

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 08 80 00 Glazing
- .2 Section 08 71 00 Door Hardware
- .3 Section 09 03 61 Historic - Painting Exterior Surfaces

1.2 REFERENCE STANDARDS

- .1 America Architectural Manufacturers Association (AAMA) / Window and Door Manufacturers Association (WDMA) / Canadian Standards Association (CSA)
 - .1 AAMA/WDMA/CSA 101/I.S.2/A440 -[11]. NAFS 2011 - North American Fenestration Standard/Specification for windows, doors, and skylights
- .2 ASTM International
 - .1 ASTM E 779-[10]. Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
 - .2 ASTM E 1186 - [03(2009)]. Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
 - .3 ASTM E 1827-[11]. Standard Test Methods for Determining Air tightness of Buildings Using an Orifice Blower Door.
 - .4 ASTM E 2178 -[13]. Standard Test Method for Air Permeance of Building Materials.
- .3 CSA Group
 - .1 CAN/CSA-A440 -[00 (R2005)] Windows.
 - .2 CAN/CSA-A440.2-[14] /A440.3-[14]. Energy Performance of Windows and Other Fenestration Systems / User Guide to CSA A440.2-[04]. Energy Performance of Windows and Other Fenestration Systems
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (SDS).

1.3 SEQUENCING

- .1 Sequence work of this Section with work of Sections 02 80 00 - Hazardous Materials Remediation and 09 03 61 Historic - Painting Exterior Surfaces. Sequence work to suit scope of work specified:
 - .1 Protect adjacent finishes and sandstone masonry around the window.
 - .2 Remove window and door hardware
 - .3 Remove and repair existing wood sashes and door panels; and/ or damaged glazing panels and replace as noted in the drawings.
 - .4 Patch and repair existing window and door frames as required.
 - .5 Patch and repair existing interior wood window sills as required.
 - .6 Re-install conserved wood sashes and door panels in conserved framed openings.
 - .7 Repaint wood.
 - .8 Re-install restored hardware and install new hardware as indicated by the window schedule.
 - .9 Restore affected exterior finishes and paint interior trims to match exterior.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data.
 - .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Manufacturers' printed data sheets.

- .2 Material Safety Data Sheets (SDS).
- .3 Shop Drawings.
 - .1 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Samples.
 - .1 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Replacement wood: 150 mm long samples for:
 - .1 Sills
 - .2 Stiles and Rails
 - .3 Muntin bars
 - .4 Parting strips
 - .5 Brick molds
 - .6 Door/ Window stops
 - .7 Door/ Window Frame
 - .2 Replacement Glazing
 - .3 New and Replacement Hardware
 - .1 Locks
 - .2 Latches
 - .3 Pulls and handles
 - .4 Hinges
 - .5 Sash Chains
 - .6 Insect screen fasteners
 - .7 Hung sash hold opens
 - .4 Weather-stripping: [150] mm long samples for each type of application:
 - .1 Spring bronze V-type
 - .2 Spring bronze with thick felt between moving components
 - .5 Gaskets
 - .6 Backer rods
 - .7 Sealants
 - .8 Adhesives
 - .9 Patching compounds
 - .10 Screws, bolts and fasteners
 - .11 Lubricants
 - .12 Glazing compound
 - .13 Component labels

1.5 CLOSEOUT SUBMITTALS

- .1 Record Documentation.
 - .1 Provide one copy of photographic documentation before, during and after the wood window repairs.
 - .2 Provide one copy of As-built drawings.

1.6 QUALITY ASSURANCE

- .1 Qualifications.
 - .1 Work of this Section: only undertaken by Contractor experienced in conservation of historic wood window work and in traditional carpentry techniques required for repairing wood windows.
- .2 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .1 Undertake mock-up of existing paint finish removal utilizing various removal techniques for review and approval with Departmental Representative to determine most appropriate and least invasive

- method. Perform small samples of various methods; locations to confirmed with Departmental Representative prior to testing.
- .2 Construct a full-size mock-up of replacement/ scarfed wood repairs at existing window and door frames where applicable for review and approval with Departmental Representative.
 - .3 Prepare mock-ups of 2 typical pieces of existing bronze hardware.
 - .1 Remove tarnish and overpaint. Clean hardware.
 - .4 Provide minimum 3 working days notice to [Departmental Representative] prior to beginning mock-up.
 - .5 Undertake each initial step, from labelling, disassembly and surface preparation through repair and painting of mock-up under the direct review of the Departmental Representative.
 - .1 Adjust techniques as directed by Departmental Representative until desired results are achieved.
 - .6 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with work.
 - .7 Obtain Departmental Representative's approval of mock-up before proceeding with the Work.
 - .8 When accepted, mock-up demonstrates minimum standard for this work.
 - .9 Mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Storage and handling of dismantled components:
 - .1 Protect from weather.
 - .2 Ensure easy accessibility.
 - .3 Store together in logical groupings.
 - .4 Pad, support and stack sashes and frames. Prevent damage to components.
 - .5 Maintain component labels in good condition and securely attached to components until re-installation.
- .2 Packaging Waste Management.
 - .1 Recycle all packaging materials per Section 01 74 19 - Waste Management to the maximum extent economically possible.
 - .2 Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated areas for recycling.
 - .3 Do not burn waste at project site.
 - .4 Fold up metal banding, flatten, and place in designated area for recycling.

1.8 SITE CONDITIONS

- .1 Existing Conditions.
 - .1 Existing paint is assumed to contain dangerous levels of lead.
 - .1 Undertake work, protect workers and building occupants, and contain and dispose of designated substances in accordance with Authorities Having Jurisdiction and Sections 02 80 00 Hazardous Materials Remediation, 02 81 00 – Transportation and Disposal of Hazardous Materials and 02 83 10 - Lead - Base Paint Abatement - Minimum Precautions.

1.9 WARRANTY

- .1 Extended Correction Period.
 - .1 For work of this Section 08 03 52 - Conservation Treatment for Period Windows and Doors, the 12-month warranty period is extended to 24 months.

2 Products

2.1 MATERIALS

- .1 Existing components
 - .1 Glazing: Protect existing glazing to remain in situ during restoration work. Retain, restore and store existing translucent window glazing for re-installation where glass is removed as required to facilitate the Work.
 - .2 Hardware: Retain, restore and store existing hardware for re-installation unless noted otherwise in the drawings.
 - .3 Sashes: Retain, restore and store existing sashes for re-installation.
 - .4 Frame: Retain and restore.
 - .5 Door Panels: Retain, restore and store existing panels for re-installation. Refer to Door Schedule for revised swing information.
- .2 Replacement Glazing Components
 - .1 Clear float glass, pane thickness, dimension and profile to match existing panes to be removed.
 - .2 Semi-Opaque, satin etched float glass, pane thickness, dimension and profile to match existing panes to be removed.
- .3 Paint Stripper.
 - .1 Standard of Acceptance: Peel-Away Paint Remover System by Dumond or approved equivalent.
- .4 Glazing Putty.
 - .1 Comply with manufacturer's written data, including technical bulletins and installation instructions, and data sheets. Review paint compatibility and requirements with manufacturers literature prior to applying paint/ primer finishes.
 - .2 Standard of Acceptance: Allback Oil Linseed Putty, UGL® Glazol® Glazing Compound or approved equivalent.
- .5 Epoxy Wood Repair System.
 - .1 Comply with manufacturer's written data, including technical bulletins and installation instructions, and data sheets. Review paint compatibility and requirements with manufacturers literature prior to applying paint/ primer finishes.
 - .2 Standard of Acceptance: Abatron Liquid Wood & Wood Epoxy, Wood Restoration Kit or Rhino Ultimate Wood Repair system or approved equivalent.
- .6 Adhesive.
 - .1 Epoxy, two-part formulated for architectural woodwork in exterior locations.
 - .1 Standard of acceptance: Cold cure, G1 or G2 by Industrial formulators, West Systems or approved equivalent.

2.2 FINISHES

- .1 Paint System per requirements of Section 09 03 61 Historic - Painting Exterior Surfaces.

2.3 ACCESSORIES

- .1 Hardware: Retain, restore and store existing hardware for re-installation.
- .2 Replacement Hardware:
 - .1 Interior Latches: non-ferrous, to match general appearance and size of existing.
 - .2 Pulls: to match existing.
 - .3 Hinges: non-ferrous, including fasteners to match general appearance and size as existing.
- .3 New Hardware.
 - .1 Non-ferrous replacement hardware to match finish, dimension and general appearance of existing:
 - .1 Latches
 - .2 Pulls and handles

- .3 Hinges
- .4 Sash Chains
- .5 Insect screen fasteners
- .6 Hung sash hold opens
- .4 Glazing tape: urethane foam, closed cell.
- .5 Weather-stripping.
 - .1 Sprung bronze strip, size to suit application.
 - .2 Spring plastic strip, size to suit application.
 - .1 Adhesive.
 - .3 Extruded vinyl strip, size to suit application.
- .6 Weather-stripping for each type of application:
 - .1 Sprung bronze V-type
 - .2 Sprung bronze with thick felt between moving components
- .7 Backer rods.
- .8 Linseed Oil.
- .9 Sealants: in accordance with Section 07 92 00 - Joint Sealants
- .10 Screws, bolts and fasteners.
 - .1 Non-ferrous, to match existing.
- .11 Gaskets: 5 mm deep non-adhesive neoprene strip gaskets, width to suit application.
- .12 Component labels for:
 - .1 Wood components: sheet brass tag with hole at one end, punched with required component information, and secured to component with stainless steel wire.
 - .2 Hardware components: sheet brass tag with hole at one end, punched with required component information, and secured to component with stainless steel wire.
 - .3 Glazing components: gasket paper and waterproof marker. Secured to component with temporary adhesive.

2.4 SOURCE QUALITY CONTROL

- .1 Make repair workshop accessible to Departmental Representative for inspection of work in progress.

3 Execution

3.1 VERIFICATION OF CONDITIONS

- .1 Report conditions of deteriorated materials found during paint removal to Departmental Representative for existing window sashes, window and door frames and door panels.

3.2 PREPARATION

- .1 Photograph window sash, frame elements and hardware.
- .2 Install temporary enclosures in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .3 Protect window frames with tarpaulins for duration of the Work.
 - .1 Protect from direct sun.
 - .2 Keep dry.
- .4 Identify, label and photograph window sash and frame elements.
 - .1 Provide sufficient additional information: ensure component configuration and orientation is recorded on label.
 - .2 Record component label information on Contract Drawings.

- .3 Labels: gasket paper marked with waterproof marker. Securely attach to component.
- .4 Metal components: ensure required component information is on sheet brass tag. Secure tag to component with stainless steel wire.
- .5 Glazing components: ensure required component information is marked on gasket paper with waterproof marker. Securely attach to component.
- .6 Hardware: place component in sealable plastic bag. Ensure label visible in bag.
- .5 Discuss with Departmental Representative intended approach for removal of window sash, door panel and hardware.
- .6 Notify Departmental Representative before removing window sash, trims and hardware.
 - .1 Remove sashes, door panels and label components, carefully pack in crates and transport to shop for repairs.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Protect adjacent surfaces from damage prior to undertaking dismantling, in-situ repairs and refinishing.

3.4 DISMANTLING EXISTING WINDOW SASHES

- .1 General.
 - .1 Avoid damaging materials and finishes adjacent to the windows being dismantled.
 - .2 Avoid damaging material and window components.
 - .3 Avoid marring, crushing or splitting components.
 - .4 Minimize risk of breakage: reinforce panes of glass with vinyl adhesive tape on both sides.
 - .5 Remove sash chains and associated fasteners, latches and hinges and store separately for cleaning and restoration.
 - .6 Retain dismantled components for duration of the Work.
 - .7 Cover window openings with polyethylene sheets while the sash are out for repair.
- .2 Label dismantled components, including hardware.
 - .1 Labels: gasket paper, marked with waterproof marker and securely attached to component on hidden surface.
 - .2 For smaller components such as hardware: place component in sealable plastic bag with label visible in bag.
 - .3 Mark "Property of Government of Canada" on hidden surface of disassembled components removed from site.
- .3 Storage and handling of dismantled components.
 - .1 Protect from weather.
 - .2 Ensure easy accessibility.
 - .3 Store together in logical groups.
 - .4 Pad, support and stack sashes. Prevent damage to sashes.
- .4 Removal of hardware and screws.
 - .1 Clean screw heads.
 - .2 Apply penetrating oil to screw heads 24 hours in advance of removal.
 - .3 Use only screwdrivers that exactly fit screw heads.
 - .4 Retain and store for restoration removed hardware and screws.
- .5 Components let into a groove or mortise, such as parting strips.
 - .1 Carefully and neatly cut adjacent paint using a sharp chisel or knife. Avoid tear out.
- .6 Extraneous fasteners.
 - .1 Nails requiring removal: cut or pull nail through the back of component. Do not drive nail through face of component.

- .2 Remove and discard extraneous fasteners.

3.5 SHOP REPAIR OF EXISTING WINDOW SASHES/ DOOR PANELS

- .1 Fabricate window components in accordance with approved shop drawings.
- .2 Surface preparation sashes and door panels: Remove existing paint products.
 - .1 Conduct surface preparation work in shop.
 - .2 Proceed with existing paint removals in accordance with 3.4.1 of this section and per Section 02 80 00 Hazardous Materials Remediation.
- .3 Make repairs of sash and door panels plumb, level, square and true.
- .4 All repairs to match existing materials, profiles and dimensions.
- .5 Existing Glazing Removal
 - .1 Remove existing glazing lights from sashes and label for in-statement where required by conservation work.
 - .2 Gently remove existing glazing compound with tools and avoid damage to existing wood substrate and character-defining elements.
 - .3 Replace broken glazing and patterned glazing with new glass as noted by the drawings and in accordance with 2.2.2 and 2.5.10 of this Section.
 - .4 Replace glazing broken during removal procedures at own expense.
- .6 Splicing in new material.
 - .1 Cut out damaged wood sections where indicated in the drawings.
 - .2 Splice in new wood sections to match species and profile of existing wood section.
 - .3 Shop fit parts before connecting and gluing.
 - .4 Connect and dress corners.
 - .5 Stile, rail and muntin joints: plane smooth.
- .7 Surface Voids.
 - .1 Fill surface voids with compounds formulated for wood.
 - .2 Apply patching compound. Build up surfaces to repair minor damage and weathering.
 - .3 Repairs in conformance with 3.7 of this section.
- .8 New Glazing Installation.
 - .1 Sand and clean rebates.
 - .2 Prime rebates with light coat of mix of equal parts of boiled linseed oil and turpentine. Allow to dry for 24 hours.
 - .3 Apply back putty to rebate.
 - .4 Bed glass firmly into position in rebate. Ensure it is evenly seated.
 - .5 Install glazing points.
 - .6 Neatly apply exterior putty bevel in line with edges of stiles and rails.
 - .7 Strike off excess putty. Profile to match existing.
 - .8 Allow putty to cure for minimum 3 weeks before shipping and painting.
- .9 Re-assembly.
 - .1 Provide new sash chains and associated fasteners, hinges and latches as indicated by drawings.
 - .2 Install to match general appearance of hardware location of adjacent existing sashes.

3.6 IN-SITU RE-FINISHING AND REPAIRS

- .1 Paint Removal: Existing paint finish to be removed from sashes, window and door frames, door panels and associated trims at interior and exterior faces.
 - .1 All paint removal work to be carried out by qualified personnel and to job specifications, and to be monitored by Contractor for quality.
 - .2 Workers to be informed of safety rules and precautions necessary for removal of lead contaminated paint per Section 02 80 00 Hazardous Materials Remediation.

- .3 Strip all existing paint from existing sashes, door panels and window/ door frames complete with associated trims.
- .4 Remove sashes and door panels from frames prior to paint removal process from frames.
- .5 Paint removal from sashes and door panels to be completed in Shop.
- .6 Remove paint from wood in manner that conserves the character-defining elements.
 - .1 Strip paint using heat or gently paint stripping solution that will not harm or stain the existing wood substrate to soften paint in conjunction with careful scraping.
 - .2 Do not combine heat and chemical paint stripping solutions methods for paint removal.
 - .3 Instruct workers to remove the least amount of wood possible when scraping wood.
 - .4 Apply strippers in strict accordance with manufacturers directions.
 - .5 Where heat method is utilized; move heat gun consistently to avoid burning wood substrate.
 - .6 After majority of paint is removed by stripping, use appropriate tools to remove remainder of paint. For edges with a profile, grind and shape the scrapper to match the profile.
 - .7 Sand surfaces gently and do not sand straight corners.
- .7 After paint is removed, remove latent chemicals from the stripping solution with a gentle water wash with nylon brushes.
- .8 Report conditions of deteriorated materials found during paint removal to Departmental Representative.
- .2 Undertake minor repairs including:
 - .1 Fill of the surface voids.
 - .1 Fill surface voids with compounds formulated for wood.
 - .2 Apply patching compound. Build up surfaces to repair minor damage and weathering.
 - .3 Slope built-up surfaces away from glazing.
 - .4 Repairs in conformance with 3.7 of this section.
- .3 Undertake major repairs including:
 - .1 Dutchman repairs and splicing-in of new material as noted in the drawings.
- .4 Re-painting and refinishing in accordance with Section 09 03 61 Historic - Painting Exterior Surfaces.
 - .1 Keep moving parts and flexible components free from primer and paint.

3.7 CONFIRMATION OF SEALANT LOCATIONS FOR RE-INSTALLATION

- .1 Outside perimeters of window frame.
 - .1 Obtain Departmental Representative's approval for sealant locations.

3.8 REPAIR OF WOOD SUBRATE

- .1 Restore existing wood substrate with epoxy wood repair system to repair minor holes, surface voids, checks and small pockets of decay.
 - .1 Application of epoxy wood repair system to meet manufacturers installation methods and requirements.
 - .2 Review and confirm compatibility of wood repair system with exterior grade, linseed-oil paint products.

3.9 SPLICING IN NEW MATERIAL

- .1 Material.
 - .1 Same wood species as existing parent wood component.
 - .2 Grain orientation to match existing parent wood component.

- .2 Cut out damaged wood sections where indicated on Contract Drawings.
- .3 Splice in new wood sections to match profile of existing wood section.
- .4 Shop fit parts before connecting and gluing.
- .5 Stile, rail and muntin joints: glue, plane and sand smooth.
- .6 Frames: scarf in new material to match species, grain orientation, profile and dimension as existing.

3.10 DUTCHMAN REPAIRS

- .1 Restore original profile and ensure proper fit of wood components:
 - .1 Repair damage in sashes and frames with Dutchman repairs.
 - .2 Employ Dutchman repairs only where wood is broken or missing.
 - .3 Areas with minor wear of wood are acceptable for re-use.
- .2 Material.
 - .1 Same wood species as existing parent wood component.
 - .2 Grain orientation to match existing parent wood component.
- .3 Joints.
 - .1 Ensure joints are tight and visible only on close inspection.
 - .2 Exterior exposed joints: weather tight, bevelled for moisture drainage to exterior.
- .4 Application.
 - .1 Prepare damaged area of existing parent wood component for Dutchman repair.
 - .2 Cut out damaged wood sections where indicated on Contract Drawings.
 - .3 Splice Dutchman repair piece into parent wood component.
 - .4 Shop fit parts before connecting and gluing.
 - .5 Attach Dutchman repair piece to parent wood component only. Do not attach to adjacent wood component.
 - .6 Clamp repair piece in place until adhesive has set. Protect repair piece and other wood components from pressure marks.
 - .7 Avoid using surface fasteners.
 - .8 Larger Dutchman repairs:
 - .1 Fasten repair piece to parent wood component with brass or stainless-steel screws, size to suit.
 - .2 Countersink screw and fill hole with wood plug.
 - .3 Match grain orientation of wood plug to parent wood component.
 - .9 Stile, rail and muntin joints glue, plane and sand smooth.

3.11 RE-PAINTING AND FINISHING

- .1 Perform re-painting of wood windows in accordance with Section 09 03 61 - Historic Painting Exterior Surfaces.

3.12 RESTORATION OF EXISTING HARDWARE

- .1 Reuse existing hardware at all window and door locations unless noted otherwise in the drawings.
- .2 Remove paint from hardware and screws:
 - .1 Boil in vinegar.
 - .2 Strip paint using paint strippers. Take care not to damage patina. Clean with water. Dry thoroughly.
- .3 Lubricate parts including restored sash latches and hinges prior to re-installation.
- .4 Store restored hardware and screws for re-installation.

3.13 INSTALLATION OF HARDWARE

- .1 Existing Hardware.

- .1 Reinstall hardware to operate smoothly and in same location as removed.
- .2 New Hardware.
 - .1 Install new hardware including latches, sash chains and associated fasteners, and hinges in same manner and location as existing where precedent exists on site.
 - .2 Confirm installation locations with Departmental Representative.

3.14 TRANSPORTATION TO SITE

- .1 Brace restored window components to maintain squareness and rigidity during shipment and installation.

3.15 RE-INSTALLATION OF SASHES

- .1 Install restored sashes and door panels in same locations as removed.
- .2 Set units plumb, level and true to line.
- .3 Ensure that double hung sashes are operable for their full height.
- .4 Install weather-stripping
 - .1 Coordinate re-installation of sashes and door panels with installation of new weather-stripping.
 - .2 Install new weather-stripping in accordance with manufacturer's written instructions.
 - .3 Install weather-stripping at locations indicated in Drawings.
 - .1 Install weather-stripping in a fine, neat bed of silicone sealant.
 - .4 Install new weather-stripping without breaks at corners and perimeter.
- .5 Install new interior insect screens and hardware as indicated in drawings.
- .6 Apply final paint top coat to sashes and door panels.
- .7 After painting and finishing, install and adjust restored hardware.
- .8 Adjust sashes and door panels to operate smoothly in frames.

3.16 REPAIR OF DISTURBED INTERIOR COMPONENTS

- .1 Re-install restored interior woodwork: mouldings, trims, sills and apron where temporarily removed to facilitate restoration and interior renovations.

3.17 SEALANT BEAD APPLICATION

- .1 Prime wood frame.
- .2 Apply clean bead of sealant on primed frame.
- .3 Install bond-breaker tape on operable sash.

3.18 CAULKING

- .1 Apply sealant in accordance with Section 07 92 00 - Joint Sealant.
- .2 Install sealant where indicated on Contract Drawings.
- .3 Apply sealant after re-installation of shop-repaired windows and before final top coat of paint.

3.19 CLEANING

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 08 71 00 - Door Hardware.
- .2 Section 09 91 23 - Painting.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM A653/A653M-17, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian Standards Association (CSA).
 - .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
 - .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .3 Canadian Steel Door Manufacturers Association (CSDMA).
 - .1 Recommended Specifications for Commercial Steel Door and Frame Products 08 11 00, 2006.
 - .2 Recommended Selection and Usage Guide for Commercial Steel Door and Frame Products 08 11 00, 2009.
- .4 National Fire Protection Association (NFPA).
 - .1 NFPA 80, Standard for Fire Doors and Other Opening Protectives, 2016 Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop drawings:
 - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, arrangement of hardware, fire rating and finishes.
 - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings reinforcing, fire rating finishes.
 - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

Part 2 - Products

2.1 FRAME MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653/A653M, Z275, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF75.

2.2 PRIMER

- .1 Rust inhibitive touch-up only.

2.3 ACCESSORIES

- .1 Metallic paste filler: to manufacturer's standard.

2.4 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
 - .1 Interior frames: all-welded, one-piece construction, fabricated from 1.6 mm thick sheet steel.
- .3 Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .4 Prepare frame for door silencers, three (3) for single door, two (2) at head for double door.
- .5 Manufacturer's nameplates on frames and screens are not permitted.
- .6 Conceal fastenings except where exposed fastenings are indicated.
- .7 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

2.5 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide two (2) anchors for rebate opening heights up to 1520 mm and one (1) additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.6 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipping and handling; which shall not be used for installation.
- .7 Fabricate frame products for large openings in sections of maximum practical size. Splice joints for field assembly.

Part 3 - Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames in accordance with NFPA 80 except where specified otherwise.
- .2 Install doors and frames in accordance with CSDMA Installation Guide.

3.3 FRAME INSTALLATION

- .1 Prior to installation, remove temporary shipping spreaders.
- .2 Set frames plumb, square, level and at correct elevation.
- .3 Secure anchorages and connections to adjacent construction.
- .4 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary wood spreaders after frames are built-in.
- .5 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 SCHEDULES

- .1 Refer to: Door Schedule on drawings for types, sizes and location.

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 06 20 00 - Finish Carpentry.
- .2 Section 08 71 00 - Door Hardware.
- .3 Section 09 91 23 - Painting.

1.2 REFERENCE STANDARDS

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
 - .1 Quality Standards for Architectural Woodwork 1998.
- .2 Canadian Standards Association (CSA International).
 - .1 CSA Certification Program for Windows and Doors 00.
- .3 National Fire Protection Association (NFPA).
 - .1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-1999, Standard Method of Fire Tests of Door Assemblies.
- .4 Underwriters' Laboratories of Canada (ULC).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two (2) copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For caulking materials during application and curing.
 - .2 For door materials and adhesives.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate door types, materials and finishes, core construction, transom panel construction and cutouts.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one (1) 300 x 300 mm corner sample of each type wood door.
- .3 Show door construction, core, glazing detail and faces.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Storage and Protection:
 - .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
 - .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.

- .3 Protect doors from scratches, handling marks and other damage.
- .4 Store doors away from direct sunlight.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of packaging material in appropriate on-site bin for recycling in accordance with site waste management program.
- .3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- .4 Divert unused adhesive material from landfill to official hazardous material collections site approved by Authorities having jurisdiction.
- .5 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 - Products

2.1 WOOD FLUSH DOORS

- .1 Solid core doors: to ANSI/WDMA I.S. 1A.
 - .1 Construction grade: Premium grade; 5-ply hot pressed.
 - .2 Performance duty level: extra heavy duty.
 - .3 Stiles and rails: bonded to core; size as required to meet performance duty level.
 - .4 Core: as described in 2.1.2 below.
 - .5 Blocking: provide blocking for locks, closer and other hardware.
 - .6 Face panels: Douglas Fir to match wall material and finish unless noted otherwise.
 - .7 Edges: hardwood; minimum 11 mm thick, to match face panels.
 - .8 Adhesive: Type I (waterproof).
- .2 Core:
 - .1 Staved lumber core door:
 - .1 WDMA I.S.1A door descriptor: SLC-5.
 - .2 Core: glued block core, of one (1) species; bonded to stiles and rails.
 - .2 Composite mineral core door:
 - .1 WDMA I.S.1A door descriptor: FD-XX-5 (where XX represents the fire-resistance rating in minutes).
 - .2 Core: special non-combustible mineral core; bonded to stiles and rails.
 - .3 Fire rating: 45 minutes.
- .3 Wood and adhesive materials used in door construction shall contain no added urea formaldehyde.
- .4 Fire-rated wood doors: tested in accordance with CAN/ULC S104 or NFPA 252 to achieve rating as scheduled.

