

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 02 41 13 – Selective Site Demolition.
- .2 Section 08 03 52.71 – Historic - Wood Window Rehabilitation.
- .3 Section 08 03 52.81 – Historic - Wood Window Replacement, new sashes.
- .4 Section 09 03 91 – Historic - Painting.

1.02 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
 - .2 CAN/CGSB-12.13-M91, Patterned Glass.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for glass and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit 150 x 150 mm size samples of each type and thickness of glass.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Photographic Documentation:
 - .1 Submit photographs for each stage of work and each mock-up in accordance with Section 08 03 52.71 – Historic - Wood Window Rehabilitation.

1.04 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.
- .3 Record Documentation:
 - .1 Submit assembled documentation in the form of a Conservation Report to document every step of the restoration process from examination of existing conditions to reinstallation.

- .2 Submit Database to locate interventions by type for each window unit.

1.05 QUALITY ASSURANCE

- .1 Qualifications: in accordance with Section 08 03 52.71 – Historic - Wood Window Rehabilitation supplemented as follows.
 - .1 Carry out glazing work in this section using skilled tradespersons trained and experienced in removal and installation of glazing putty.
 - .2 Glazer and personnel shall be specializing in the area of work.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Mock-Ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Construct mock-up to include glass removal and setting for each glazing type.
 - .3 Mock-up will be used:
 - .1 To judge quality of work, substrate preparation, operation of equipment and material application.
 - .4 Locate where directed by the Departmental Representative.
 - .5 Allow 72 hours for inspection of mock-up before proceeding with work.
 - .6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials glazing off ground and glazing compounds indoors between 18 degrees C and 23 degrees C and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect glazing and accessories from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, and packaging materials in accordance with Section 01 00 10 – General Instructions, Waste Management.

1.07 AMBIENT CONDITIONS

- .1 Ambient Requirements:
 - .1 Install glazing compounds when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

PART 2 PRODUCTS

2.01 MATERIALS

- .1 Flat Glass:
 - .1 Float glass, to CAN/CGSB-12.3, clear, thickness as per existing, assume about 4 mm thick.
 - .2 Patterned glass: to CAN/CGSB-12.13, thickness as per existing, assume about 4 mm thick.
 - .1 Styles A-figured one surface, facing interior.
 - .2 Surface treatment: etching or sandblasting as required to match existing.
- .2 Curved glass:
 - .1 Float glass, to CAN/CGSB-12.3, clear, thickness as per existing, assume about 4 mm thick, radius to match radius of curved sash.

2.02 ACCESSORIES

- .1 Setting blocks: Eastern white pine, minimum 40 mm x width of glazing x 2-3 mm height.
- .2 Glazing compounds:
 - .1 Linseed oil putty, by same manufacturer as paint system, putty components:
 - .1 Linseed oil, raw: concentration 35-55%
 - .2 Calcium carbonate: concentration 45-65%
- .3 Wood Sealer: Shellac.
 - .1 Shellac flakes, de-waxed.
 - .2 Denatured alcohol (methyl hydrate).
- .4 Glazing points: non-ferrous metal.

2.03 TOOLS

- .1 Clear glass jar with lid.
- .2 Portable steamer with hose.
- .3 Pumice.
- .4 Soft brush.

PART 3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
 - .1 Verify that openings for glazing are correctly sized and within tolerance.
 - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
 - .3 Visually inspect substrate.

- .4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .5 Proceed with installation only after unacceptable conditions have been remedied.

3.02 PREPARATION

- .1 Remove existing glazing and salvage for reuse in accordance with Section 02 41 13 - Selective Site Demolition.
- .2 Soften putty using steam to avoid braking glass from heat shock, remove glazing points, and carefully remove glass. In some cases, sealant was previously applied on top of existing putty; remove sealant in conjunction with putty. Also, where putty was previously replaced, remove wood glazing stops and sealant.
- .3 Label each pane of glass for re-installation in its original location. Salvage broken panes for reuse in smaller lights.
- .4 Proceed with re-glazing following sash restoration and surface preparation respectively in accordance with Section 08 03 52.71 – Historic - Wood Window Rehabilitation and Section 09 03 91 – Historic - Painting.
- .5 Sand and clean glazing rebates.
- .6 Before applying glazing, prime the glazing rebate with a mixture of shellac flakes and alcohol.
 - .1 Mix shellac flakes and methyl hydrate in a glass jar to the consistency of motor oil. Mix only enough for one day's use.
- .7 Brush shellac mixture into rebates. Let dry 2 hours before applying putty.

3.03 INSTALLATION

- .1 Cut replacement glass to suit size of existing lights and to clearances recommended by glass manufacturer. Each pane of glass is to be undersized about 1.5 mm around the perimeter.
- .2 Set glazing lights in traditional manner, using glazing putty.
 - .1 Empty the entire container of putty on a non-absorbent surface and knead until soft before use. This will be easier if the putty is warmed in microwave.
 - .2 Use putty at a temperature between 15 degrees C and 25 degrees C. If the putty is too sticky, knead on a piece of cardboard to remove some of the oils. Do not add chalk to the putty, as this will cause separation.
 - .3 If the putty is too hard, re-warm the putty.
 - .4 Use warmer softer putty for back puttying and harder putty for bevel putty.
- .3 Place setting blocks with edge block maximum 75 mm from corners for upper sashes of gabled masonry dormers.
- .4 Apply back putty to the rebates about 1-2 mm thick but with enough putty so that the glass is well seated and there are no gaps between the glass and the rebates.
- .5 Set replacement or salvaged glass on full bed of putty to proper sash frame tolerances. Ensure it is evenly seated.
- .6 Install glazing points at 300 mm on centre, with edge point maximum 75 mm from corners.

- .7 Neatly apply exterior putty bevel in line with edges of stiles and rails.
- .8 Allow putty to set up for 24 hours before striking off excess.
- .9 Tool putty to true, even lines, and free of creases, cavities, bubbles and other defects which will mar its appearance and performance.
- .10 Apply ground pumice to each pane of glass sequentially. Spread liberally with a soft brush, allowing the pumice to absorb any oil residue. Sweep the pumice off the glass. The glass should take on a nice shine, free of oily prints. The discarded pumice may be reused for subsequent panes.
- .11 Allow putty to cure for minimum 72 hours before painting.
- .12 Paint cured putty in accordance with Section 09 03 91 – Historic - Painting.
 - .1 Lap paint onto glass by 2 mm with application of the exterior and interior finishing paint coats.

3.04 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions, Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .1 Remove traces of primer, caulking.
 - .2 Remove glazing materials from finish surfaces.
 - .3 Remove labels.
 - .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions, Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 00 10 – General Instructions, Waste Management.

3.05 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 After installation, mark each light with an "X" by using removable plastic tape or paste.
- .3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION