PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 09 91 10 – Painting
.2 Section 01 56 00 – Temporary Barrier and Enclosures

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers' Association of Canada (AWMAC):
  .1 Architectural Woodwork Quality Standards Illustrated, Eighth Edition, Version 2.0, 2005 (referred to hereinafter as "QSI").

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Mockups
  .1 Disassembly and removal of one door and frame assembly under review of Departmental Representative.

1.4 CLOSEOUT SUBMITTALS

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

1.5 QUALITY ASSURANCE

.1 Work to be undertaken by fully qualified personnel with previous experience in heritage metal restoration.
.2 Undertake each initial step of restoration from disassembly, removal, tagging, surface preparation, repair and painting under direct review of Departmental Representative. Adjust techniques as directed until desired results are achieved.
.3 Approved work or procedures serve as the standard for subsequent work.
.4 Coordinate with masonry and other trades.

1.6 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 conserved components padded in plywood crates.
.3 Storage and Handling Requirements:
  .1 Store components off ground indoors, in clean, dry, well-ventilated area.
  .2 Store and protect from damage.
  .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Use products as indicated and in accordance with manufacturer's printed instructions.
.2 All exposed fasteners to be slot head.
.3 Match size, profile and head of existing.
.4 Component Labels
  .1 Use sheet brass tag and fasten with iron re-bar wire.
  .2 Engrave tag with I.D. # and key this to a drawing / photo.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Before starting work, verify existing conditions and variations from contract documents and notify Departmental Representative of any discrepancy.
.2 Visually inspect substrate in presence of Departmental Representative.
.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative

3.2 PREPARATION

.1 Protect adjacent materials from damage at all times.

3.3 LABELING

.1 Label each individual piece with two tags per piece and assume no pieces are interchangeable.
.2 Attach labels on site as each piece is removed.

3.4 TRANSPORTING

.1 Carefully transport frames laid flat.
.2 Transport frames horizontally. Support units on 2 x 4 sleepers placed 600 mm o.c. so as to prevent warping
.3 Do not drag or mishandle components.

3.5 SCOPE OF WORK SUMMARY

.1 Label, photograph, and carefully remove solid doors, their frames, and all related parts and miscellaneous shims.
.2 Take doors off site for finishing. Package doors in a well-labeled crate and store in an interior, heated location subject to approval of Departmental Representative until reinstallation.
.3 Wood Door treatment:

.1 Work will be reviewed by a professional wood conservator. The end result is to be even and without obvious repair.
.2 Surface clean all wood areas with T.S.P. Cleaner
.3 Lay down all lifting veneer and wood with liquid fish glue and syringe.
.4 Replace all missing sections of wood with wood and glue with water resistant wood glue
.5 Wipe down surfaces to remove all previous repairs of scratches with markers. Use an amalgamator and amalgamator solvent or alcohol.
.6 Dutchman Repair should be stained to match existing colour. Bleach wood before staining if required. The stain should be a semi-transparent wiping stain. Apply a sealer coat over top with shellac.
.7 Final wetting and sanding to be done before staining to match surrounding areas.
.8 Area of colour loss to have a semi transparent wiping stain.
.9 Scratched areas shall be given one coat of lacquer after repaired.
.10 All surfaces should be given one coat of lacquer.
.11 Apply lacquer with pad or aerosol lacquer spray.
.12 Schedule: Refinish 100% of door, assuming one Dutchman repair and 10 cm^2 of lifting veneer.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Standards Association (CSA International)
.1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).

.3 Canadian Steel Door Manufacturers' Association (CSDMA)
.1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
.2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.4 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.

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

1.3 DELIVERY, STORAGE AND HANDLING

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

.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

2.2 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
.1 Adhesive: maximum VOC content 50 g/L to SCAQMD Rule 1168.

2.3 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.
.1 Maximum VOC limit 50 g/L to GC-03.

2.4 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 10. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.
.1 Maximum VOC emission level 50 g/L to SCAQMD Rule 1113.

2.5 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior and interior top and bottom caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Metallic paste filler: to manufacturer's standard.

.5 Fire labels: metal riveted.

.6 Sealant.
.1 Maximum VOC limit 250 g/L to SCAQMD Rule 1168.

.7 Glazing.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.
.1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.
.2 Design exterior glazing stops to be tamperproof.

2.6 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.6 mm welded thermally broken type construction.

.4 Interior frames: 1.6 mm welded type construction.

.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cutouts with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

2.7 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 2 anchors for rebate opening heights up to 1520 mm and 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.

2.8 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 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.9 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: honeycomb construction. Interior doors: hollow steel construction.

.3 Fabricate doors with longitudinal edges welded. Seams: visible.

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware.

.5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.9 Manufacturer's nameplates on doors are not permitted.

2.10 HOLLOW STEEL CONSTRUCTION

.1 Form face sheets for exterior doors from 1.6 mm sheet steel.

.2 Form face sheets for interior doors from 1.6 sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to face sheets at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with polystyrene core.

.5 Fill voids between stiffeners of interior doors with honeycomb core.

2.11 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation.

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 to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 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 spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrier.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
.1 Hinge side: 1.0 mm.
.2 Latchside and head: 1.5 mm.
.3 Finished floor, top of carpet noncombustible sill and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

3.5 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.6 GLAZING

.1 Install glazing for doors and in accordance with Section 08 80 50 - Glazing.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 09 91 10 – Painting
.2 Section 01 56 00 – Temporary Barriers and Enclosures
.3 Section 07 92 00 – Joint Sealants

1.2 REFERENCES

.1 Canadian Conservation Institute:
  .1 *Technical Bulletin 17, Threaded Fasteners in Metal Artifacts*, by George Prytulak. Canadian Heritage, 1997.

1.2 SCOPE OF WORK SUMMARY

.1 Label, photograph, and carefully remove metal-faced wood door and its components; including frame, casing, hardware, room identification tag and other miscellaneous shims and parts.
.2 Take door off site for finish composite testing
.3 Clean metal surfaces using mineral spirits and lacquer thinner.
.4 Remove previous repairs.
.5 Ensure all penetrations or damage to steel have been repaired to have smooth finish.
.6 Fill existing machine screw holes in door and its frame with either polyester or epoxy-based filler.
.7 Build up thickness in areas missing finish with either polyester or epoxy-based filler.
.8 Heat and straighten any deformed components.
.9 In-paint base colours, graining and veining.
.10 Apply two coats each of acrylic primer and flat sheen latex base colour, sanding between coats.
.11 Apply grain layers of stain; sealing first coat with polyurethane.
.12 Match existing faux finishing using specialty tools, and seal with polyurethane top coat.
.13 Install door in opening.
.14 Apply final polyurethane top coat.
.15 Apply perimeter sealant inside and out, between frame and wall.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Description of treatment method
  .1 Provide a Finish Composition Report and proposed treatment approach for review.
.2 Mock-ups
  .1 Disassembly and removal of door and its frame under review of Departmental Representative.
  .2 Removal of paint, putty, previous repair and / or corrosion products from two inconspicuous areas of the door or its components.
  .3 Two examples of filling-in old screw holes with polyester or epoxy-based filler and ground smooth.
  .4 The painting-in of one spot repair.
  .5 Surfaces: ready for coatings but not treated with coatings.

.6 Installation of hardware.
.7 Reinstallation of door and its frame under direct review of Departmental Representative, showing the reinstallation of the frame in the wall opening, painting, and installation of perimeter sealant.
.8 Approved mock-ups become standard of acceptance for finished work.

.2 Samples
.1 A 610 X 610 mm sample of faux finish on the steel to which the finish will be applied in final state.
.2 Colour samples for caulking at perimeter of frame.
.3 New SS screw with plastic anchor for fastening frame to masonry.

1.4 CLOSEOUT SUBMITTALS

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

1.5 QUALITY ASSURANCE

.1 Work to be undertaken by fully qualified personnel with previous experience in heritage door restoration and faux finishing techniques.
.2 Provide a Finish Composition Report and to ensure compatibility of coatings with findings of the original door finish.
.3 Disassemble door and its frame on site, transport, and restore door and its frame in shop. Leave door and its frame fully restored, painted and installed in like-new condition upon completion of work.
.4 Perform restoration work on a horizontal surface, as per original technique, off-site.
.5 Undertake each initial step of door restoration from disassembly, removal, tagging, surface preparation, repair and painting under direct review of Departmental Representative. Adjust techniques as directed until desired results are achieved.
.6 Fabricate tools as required to achieve matching finish.
.7 Materials and tools to capture all details including but not limited to; graining and veining.
.8 Approved work or procedures serves as the standard for subsequent work.
.9 Coordinate removal and installation with masonry and other trades.

1.6 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 Storage and Handling Requirements:
.1 Store door and its components off ground, indoors, in clean, dry, well-ventilated area with controlled ambient temperatire and relative humidity.
.2 Store and protect door and its components from damage.
.3 Replace defective or damaged materials with new.

.3 Package and deliver conserved door in a well-labelled crate.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Use products as indicated and in accordance with manufacturers' printed instructions.

.2 Stainless steel fasteners:
- .1 All existing door jamb and trim fasteners to be replaced with new 300 series stainless steel .
- .2 Replace fasteners for hardware with brass screws
- .3 All exposed fasteners in door jamb to be oval-head slot screws; to match existing.
- .4 All exposed fasteners in door hinges, lock set and other hardware to be flat-head slot screws.
- .5 All concealed fasteners to be flat head nails, countersunk to create flush surface once coated.
- .6 Match size, profile and head of existing fasteners.

.3 Component Labels:
- .1 Use sheet brass tag and fasten with re-bar wire.
- .2 Engrave tag with the words "Property Gov't of Canada" as well as other necessary information to ensure that all components are reinstalled in their original location and in their original orientation.

.4 Lubricating Oil
- .1 Oil formulated to provide smooth operation of metal parts.

.5 Caulking:
- .1 At perimeter of door casing at plaster use caulking, neatly tooled. Mask edges to ensure crisp lines. Colour as directed by Departmental Representative.

.6 Backer Rod
- .1 Closed cell foam backer rod, of required diameter to fit gaps.

.7 Hardware:
- .1 Strike, brass to suit openings

.8 Tools:
- .1 Custom fabricate faux finishing tools as required to achieve matching finish.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Before starting work, verify existing conditions and variations from contract documents and notify Departmental Representative of any discrepancy.

.2 Visually inspect substrate in presence of Departmental Representative.
.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative

3.2 PREPARATION

.1 Protect adjacent materials from damage at all times.
.2 Carefully remove door and door frame including door stop, jamb and casing for the duration of the work, for repair in the shop.
.3 Remove existing sealant at door frame perimeter. Clean and leave ready for re-caulking in accordance with Section 07 92 00 – Joint Sealants.
.4 Carefully remove door-mounted hardware and metal insertions and store for cleaning and repainting.
.5 Examine door and frame with Departmental Representative to determine extent of repairs required.
.6 Temporary constructs
.1 Upon removal of door and its components, construct temporary hoarding in existing door opening in accordance with Section 01 56 00.

3.3 LABELING

.1 Use indicated door number.
.2 Label each individual piece with two tags per piece and assume no pieces are interchangeable.
.3 Attach labels on site as each piece is removed.

3.4 DISASSEMBLY

.1 Carefully remove caulking or other finishes from perimeter of door, frame and trim.
.2 Remove moldings as required to facilitate repairs to door panels

3.5 TRANSPORTING

.1 Carefully transport door and its components laid horizontally on a flat bed truck.
.2 Support units on 2 x 4 sleepers placed 600 mm o.c. so as to prevent warping
.3 Do not drag or mishandle door and its components.

3.6 SURFACE PREPARATION

.1 Clean metal surfaces using mineral spirits and lacquer thinner.
.2 Any components showing corrosion products are to be treated by hand sanding

3.7 REPAIRS AND MODIFICATIONS
.1 Remove previous repairs and leave ready for new repair.
.2 Fill old screw holes and other holes with either polyester or epoxy-based filler, and file smooth.

.3 Build up thickness in areas missing finish with either polyester or epoxy-based filler.
.4 Ensure all penetrations or damage to metal have been repaired to have smooth finish.
.5 Drill and tap new screw holes in door stop to receive countersunk fasteners.
.6 Correct deformities in frame to rectify binding
.7 Provide new strike-plate at lock-edge; size and profile of openings to match lock and latch in existing lockset.
.8 Remove wood ventilation grille, and weld in new 1 mm thick steel panels to close opening previously cut out of central lower panel.
.9 Schedule: Assume 1 m^2 in aggregate of the above repairs, per door.

3.8 HARDWARE CLEANING AND REPAIR

.1 Remove all hardware and transport to workshop for cleaning and repair
.2 Removal all added materials such as mild steel replacements, electric welds, bolts and similar items.
.3 Remove paint and corrosion by electrolytic reduction bath.
.4 Use very gentle and short duration grit blast to address any areas not thoroughly cleaned by the reduction process.
.5 Fabricate replacement parts, as required, from the same material as was used in the original construction.
.6 Schedule: Assume all hardware on all doors receives the above treatment.

3.9 PAINTING

.1 Paint in accordance with Section 09 91 10 and as follows.
.2 Apply paint finish only when:
  .1 substrate and ambient temperatures are:
    .1 within limits prescribed by product manufacturer's instructions,
    .2 maintained within prescribed limits for the required curing period, and
    .3 to approval of Departmental Representative.
  .2 moisture, fumes, dust or other airborne particles which may jeopardize the quality of the finished surface are no longer being generated by surface preparation activity or other construction operations, and
  .3 surface to be painted is dry, properly cured and adequately prepared and illuminated to a minimum 270 lx. In-paint base colours, graining and veining.
.3 Apply two coats acrylic primer, sanding between coats. Sand 2nd coat and wipe with tack cloth to prepare for base paint.
.4 Apply two coats flat sheen base colour latex pain, sanding between coats. Scuff sand second coat and wipe down using tack cloth and mineral spirits.
.5 Apply first grain layer of stain; sealing first coat with polyurethane.
.6 Sand polyurethane and apply second coat of decorative graining using stain.
.7 Apply sealer coat using urethane; and sand.
.8 Create fading to match existing faux finishing using specialty tools, and seal with polyurethane top coat.

.9 Fasteners
  .1 Gently treat heads of new stainless steel machine screws with air abrasive to provide tooth for paint.
  .2 Immediately prior to installing the new fasteners coat the threads with white lithium grease taking extreme care not to contaminate with grease any surface that has to be painted.
  .3 Once screws are installed prime the heads with one coat of epoxy primer.

.10 Once the door and its trim components are installed, but before perimeter sealant is applied, apply final top coat.

.11 After re-assembly and reinstallation, touch-up scratches or chips to base metal by brush. Apply primer coat and colour coats if primer is damaged. Apply only colour coats if primer coat is not damaged.
  .1 Protection
    .1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Departmental Representative.
    .2 Protect building occupants and the general public in and about the building.

.12 Mixing paint and stain
  .1 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.

.13 Application
  .1 Method of application to be as approved by Departmental Representative. Apply base coats by spraying; apply faux finish and top coats by brush. Conform to manufacturer's application instructions unless specified otherwise.
  .2 Brush application.
    .1 Work paint into cracks, crevices and corners.
    .2 Brush out runs and sags.
    .3 Remove runs and sags from finished work and repaint.
  .3 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
  .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
  .5 Sand and dust between each coat to remove visible defects.

.14 Advise Departmental Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.15 Schedule: Assume 1 m^2 in aggregate of painting per door.