2.2 FABRICATION

- .1 Vertical edge strips to match face veneer/ finish face.
- .2 Bevel vertical edges 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

Part 3 - Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.
- .2 Install labelled fire rated doors to NFPA 80.
- .3 Install doors and hardware in accordance with manufacturer's printed instructions.
- .4 Adjust hardware for correct function.

3.3 ADJUSTMENT

- .1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking; clean doors and frames.
- .3 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 06 10 53 - Miscellaneous Rough Carpentry.
- .2 Section 07 92 00 - Joint Sealants.
- .3 Section 08 03 52 - Conservation Treatment for Period Wood Window and Doors.
- .4 Section 08 80 00 - Glazing.
- .5 Section 09 91 00 - Painting.

1.2 REFERENCE STANDARDS

- .1 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA 2605-13, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .2 ASTM International (ASTM).
 - .1 ASTM C920-18, Specification for Elastomeric Joint Sealants.
 - .2 ASTM D4216-13, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB 79.1-M91, Insect Screens.
- .4 Canadian Standards Association (CSA).
 - .1 AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS - North American Fenestration Standard / Specification for Windows, Doors, and Skylights.

1.3 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 windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, junction between combination units, interior and exterior trim, elevations of unit, anchorage details, description of related components and exposed finishes fasteners, and caulking.

1.4 TEST REPORTS

- .1 Submit test reports from approved independent testing laboratories, certifying that windows comply with the requirements of the standards specified herein.

1.5 MAINTENANCE DATA

- .1 Provide operation and maintenance data for cleaning and maintenance of windows for incorporation into maintenance manual.

1.6 WARRANTY

- .1 Contractor hereby warrants windows against air tightness, water tightness and for wind load resistance (in accordance with AAMA/WDMA/CSA 101/I.S.2/A440), defects, broken and loose hardware and malfunction under normal usage.

- .2 The warranty period is, with respect to this section of the work, extended from one (1) year to five (5) years.
- .3 Leaking, fading and discoloration, deforming and faulty operation of hardware shall be judged as defective work.

Part 2 - Products

2.1 WINDOWS

- .1 Description: Double Hung sash window:
 - .1 Solid vertical grain Douglas Fir; double hung operation with tilt sashes.
 - .2 True Divided Lites.
 - .3 Hardware - White.
 - .4 Finish:
 - .1 Interior: factory primed white
 - .2 Exterior: Linseed Oil based paint, per the requirements of Section 09 91 00 - Painting.
- .2 Description: Hopper replacement sash:
 - .1 Solid vertical grain Douglas Fir; hopper operation.
 - .2 True Divided Lites.
 - .3 Hardware: Per the requirements of Section 08 03 52 - Conservation Treatment for Period Wood Windows and Doors.
 - .4 Finish:
 - .1 Interior: factory primed white
 - .2 Exterior: Linseed Oil based paint, per the requirements of Section 09 91 00 - Painting.

2.2 HARDWARE

- .1 Provide check rail lock, tilt sash locks, spiral balances of size to suit sash.
- .2 Weatherstripping:
 - .1 Jamb: Foam-filled bulb.
 - .2 Header: Continuous dual leaf.
 - .3 Bottom rail and check rail: Hollow bulb.
- .3 Insect Screen:
 - .1 Factory-installed full screen.
 - .2 Screen Mesh: Charcoal Fiberglass.
 - .3 Frame finish: natural wood.
- .4 Latches and Locks:
 - .1 New Window: Factory-installed, white in colour.
 - .2 Replacement Sash: Non-ferrous replacement hardware to match finish, dimension and general appearance of existing adjacent per the requirements of Section 08 03 52 - Conservation Treatment for Period Wood Windows and Doors.
- .5 Sash Chains:
 - .1 Non-ferrous replacement hardware to match finish, dimension and general appearance of existing adjacent. per the requirements of Section 08 03 52 - Conservation Treatment for Period Wood Windows and Doors.

2.3 GLASS

- .1 Glass:
 - .1 Double Hung Window: single glazed, satin etched - frosted - float glass.
 - .2 Hopper: single glazed, vision, float glass.
- .2 Provide authentic divided lites with solid wood muntins for new windows and sashes.
- .3 Replacement panes in existing windows and doors where indicated by drawings.

2.4 FABRICATION

- .1 Shop drawings shall be reviewed before any fabrication begins.
- .2 Shop fabricate and fit all components in accordance with details and reviewed shop drawings.
- .3 Build units square, true, accurate to size, free from distortions, waves, twists, buckles and other defects detrimental to appearance and performance.
- .4 Construct units to size and shapes indicated. Joints to be accurately cut, fitted, assembled and fusion welded to provide neat, weathertight joinery.
- .5 Factory glaze windows.

