casements shall be appropriately stacked, padded and supported to prevent deterioration, warping, abrasion or other forms of damage.

.6 When removing screws and hardware carefully clean the screw heads first. Apply penetrating oil in advance of removal. Let dwell as directed by manufacturer. Use screw drivers that fit the heads exactly. Where hardware is fitted into a mortise, such as the leaves of butt hinges, carefully and neatly cut the adjacent wood with a sharp chisel to avoid tear out.

.7 Remove existing hardware

.1 Remove all miscellaneous, unused hardware from window sash, frame and surround.

.2 Where possible salvage existing original window hardware for reuse. Reinstall complete sets if possible.

.3 Clean hardware before and after installation.

3.2 REPAIR EXISTING WOOD WINDOWS

.1 Flush parts of frames and sash areas where decayed or damaged wood have been cut out with zinc napthanate and consolidate and fill, or piece in with new wood, glued and fastened, for larger areas of damage.

.2 All joinery for stiles and rails to match existing construction.

.3 All vertical muntin bars are to be continuous and are also to match existing construction.

.4 Only horizontal muntins may be stub tenons.

.5 Construct true and square where possible, but match existing irregularities so as not to emphasize them.

.6 Prime end grain of all joinery work, with linseed oil prior to assembly.

.7 Shop prime and back prime all work before installation.

3.3 WOOD FILLER APPLICATION

.1 Provide dry, clean surface removing all dry rot, dirt, saw dust or loose paint.

.2 Where rotted wood is present, remove before applying epoxy wood filler.

.3 Use screen wire or wood blocks to bridge or reinforce larger holes.

.4 Prepare and apply wood filler in accordance with manufacturer's instructions.

.5 For best results, allow 15-20 minutes of standing time after application before roughly shaping and moulding.

.6 Form mould profiles to match existing wood profiles.

.7 Let filler cure. Full cure achieved in 3-7 days. Sanding can generally take place within 1-2 days – premature sanding will gum up sandpaper. Always sand in direction of wood grain.

.8 Fine sand in preparation for hand priming and painting to suit existing surrounding heritage fabric, in accordance with Appendix 12 - Heritage Painting.

3.4 EPOXY WOOD CONSOLIDANT

.1 Prepare wood window as per the manufacturer's instructions.

.2 Apply the consolidant as per the manufacturer's instructions. The following is offered as general guidance:

.1 Epoxy consolidant may be applied by pouring or with a brush.

.2 Apply mixture by pouring and brushing onto the wood surface until damaged area is fully saturated. The applicator bottle can be used to inject into drilled holes or larger openings in the wood. Consolidant will readily follow grain of wood. Apply wood consolidant while absorption continues.

.3 Apply liberally to prepared decay area but not beyond. Do not allow consolidant to touch adjacent areas, materials or building components. Repeat application 4 to 6 times or until surfaces do not accept more consolidant. Allow approximately one hour between applications.

.4 For vertical surfaces drill small holes in wood on angle to hold consolidant.

.5 Avoid unnecessarily coating surfaces.

.6 Keep epoxy consolidant out of direct sunlight and at temperatures above 15 degrees C. (60 degrees F.) until fully cured.

.7 After curing is complete, infill missing pieces with epoxy wood filler.

.3 Following application leave all areas free and clean of epoxy. Discard unused epoxy, containers, tools and towels in accordance with any local, Provincial and Federal regulations.

3.5 EPOXY WOOD FILLER

.1 Prepare wood window as per the manufacturer's instructions.

.2 Apply the consolidant as per the manufacturer's instructions. The following is offered as general guidance:

.1 Provide dry, clean surface removing all dry rot, dirt, saw dust or loose paint.

.2 Where rotted wood is present, remove or encapsulate with epoxy consolidant before applying epoxy wood filler.

.3 Epoxy patch may be applied with a putty knife, trowel or similar tool.

.4 Apply patch to properly prepared cavities or checks. Do not apply in thicknesses greater than 1 1/2 inches or in any one area exceeding one quart at one time. Allow epoxy to set before applying additional layers.

.5 In certain situations, such as with window sills where the outside corner has been abraded away, the patch material shall be mixed at a low viscosity and cast to

form the desired shape. Use butcher's wax as a release on the form. After the patch has cured remove all traces of the release with varasol to ensure adhesion of paint films.

.6 Plane, tool and sand surfaces smooth and remove all excess on the surface so that the epoxy is limited to voids.

.7 For best results, allow 15 - 20 minutes of standing time after application before roughly shaping and moulding.

.8 Let filler cure. Full cure achieved in 1.5-3 days, depending on temperature. Cured epoxy can be worked and tooled similar to real wood.

.9 Sanding can generally take place within 1-2 days – premature sanding will gum up sand paper. Always sand with wood grain.

.10 In the process of tooling and sanding, remove all excess epoxy to expose sound wood surface where possible.

.11 Never fill construction joints, such as that between a stile and a rail, with epoxy.

.3 Following application leave all areas free and clean of epoxy. Discard unused epoxy, containers, tools and towels in accordance with any local, provincial and federal regulations.

3.6 'DUTCHMEN' REPAIRS

.1 Material spliced in as repair shall be same wood species with grain orientated to match original.

.2 Joints shall be tight so that after finishing they are visible only upon close inspection.

.3 In exterior situations joints shall be weather tight; bevel joints so that they would drain to the exterior should moisture penetrate.

.4 Material spliced in shall be attached to the parent piece, not adjacent element.

.5 Generally surface fasteners are to be avoided in Dutchmen repairs; clamp until adhesive has set and protect from pressure marks.

.6 Dutchmen repairs are required where wood is broken or missing; not for minor wear and tear.

3.7 REPLACEMENT OF BROKEN GLAZING

.1 See Appendix xx – Heritage Glazing.

.2 Cut replacement glass to suit size of existing lights.

.3 Reglaze lights in traditional manner with glazing points and glazing compound.

.4 Carefully remove existing wood glazing stop for reinstallation.

.5 Secure replacement glass against back putty, secured with glazing points, 2 per side of pane.

.6 Reinstall wood glazing stops, where they exist, over 2 mm (1/16") of face putty with fine nails. Fill all holes with wood filler.

.7 Replace all putty with glazing compound, with mitred profile and mitred inside corner profile.

.8 Finish compound flush with sash or casement rebate so that it is not visible through glass.

3.8 INSTALLATION OF HARDWARE

.1 Install hardware in accordance with manufacturer's instructions.

.2 Use the templates provided by hardware item manufacturer.

.3 Install hardware plumb, level, true with window plane as applicable.

.4 Cut recesses for hardware (as needed) neatly into windows and frames.

.5 Install hinges and hardware after final painting.

.6 Adjust hardware to operate smoothly and as specified.

.7 Ensure that latches engage securely and hold windows firmly shut and so that locks are readily operable.

.8 Ensure that exposed fastenings are installed neatly and true.

.9 Once sashes are restored they are to be weighed and the sash weights are to be adjusted by adding or subtracting weight to suit.

3.9 INSTALLATION OF WEATHER STRIPPING

.1 Install all weather stripping in accordance with manufacturer's printed instructions and with fasteners provided.

.2 Adjust all sashes to operate smoothly with weather stripping.

.3 Once sashes are planed to fit smoothly against the weather stripping rub the edges of the stiles generously with paraffin wax to reduce friction.

3.10 CLEAN UP

.1 Sand and clean affected woodwork to leave free from finish defects in any exposed part, ready for painting.

.2 Clean all window panes to be free of grease, paint and other surface dirt that distorts vision.

.3 Remove all debris resulting from work of this section from site.

END OF SECTION