3.10 REINSTALLATION

.1 Coordinate with masonry restoration and assure door components are protected.

.2 Install door frame square and plumb with stainless steel screws set into nylon expansion anchors.

.3 Install perimeter sealant between frame and plaster walls, with edges masked, over foam rope and neatly tooled.

.4 Install hardware in accordance with hardware schedule.

.5 Adjust hardware for correct function.

3.11 ADJUSTING

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

3.12 CLEANING

.1 Clean all debris and dust from on and around door and its frame.

END OF SECTION

PART 1 - GENERAL

1.1 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 access door components and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

.4 Samples:
.1 Submit for review and acceptance of each unit.
.2 Samples will be returned for inclusion into work.
.3 Submit 1 of each type of hand entry access door.

1.2 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.

1.3 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 off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect access doors from nicks, scratches, and blemishes.

PART 2 - PRODUCTS

2.1 ACCESS DOORS

.1 Sizes: as follows unless indicated:
.1 For hand entry: 300 x 300 mm minimum.

.2 Construction: rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180 degrees. Frame detailed to allow a taped-in drywall installation. Exposed surface mounted frames are not acceptable.

.3 Materials:
.1 Prime coated steel.
.1 Primer: VOC limit 50 g/L maximum to SCAQMD Rule 1113.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for access door installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

.1 Installation: locate access doors within view of equipment and ensure equipment is accessible for operating, inspecting, adjusting, servicing without using special tools.
.1 Installation in gypsum board surfaces: install prior to gypsum board; tape frame into drywall in accordance with Section 09 21 16 - Gypsum Board Assemblies.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by access door installation.

END OF SECTION

PART 1 - GENERAL

1.1 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 access door components and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

1.2 REFERENCES

.1 National Fire Protection Association:
.1 NFPA 288 - Standard Methods of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire Resistance–Rated Floor Systems
.2 American Society for Testing Materials:
.1 ASTM E119 - 12a Standard Test Methods for Fire Tests of Building Construction and Materials

1.3 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.

1.4 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 off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect access doors from nicks, scratches, and blemishes.

PART 2 - PRODUCTS

2.1 ACCESS DOORS

.1 Sizes: as follows unless indicated:
.1 760 x 760 mm.

.2 Construction: stainless steel hinges, able to open 180 degrees. Frame detailed installation in concrete slab.
.1 Fire Resistance Rating: 2 hours
.2 Provide fusible link to cause door to close in the event of fire.

.3 Materials:
.1 Stainless Steel.
.2 Textured aluminum cover plate.
.3 Insulation: 50 mm ceramic blanket insulation.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for access door installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

.1 Installation: locate access doors within view of equipment and ensure equipment is accessible for operating, inspecting, adjusting, servicing without using special tools.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 80 50 - Glazing
.2 Section 09 91 10 – Painting
.3 Section 07 92 00 – Joint Sealants

1.2 REFERENCES

.1 Canadian General Standards Board
  .1 CAN/CGSB 19.13-M87
.2 American Society for Testing of Materials
  .1 ASTM C 920 Type S, Grade NS, Class 25

1.3 SCOPE OF WORK SUMMARY

.1 Label, photograph, and carefully remove all windows, all related parts, and mortar and miscellaneous shims.
.2 Remove all glazing putty, paint and corrosion products by electrolytic reduction.
.3 Fill existing machine screw holes in window frame with mild steel weld.
.4 Heat and straighten any deformed components.
.5 Drill and tap new threaded holes for new fasteners in new locations in frame to accommodate new glazing system.
.6 Apply zinc rich primer and epoxy base coats and one poly-urethane top coat and install window in masonry opening.
.7 Install new glazing system, laminated glass with shims and glazing tape.
.8 Apply final poly-urethane top coat.
.9 Apply silicone wet seals inside and out.
.10 Apply perimeter sealant inside and out between frame and masonry.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Mockups
  .1 Disassembly and removal of one window frame under review of Departmental Representative (DEPARTMENTAL REPRESENTATIVE).
  .2 Removal of paint, putty and corrosion products from one window.
  .3 Two examples of filling in old screw holes with puddled in mild steel weld and ground smooth.
  .4 The painting of one window.
  .5 Reinstallation of one window, under direct review of Departmental Representative, showing the reinstallation of the frame in the masonry opening, the complete installation of glazing and stops, painting, and installation of perimeter sealant.
.2 Samples
  .1 A 150 X 150 mm sample of laminated glass with all setting materials.
  .2 Colour samples for caulking at perimeter of frame.

.3 Colour samples for caulking to be used as wet seals at glazing.
.4 New SS screw with plastic anchor for fastening frame to masonry.
.5 New SS screw for glazing stops.

1.5 CLOSEOUT SUBMITTALS

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

1.6 QUALITY ASSURANCE

.1 Work to be undertaken by fully qualified personnel with previous experience in heritage metal window restoration.
.2 Disassemble windows on site, transport, and restore windows in shop. Leave windows fully restored, painted and installed in like-new condition upon completion of work.
.3 Undertake each initial step of window restoration from disassembly, removal, tagging, surface preparation, repair and painting under direct review of Departmental Representative. Adjust techniques as directed until desired results are achieved.
.4 Approved work or procedures serves as the standard for subsequent work.
.5 Coordinate with masonry and other trades.

1.7 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 conserved windows in plywood crates.
.3 Storage and Handling Requirements:
.1 Store windows off ground indoors, in clean, dry, well-ventilated area.
.2 Store and protect windows from damage.
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Use products as indicated and in accordance with manufacturer’s printed instructions.
.2 Stainless steel fasteners:
.1 All existing fasteners to be replaced with new 300 series stainless steel.
.2 All exposed fasteners to be slot head.

.3 Match size, profile and head of existing.

.3 Glazing Accessories
.1 Glazing tape, shims and sealant for wet seals to be by one manufacturer.

.4 Component Labels
.1 Use sheet brass tag and fasten with re-bar wire.
.2 Engrave tag with the words “Property Gov’t of Canada” as well as other necessary information to ensure that all components are reinstalled in their original location and in their original orientation.

.5 Penetrating Oil
.1 Oil formulated to free seized ferrous metal parts.

.6 Air Abrasive Media
.1 100 grit aluminum oxide.

.7 Glass
.1 Replace all glass with clear laminated glass 5.56 mm thick.

.8 Shims
.1 At all W8 windows fit a brass shim 13 mm X 48 mm (confirm dimensions on site) beneath the window frame in lieu of the mortar currently in place. Fasten only to window frame only with two stainless steel machine screws.
.2 At all W5 windows discard the current shim across the bottom of the window frame and replace with brass 13 mm x 48 mm (confirm dimension on site). Fasten only to window frame with two stainless steel machine screws.
.3 Neoprene or lead shims, sized to fit, for shimming window frames squarely into masonry openings. Locate only at corners and fasteners.

.9 Caulking
.1 At perimeter of frame at stone use high-performance, low-modulus, one-component, moisture-curing, polyurethane joint sealant to CAN/CGSB 19.13-M87. Mask edges to insure crisp lines. Colour as directed by Departmental Representative.
.2 For wet seals at glass use one-part, neutral cure, fast skinning, medium modulus silicone sealant. Ensure compatibility with glazing tape.

.10 Backer Rod
.1 Closed cell foam backer rod, of required diameter to fit gaps.

.11 Nylon expansion anchors

.12 Mild steel welding rod

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Before starting work, verify existing conditions and variations from contract documents and notify Departmental Representative of any discrepancy.
.2 Visually inspect substrate in presence of Departmental Representative.

.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative

3.2 PREPARATION

.1 Protect adjacent materials from damage at all times.
.2 Temporary Window Plugs
  .1 Design plugs to be removable, weather tight, dust proof and secured against wind.
  .2 Construct from 13 mm plywood and wedge into position with 2 x 4s across interior, do not use fasteners into masonry.
  .3 In each plug fit a piece of clear polycarbonate sheet 300 mm X 600 mm to provide natural light into tower.
  .4 Seal perimeter of plug with foam rope.
  .5 Submit shop drawings of plug for approval by Departmental Representative and revise as directed.

3.3 LABELING

.1 Use indicated window numbers.
.2 Label each individual piece with two tags per piece and assume no pieces are interchangeable.
.3 Attach labels on site as each piece is removed.

3.4 DISASSEMBLY

.1 Carefully remove mortar and caulking from perimeter of window.
.2 Assume need to drill out all fasteners.
.3 Discard glass.

3.5 TRANSPORTING

.1 Carefully transport frames laid horizontally on a flat bed truck.
.2 Support units on 2 x 4 sleepers placed 600 mm o.c. so as to prevent warping
.3 Do not drag or mishandle frames.

3.6 SURFACE PREPARATION

.1 Remove all paint and corrosion products by electrolytic reduction.
.2 Wash loose dirt, paint, etc., from surfaces using a pressure washer and potable water.
.3 Load the iron components into the tank with small wires to ensure good current supply to each piece of iron and the negative lead. Connect the positive lead to the tank.

.4 Ensure that the iron components are not in direct contact with the tank (anode).
.5 Fill the tank with hydroxide solution until all parts are submerged.
.6 Turn on the power supply and check with a voltage metre that there is a voltage difference between the anode (tank) and the cathode (iron components). If there is no voltage then there is a short to be corrected.
.7 Shut off power and remove parts from the tank and pressure wash. If the surfaces are reduced to a dull grey with some black or brown mottling they are sufficiently clean.
.8 Wash with a pressure washer and water only to remove all salts and dry immediately with compressed air.
.9 Any components still showing corrosion products are to be treated again as described above.
.10 Immediately prior to painting all surfaces are to be given a dusting with air abrasive to remove any light corrosion that may have occurred in the mean time. The metal should be clean and grey with some brown and black mottled stains and no corrosion products at all. Do not blast “white” as this is overly aggressive and will result in the loss of surface detail and edge sharpness.

3.7 REPAIRS AND MODIFICATIONS

.1 Straighten bent or deformed components by heating and forging.
.2 Fill old screw holes for glazing stop screws with mild steel weld and file smooth.
.3 Drill and tap new screw holes in new locations to accommodate thicker glass assembly.
.4 For all W8 windows drill two holes, one at the ¼ point and the other at the ¾ point, and drill and tap corresponding holes in the brass shim for new machine bolts.

3.8 PAINTING

.1 Paint in accordance with Section 09 91 10 and as follows.

.2 Apply paint finish only when:
  .1 substrate and ambient temperatures are:
    .1 within limits prescribed by product manufacturer's instructions,
    .2 maintained within prescribed limits for the required curing period, and
    .3 to approval of Departmental Representative.
  .2 moisture, fumes, dust or other airborne particles which may jeopardize the quality of the finished surface are no longer being generated by surface preparation activity or other construction operations, and
  .3 surface to be painted is dry, properly cured and adequately prepared and illuminated to a minimum 270 lx. Apply zinc rich primer, epoxy base coats and one top coat to all surfaces of all components prior to reassembly.

.3 Gently treat heads of new stainless steel machine screws with air abrasive to provide tooth for paint.
.4 Immediately prior to installing the new fasteners coat the threads with white lithium grease taking extreme care not to contaminate with grease any surface that has to be painted.
.5 Once screws are installed prime the heads with one coat of epoxy primer.
.6 Once all iron work is entirely assembled, but before perimeter sealant or wet seals are applied, apply final top coat.
.7 After re-assembly and reinstallation, touch-up scratches or chips to base metal by brush. Apply primer coat and colour coats if primer is damaged.. Apply only colour coats if primer coat is not damaged.
    .1 Protection
        .1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Engineer.
        .2 Protect building occupants and the general public in and about the building.
.8 Mixing paint
    .1 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
.9 Application
    .1 Method of application to be as approved by Departmental Representative. Apply paint by brush. Conform to manufacturer's application instructions unless specified otherwise.
    .2 Brush application.
        .1 Work paint into cracks, crevices and corners.
        .2 Brush out runs and sags.
        .3 Remove runs, sags and brush marks from finished work and repaint.
    .3 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
    .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
    .5 Sand and dust between each coat to remove visible defects.
.10 Advise Departmental Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

3.9 REINSTALLATION

.1 Coordinate with masonry restoration and assure window components are protected.
.2 Install frames square and plumb with stainless steel screws set into nylon expansion anchors.
.3 Install glass on setting blocks with glazing tape inside and out.
.4 Install glazing stops and cut back any glazing tape that is proud, taking care not to damage paint film.

.5 Install wet seals, inside and out, with edges masked and neatly tool.
.6 Install perimeter sealant between frame and masonry, with edges masked, over foam rope and neatly tool.

3.10 CLEANING

.1 Clean all debris and dust from on and around windows.
.2 Clean all glass inside and out at job end with a weak solution of vinegar and water and newsprint, after wet seals are cured.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.2 Section 08 11 69 – Metal Doors and Frames

.3 Division 26: Electrical wiring automatic door openers

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-69.17-M86(R1993), Bored and Preassembled Locks and Latches.
.2 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.
.3 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).
.4 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.
.5 CAN/CGSB-69.26-96/ANSI/BHMA A156.10-1991, Power-operated Pedestrian Doors.
.6 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 00 50 – General Instructions.

.2 Hardware List:
.1 Submit contract hardware list in accordance with Section 01 00 50 – General Instructions.
.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.3 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

.4 Closeout Submittals
.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
.2 Sustainability Requirements

.1 Submit manufacturers/suppliers document indicating the percent (by weight) of recycled post consumer and/or post industrial content of materials supplied.
.2 Submit, on company letterhead, the dollar value of materials supplied that have been manufactured within 800km of the Project site.

1.4 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 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.2 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
.1 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.3 Storage and Protection:
.1 Store finishing hardware in locked, clean and dry area.

1.6 MAINTENANCE

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

PART 2 - PRODUCTS

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 Locks and latches:
.1 Bored and preassembled locks and latches: to CAN/CGSB-69.17, series 4000 bored lock, grade 1, designed for function as stated in Hardware Schedule.
.2 Lever handles: plain design.
.3 Roses: round.

.4 Normal strikes: box type, lip projection not beyond jamb.
.5 Cylinders: key into keying system as directed.

.2 Butts and hinges:
.1 Butts and hinges: to CAN/CGSB-69.18, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.3 Door Closers and Accessories:
.1 Door controls (closers): to CAN/CGSB-69.20, designated by letter C and numeral identifiers listed in Hardware Schedule, size in accordance with CAN/CGSB-69.20, table A1.
.2 Door controls - overhead holders: to CAN/CGSB-69.24, designated by letter C and numeral identifiers listed in Hardware Schedule.
.3 Closer/holder release devices: to CAN/CGSB-69.31, designated by letter C and numeral identifiers listed in hardware schedule.
.4 Door co-ordinator: surface for pairs of doors with overlapping astragal.

.4 Door Operators:
.1 Power-operated pedestrian doors: to CAN/CGSB-69.26. Surface-mounted heavy duty operator complete with extruded aluminum housing as detailed and associated hardware and switches. Provide switches in accordance with OBC requirements.

.5 Auxiliary locks and associated products: to CAN/CGSB-69.21, designated by letter E and numeral identifiers listed in Hardware Schedule.

.6 Thresholds: 152mm wide (or as detailed) x full width of door opening, extruded aluminum anodized finish, serrated surface.

.7 Weatherstripping:
.1 Head and jamb seal:
.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

2.3 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 and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

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

2.4 KEYING

.1 Doors, padlocks and cabinet locks to be as directed. Prepare detailed keying schedule in conjunction with the Departmental Representative.

.2 Provide keys in duplicate for every lock in this Contract.

.3 Provide three master keys for each MK or GMK group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Provide construction cores.

.6 Provide all permanent cores and keys to the Departmental Representative.

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.

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.3 Install key control cabinet.

.4 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.5 Remove construction cores when directed by Consultant; install permanent cores and check operation of locks.

3.3 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 provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.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 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 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 and fire exit hardware.

  .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 VERIFICATION

.1 Verification requirements in accordance with Section 01 35 18 – LEED Requirements and Procedures, including:
  .1 Materials and resources.
  .2 Storage and collection of recyclables.
  .3 Construction waste management.
  .4 Local/regional materials.
  .5 Low-emitting materials.

3.7 SCHEDULE

DOOR	F.R.R. (hrs)	BUTTS	DEADBOLT	PASSAGE SET	Auto Door Operator	CLOSER
BSS-107B	1.5	√	√	√		√
5HCT	1.5	√	√	√		√
166N					√	√
264N					√	√
466N		√	√	√		√

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 06 20 00 – Finish Carpentry
.2 Section 08 11 00 – Metal Doors and Frames.
.3 Section 08 50 10 – Historic Window Conservation

1.2 REFERENCES

.1 ASTM International
  .1 ASTM C 542-05, Standard Specification for Lock-Strip Gaskets.
  .2 ASTM D 790-07e1, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  .3 ASTM D 2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
  .4 ASTM E 84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
  .5 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  .6 ASTM F 1233-08, Standard Test Method for Security Glazing Materials and Systems.

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
  .2 CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.
  .3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
  .4 CAN/CGSB-12.8-97, Insulating Glass Units.
  .5 CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.

.3 Environmental Choice Program (ECP)
  .1 CCD-045-95(R2005), Sealants and Caulking Compounds.

.4 Glass Association of North American (GANA)
  .1 GANA Glazing Manual - 2008.
  .2 GANA Laminated Glazing Reference Manual - 2009

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 glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Submit drawings for review, identifying material characteristics.

.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.

.1 Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

.2 Construction Waste Management:
.1 Submit project Waste Reduction Workplan highlighting recycling and salvage requirements.
.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

.3 Recycled Content:
.1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.

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 glazing for incorporation into manual.

1.5 QUALITY ASSURANCE

.1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 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 off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect glazing and frames from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Develop Waste Reduction Workplan related to Work of this Section.

.5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.7 AMBIENT CONDITIONS

.1 Ambient Requirements:
.1 Install glazing 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

2.1 MATERIALS

.1 Design Criteria:
.1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Flat Glass:
.1 Silvered mirror glass: 6 mm thick.
.1 Type 1A-float glass for normal use 3A-tempered.

.3 Laminated Glass
.1 Clear laminated glass 5.56 mm thick.

.4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

.1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.
.1 VOC limit: 5 % maximum by weight to CCD-045.
.2 Ensure sealant does not contain chemical restrictions to CCD-045.

.5 Insulating Glass Units:
.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 25 mm overall thickness.
.1 Glass: to CAN/CGSB-12.3.
.2 Glass thickness: 6 mm each light

2.2 ACCESSORIES

.1 Setting blocks: EPDM, 80-90 Shore A durometer hardness to ASTM D 2240, length of 25 mm for each square meter of glazing.
.2 Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness

to suit application. Self adhesive on one face.

.3 Glazing clips: manufacturer's standard type.

.4 Mirror attachment accessories:

.1 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

PART 3 - EXECUTION

3.1 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 in presence of Departmental Representative.

.4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.5 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION: EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

.4 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.5 Rest glazing on setting blocks and push against tape and heel head of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape flush with sight line.

.7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.4 INSTALLATION: MIRRORS

.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 and mirrors 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 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 09 91 10 - Painting

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Mockups
  .1 Disassembly and removal of one louvre and frame assembly under review of Departmental Representative.
  .2 One solder repair
.2 Samples
  .1 Copper sheet with green patina, 20 cm X 20 cm approx.

1.3 CLOSEOUT SUBMITTALS

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

1.4 QUALITY ASSURANCE

.1 Work to be undertaken by fully qualified personnel with previous experience in heritage metal restoration.
.2 Undertake each initial step of restoration from disassembly, removal, tagging, surface preparation, repair and painting under direct review of Departmental Representative. Adjust techniques as directed until desired results are achieved.
.3 Approved work or procedures serve as the standard for subsequent work.
.4 Coordinate with masonry and other trades.

1.5 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 conserved components padded in plywood crates.
.3 Storage and Handling Requirements:
  .1 Store components off ground indoors, in clean, dry, well-ventilated area.
  .2 Store and protect from damage.
  .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Use products as indicated and in accordance with manufacturer’s printed instructions.
.2 Stainless steel fasteners:

.1 All existing fasteners to be replaced with new 300 series stainless steel.
.2 All exposed fasteners to be slot head.
.3 Match size, profile and head of existing.

.3 Component Labels
.1 Use sheet brass tag and fasten with iron re-bar wire.
.2 Engrave tag with I.D. # and key this to a drawing / photo.

.4 Air Abrasive Media
.1 35 - 70 grit.

.5 Copper Nitrate solution
.6 Nylon expansion anchors
.7 Detergent: non-toxic
.8 Solder: 50% lead, 50% tin
.9 Flux: Acid paste
.10 1mm galvanized sheet steel
.11 50 x 50 mild steel galvanized angles

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Before starting work, verify existing conditions and variations from contract documents and notify Departmental Representative of any discrepancy.
.2 Visually inspect substrate in presence of Departmental Representative.
.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative

3.2 PREPARATION

.1 Protect adjacent materials from damage at all times.

3.3 LABELING

.1 Label each individual piece with two tags per piece and assume no pieces are interchangeable.
.2 Attach labels on site as each piece is removed.

3.4 DISASSEMBLY

.1 Carefully remove iron screen and all mounting brackets.
.2 Remove the copper louvres and all retaining brackets.
.3 Assume need to drill out all fasteners.

3.5 TRANSPORTING

.1 Carefully transport frames laid flat.
.2 Transport frames horizontally. Support units on 2 x 4 sleepers placed 600 mm o.c. so as to prevent warping
.3 Do not drag or mishandle components.

3.6 IRON SCREEN TREATMENT

.1 Iron screens: Remove all paint and corrosion products by electrolytic reduction.
.2 Wash loose dirt, paint, etc., from surfaces using a pressure washer and potable water.
.3 Load the iron components into the tank with small wires to ensure good current supply to each piece of iron and the negative lead. Connect the positive lead to the tank.
.4 Ensure that the iron components are not in direct contact with the tank (anode).
.5 Fill the tank with hydroxide solution until all parts are submerged.
.6 Turn on the power supply and check with a voltage metre that there is a voltage difference between the anode (tank) and the cathode (iron components). If there is no voltage then there is a short to be corrected.
.7 Shut off power and remove parts from the tank and pressure wash. If the surfaces are reduced to a dull grey with some black or brown mottling they are sufficiently clean.
.8 Wash with a pressure washer and water only to remove all salts and dry immediately with compressed air.
.9 Any components still showing corrosion products are to be treated again as described above.
.10 Immediately prior to painting all surfaces are to be given a dusting with air abrasive to remove any light corrosion that may have occurred in the mean time. The metal should be clean and grey with some brown and black mottled stains and no corrosion products at all. Do not blast “white” as this is overly aggressive and will result in the loss of surface detail and edge sharpness.
.11 Provide a removable sheet steel baffle to block the movement of air as indicated, on House of Commons Tower. Provide steel angle reinforcing to support sheet metal; install with fully reversible connection details, to enable the iron screen to be restored to its original state without additional conservation work required. Paint black.

3.7 LOUVRE CONSERVATION

.1 Pressure-wash the louvre with a detergent solution. Nylon brushes may be used as long as the corrosion patina is not removed.
.2 Re-solder all broken joints of copper louvres, taking care not to damage the patina of corrosion on the surrounding copper sheet. Re-soldering joints will require the cleaning of corrosion from the copper at these locations.
.3 After solder repairs have been completed, reinstate patina by applying a saturated solution of copper nitrate to the heated metal surface, approximately 100C.
.4 Do not apply protective finishes to the copper.
.5 Elongate the bolt holes at attachment points of the copper louvres attachment by drilling out an additional 10mm in length, to allow for thermal movement.

3.8 PAINTING, IRON SCREENS

.1 Paint in accordance with Section 09 91 10 and as follows:
.2 Apply paint finish only when:
  .1 substrate and ambient temperatures are:
    .1 within limits prescribed by product manufacturer's instructions,
    .2 maintained within prescribed limits for the required curing period,
    .3 to approval of Departmental Representative,
    .4 moisture, fumes, dust or other airborne particles which may jeopardize the quality of the finished surface are no longer being generated by surface preparation activity or other construction operations, and surface to be painted is dry, properly cured and adequately prepared and illuminated to a minimum 270 lx. Apply zinc rich primer, epoxy base coat and one top coat to all surfaces of all components prior to reassembly.
    .5 Immediately prior to installing the new fasteners coat the threads with zinc rich primer, taking extreme care not to contaminate with grease any surface that has to be painted.
    .6 After re-assembly and reinstallation, touch-up scratches or chips to base metal by brush. Apply primer coat and colour coats if primer is damaged. Apply only colour coats if primer coat is not damaged.
      .1 Protection
        .1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Departmental Representative.
        .2 Protect building occupants and the general public in and about the building.
.3 Mixing paint
  .1 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
.4 Application
  .1 Method of application to be as approved by Departmental Representative. Conform to manufacturer's application instructions unless specified otherwise.
  .2 Brush application.
    .1 Work paint into cracks, crevices and corners.
    .2 Brush out runs and sags.
    .3 Remove runs, sags and brush marks from finished work and repaint.
  .3 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
  .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
  .5 Sand and dust between each coat to remove visible defects.

.5 Advise Departmental Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

3.9 REINSTALLATION

.1 Coordinate with masonry restoration and assure louvre components are protected.
.2 Install frames square and plumb with stainless steel screws set into nylon expansion anchors.

3.10 CLEANING

.1 Clean all debris and dust from on and around louvres.

3.11 SCHEDULE

Location	**Percentage broken solder joints**
East face	20 %
North face	20 %
West face	35 %
South face	20 %
North face	40 %
West face	50 %
South face	20 %
East face	20 %

END OF SECTION