Part 3 - Execution

3.1 INSTALLATION

- .1 Install work plumb, square, level, free from warp, twist and superimposed loads, and in accordance with manufacturer's instructions.
- .2 Properly locate windows in existing frames.
- .3 Ensure there is no restriction of the linear expansion and contraction of windows. Accordingly, the joint between the window and rough opening must have an adequate tolerance.
- .4 New Window: Fasten in accordance with manufacturer's instructions.
- .5 Replacement Sash: Modify existing frame as required to support new hopper sash.
 - .1 provide new window stops, weather stripping, and hardware to match adjacent existing as required to achieve complete operation of window.

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 08 11 00 - Metal Doors and Frames.
- .2 Section 08 14 16 - Flush Wood Doors.
- .3 Section 02 41 19 - Selective Demolition, Cutting and Patching

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).
 - .1 ANSI/BHMA A156.1-2016, Butts & Hinges.
 - .2 ANSI/BHMA A156.2-2011, Bored and Preassembled Locks and Latches.
 - .3 ANSI/BHMA A156.4-2013, Door Controls - Closers.
 - .4 ANSI/BHMA A156.5-2014, Cylinder and Input Devices for Locks.
 - .5 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
 - .6 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA).
 - .1 Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.

1.3 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 door hardware 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 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
 - .4 After approval samples will be returned for incorporation in Work.
- .4 Hardware List:
 - .1 Submit contract hardware list.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.5 MAINTENANCE MATERIALS SUBMITTALS

- .1 Extra Stock Materials:
 - .1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Tools:
 - .1 Supply 2 sets of wrenches for locksets, fire exit hardware and door closers.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect door hardware from nicks, scratches, and blemishes.
 - .3 Protect prefinished surfaces with wrapping.
 - .4 Replace defective or damaged materials with new.

Part 2 - Products

2.1 HARDWARE ITEMS

- .1 Use one (1) manufacturer's products only for similar items.

2.2 DOOR HARDWARE

- .1 Levers, Pull and Locks:
 - .1 Lever sets: brass construction, full lip strike plate to suit; privacy and passage function as scheduled.
 - .1 Lever: modern design, 117 mm long x 54 mm projection, 41 mm clearance.
 - .2 Rosette: 63 mm diameter x 9.5 mm thick.
 - .3 Acceptable Materials: Emtek Aston Lever with disk rosette.
 - .4 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
 - .2 Door Pulls:
 - .1 Interior Partition Doors: brass construction; thru-bolted with decorative washer and caps.
 - .1 Size: 27 mm wide x 219 mm long, 54 mm projection. 25 mm x 1.5 mm base.
 - .2 Acceptable Materials: Emtek Baden Pull.
 - .3 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
 - .2 Exterior Double Doors: brass/ bronze construction, concealed surface mount installation. General size and appearance to match existing brass/ bronze door pull.
 - .3 Pocket Door Lock:
 - .1 Lock: mortise lock body, keyed cylinder on exterior side; spring mounted recessed edge pull.
 - .2 Size:
 - .1 Lock body: 158 mm high x 88 mm deep.
 - .2 Overall face dimensions: 73 mm wide x 185 mm high.
 - .3 Acceptable Materials: Emtek Modern Rectangular Pocket Door Mortise.

- .4 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
- .4 Deadbolt: to ANSI/BHMA A156.5, mortise type, Grade 1, stainless steel bolt with 25 mm throw.
 - .1 Function:
 - .1 Privacy: Cylinder outside, lock/unlock thumb turn inside, complete with occupancy indicator when locked.
 - .2 Classroom: cylinder outside, unlock only thumbturn inside.
 - .2 Finish: to match lever set.
- .5 Privacy Latch: Finish to be selected by Departmental Representative from manufacturer's complete finish range. Finish to coordinate with other door hardware components.
- .2 Hinges:
 - .1 Butt hinges: to ANSI/BHMA A156.1, quantity and size to suit door size and weight. Finish to be selected by Departmental Representative to match door locks, latches, pulls and levers.
- .3 Door Closers:
 - .1 Door closers: to ANSI/BHMA A156.4, parallel arm mounting; size to suit door size and weight; full plastic cover, painted finish. Provide colour matched rust inhibitive finish on arm.
 - .1 Finish colour to be selected by Departmental Representative from manufacturer's complete colour range.
- .4 Smoke seals: Silicone bulb with self-adhesive backing; length equal to jambs and head. Colour as selected by Departmental Representative.

2.3 MISCELLANEOUS HARDWARE

- .1 Sliding Barn Door Hardware:
 - .1 Flat bar track, 50 mm high x 6 mm thick x length to suit.
 - .2 Carrier: face mounted, to suit door size and weight.
 - .3 Accessories: provide track mounted stops, mounting bracket, guide roller and channel, anti-lift pin, and other accessories for complete installation.
 - .4 Finish to be selected from manufacturer's complete colour range.
- .2 Door stops: to ANSI/BHMA A156.16, Classification L02101, wall mounted, cast construction; convex face.
 - .1 Colour/ finish to be selected by Departmental Representative from Manufacturers complete colour range.
- .3 Coat Hooks:
 - .1 Flat bar, 128 mm long x 25 mm wide x 3 mm thick, bent to provide 47 mm overall projection, 10 kg. load capacity.
 - .2 Acceptable Materials: Richelieu Contemporary Metal Hook - 1223.
 - .3 Finish: as selected by Departmental Representative from manufacturer's complete finish range.

2.4 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door supply fastening devices, and install so pull can be secured through door from reverse side.

- .5 Use fasteners compatible with material through which they pass.

2.5 KEYING

- .1 Doors to be keyed in coordination with Departmental Representative.
- .2 Supply keys in duplicate for every lock in this Contract.
- .3 Supply three (3) master keys for each master key or grand master key group.
- .4 Hand over permanent cores and keys to Departmental Representative.

Part 3 - Execution

3.1 INSTALLATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.
- .4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .5 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .6 Install key control cabinet.
- .7 Use only manufacturer's supplied fasteners.
 - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .8 Remove construction locks when instructed by Departmental Representative.
 - .1 Install permanent cores and ensure locks operate correctly.

3.2 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
 - .3 Remove protective material from hardware items where present.
 - .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 DEMONSTRATION

- .1 Maintenance Staff Briefing:
 - .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
 - .3 Use, application and storage of wrenches for door closers, locksets, hardware, etc.
 - .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by door hardware installation.

3.6 SCHEDULE

- .1 Per Architectural Drawings.

3.7 HARDWARE GROUPS

- .1 Group 01 (Family Washrooms)
 - .1 Door Lever (Passage)
 - .2 Deadbolt (Privacy, with Occupancy Indicator)
 - .3 Coat Hook
 - .4 Door Stop
 - .5 Hinges to suit
 - .6 Door Closer
- .2 Group 02 (Changing Rooms and WC's)
 - .1 Door Pull
 - .2 Privacy Latch
 - .3 Coat Hook
 - .4 Door Stop
 - .5 Hinges to suit
- .3 Group 03 (Janitor)
 - .1 Door Lever (Passage)
 - .2 Deadbolt (Classroom)
 - .3 Door Closer
 - .4 Smoke seals
 - .5 Door Stop
 - .6 Hinges to suit
- .4 Group 04 (Staff Washroom)
 - .1 Door Lever (Privacy)
 - .2 Coat Hook
 - .3 Door Stop
 - .4 Hinges to suit
- .5 Group 06 (Sliding Pocket Door)
 - .1 Pocket Door Lock
 - .2 Pocket Sliding Door Track to suit
- .6 Group 07 (Sliding Barn Door)
 - .1 Sliding Barn Door Track

- .7 Group 08 (Double Exterior Doors)
 - .1 Bronze door pull to match general appearance of existing to be replaced
 - .2 Door sweep

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 06 10 53 - Miscellaneous Rough Carpentry.
- .2 Section 06 20 00 - Finish Carpentry.
- .3 Section 07 42 33 - Plastic Wall Panels.
- .4 Section 08 52 00 - Wood Windows.
- .5 Section 08 81 00 - Conservation Treatment for Period Wood Windows and Doors.
- .6 Section 09 03 61 - Historic - Painting Exterior Surfaces.

1.2 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, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit samples of glazing film for review and acceptance by Departmental Representative.
- .4 Mock-Ups:
 - .1 Prepare mock-up of replacement glazing for existing period windows and door panels for review and acceptance by Departmental Representative.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit maintenance data for glazing film for incorporation into manual.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 - Products

2.1 MATERIALS

- .1 Silvered mirror glass: Type 1B-float glass for high humidity use.
- .2 Glazing Film: Semi-opaque window film, locations as noted in the Drawings. Finish to be selected from Manufacturers standard colour range by Departmental Representative.
- .3 Single Pane Glass:

- .1 Translucent Glass: Satin etched, single pane float glass, thickness to match existing.
- .2 Transparent Glass: Single pane float glass, thickness to match existing.

2.2 ACCESSORIES

- .1 Mirror attachment accessories:
 - .1 metal clips, finish to be selected by consultant.
- .2 Glazing Compound:
 - .1 Glazing Compound: Comply with manufacturer's written data, including technical bulletins and installation instructions, and data sheets. Review paint compatibility and requirements with manufacturers literature prior to applying paint/ primer finishes.
 - .2 Exterior grade, white, oil-based window putty:
 - .1 Standard of Acceptance: Allback Oil Linseed Putty, UGL® Glazol® Glazing Compound or approved equivalent.

Part 3 - Execution

3.1 INSTALLATION

- .1 Glazing Film
 - .1 Comply with manufacturer's written data, including technical bulletins and installation instructions, and data sheets.
 - .2 Preparation:
 - .3 Measure visible glass area (do not include rubber gaskets, window frames). Leave 3 mm gap at perimeter between film edges and window gasket or frame.
 - .4 Apply in patterns indicated on drawings.
 - .5 Cut film and test for fit against glass. Trim as necessary to maintain 3 mm gap at perimeter.
 - .6 Clean glass in accordance with manufacturer's instructions.
 - .7 Application:
 - .8 Remove liner while spraying water to reduce static cling on both the liner and film adhesive.
 - .9 Apply film using mounting solution.
 - .10 Carefully place film adhesive side against glass and float into place leaving approximately 3 mm gap around perimeter.
 - .11 Spray film, then using card squeegee, begin at top middle section of film and work towards sides then down.
 - .12 Repeat squeegee process until bubbles and water soap solution are forced out to edges and bottom area.
 - .13 Soak up excess water using paper towel.
- .2 Mirrors
 - .1 Set mirrors with clips. Anchor rigidly to wall construction.
 - .2 Place plumb and level.
- .3 Single Pane Glass:
 - .1 New glazing panels to suit existing window sash/ door frame size.
 - .2 Clean glass in accordance with manufacturer's instructions.
 - .3 Install per 3.5.8 of Section 08 03 52 - Conservation Treatment for Period Wood Windows and Doors.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

- .3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.3 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION