

PART 1 GENERAL**1.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 653 / A 653M-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-G40.20-04/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-03(R2008), Welded Steel Construction (Metal Arc Welding).
- .4 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.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-10, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-08, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .2 CAN4-S104-M80 (R1985), Standard Method for Fire Tests of Door Assemblies.
 - .3 CAN4-S105-M85(R1992), Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SYSTEM DESCRIPTION

- .1 Design Requirements:
 - .1 Steel fire rated frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 or NFPA 252 for ratings specified or indicated.
 - .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, or NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 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, glazed and louvred, arrangement of hardware, fire rating and finishes.
 - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating and finishes.
 - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
 - .4 Submit test and engineering data, and installation instructions.
- .4 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

1.4 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 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

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.
- .2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.3 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.

2.4 PAINT

- .1 Field paint steel frames in accordance with Section 09 91 23 - Interior Painting.

2.5 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior and interior top and bottom caps: 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 Door bottom seal: In accordance with Section 08 71 00 - Door Hardware.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Fire labels: metal riveted.
- .7 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 and dry glazing of snap-on type.
 - .2 Design exterior glazing stops to be tamperproof.

2.6 FRAMES FABRICATION GENERAL

- .1 Metal Frame Types:
 - .1 Interior frames (**MF-01**): 1.6 mm knocked-down type construction.
 - .2 Interior frames, Temperature rise rated (MF-03): 1.6 mm welded type construction.
- .2 Fabricate frames in accordance with CSDMA specifications.
- .3 Fabricate frames to profiles and maximum face sizes as indicated.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Protect mortised cutouts with steel guard boxes.
- .6 Prepare frame for door silencers, 1 for single door, 2 at head for double door.
- .7 Manufacturer's nameplates on frames and screens are not permitted.
- .8 Conceal fastenings except where exposed fastenings are indicated.
- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

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.
- .7 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

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.

3.4 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.

3.5 GLAZING

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

END OF SECTION

PART 1 GENERAL**1.1 REFERENCES**

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
 - .1 Quality Standards for Architectural Woodwork 1998.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
 - .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA A440.2-98, Energy Performance of Windows and Other Fenestration Systems.
 - .2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
 - .3 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.
 - .4 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
 - .5 CSA Certification Program for Windows and Doors.
- .4 Environmental Choice Program (ECP).
 - .1 CCD-045-92, Sealants and Caulking Compounds.
 - .2 CCD-046-92, Adhesives.
- .5 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.
- .6 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.
 - .2 CAN4-S105M-85 (R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 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 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 and cutouts for glazing, sizes, core construction, transom panel construction and cutouts.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Show door construction, core, glazing detail and faces.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Wood fire rated doors: labelled and listed by an 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.

- .4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 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. Wrap doors.
 - .4 Store doors away from direct sunlight.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of corrugated cardboard, polystyrene, and plastic 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 Departmental Representative.
- .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 (**WD-01**): to CAN/CSA-O132.2.1.
 - .1 Construction:
 - .1 Solid wood core with glazing or without glazing:
 - .1 Glued block core with wood edge band.
 - .2 7-ply construction.
 - .3 For interior use.
 - .2 Solid wood core:
 - .1 Glued block core with wood edge band.
 - .2 Framed block glued core.
 - .3 Framed block non-glued core.
 - .4 Stile and rail core.
 - .5 5-ply construction.
 - .3 Face Panels:
 - .1 Hardwood. Grade I (Premium), oak species, primed and ready to accept paint finish.
 - .4 Adhesive: Type II (water resistant) for interior doors.
 - .5 Door Finish: Colours to be determined by Departmental Representative.

2.2 GLAZING

- .1 Glass: In accordance with Section 08 80 50 - Glazing.

2.3 FABRICATION

- .1 Vertical edge strips to match door paint finish.
- .2 Prepare doors for glazing. Provide glazing stops with mitred corners.
- .3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.
- .4 Radius vertical edges of double acting doors to 60 mm radius.

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 and CAN/CSA-O132.2 Series, Appendix A.
- .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 Clean glass and glazing materials with approved non-abrasive cleaner.
- .4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

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 access door and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province Quebec, Canada.
 - .2 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.
- .4 Sustainable Design Submittals:
 - .1 LEED Canada-CI Version 1.0 Submittals: in accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan 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 Low-Emitting Materials:
 - .1 Submit listing of paints and coatings used in building, showing compliance with VOC and chemical component limits or restriction requirements.

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 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.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
- .5 Packaging Waste Management: remove for reuse 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 and Section 01 35 21 - LEED Requirements.

Part 2 Products

2.1 ACCESS DOORS

- .1 Sizes: as follows unless indicated:
 - .1 For body entry: 600 x 600 mm minimum.
 - .2 For hand entry: 300 x 300 mm minimum.
- .2 Construction: rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180 degrees.
- .3 Materials:
 - .1 Tiled or marble surfaces: stainless steel with brushed satin finish.
 - .2 Other areas: prime coated steel.
 - .1 Primer: VOC limit 50 g/L maximum to GS-11 and SCAQMD Rule 1113.

Part 3 EXCLUSIONS

- .1 Lay-in tile ceilings: use unobtrusive identification locators.

Part 4 Execution

4.1 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.

4.2 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 Tiled surfaces: in accordance with Section 09 30 13 - Ceramic Tiling.
 - .2 Install masonry surfaces: in accordance with Section 04 05 00 - Common Work Results for Masonry.
 - .3 Install gypsum board surfaces: in accordance with Section 09 21 16 - Gypsum Board Assemblies.

4.3 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 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal 01 35 21 - LEED Requirements.

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

4.4 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 REFERENCES**

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
 - .1 ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
 - .2 ANSI/BHMA A156.2-2003, Bored and Preamsembled Locks and Latches.
 - .3 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
 - .4 ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
 - .5 ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
 - .6 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
 - .7 ANSI/BHMA A156.18-2006, Materials and Finishes.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
 - .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

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 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 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions: submit manufacturer's installation instructions.

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 door hardware for incorporation into manual.

1.4 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 each type of door closers, locksets and fire exit hardware.

1.5 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.

1.6 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 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 indoors 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.
- .5 Packaging Waste Management: remove for reuse by manufacturer of pallets, crates, padding, and packaging materials.

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 Lever Lockset: to ANSI/BHMA A156.2, series 4000, grade 1, cylinders and keys supplied by Departmental Representative, cylinders installed by contractor.
 - .1 Basis of design acceptable Product: Corbin Russwin, CL3100 Series or equivalent.
 - .2 Mortise locks and latches: to ANSI/BHMA A156.13, series 1000 mortise lock, grade 1, cylinders and keys supplied by owner, cylinders installed by contractor.
 - .1 Basis of design acceptable Product: Corbin Russwin, ML2000 Series.
- .2 Electric Strike:
 - .1 Electric strike for cylindrical and/or mortise style lockset without deadbolt: to CAN4-S104 (ULC-S104) fire door conformant and ANSI/BHMA A156.31, Grade 1. Strike to include both the latch bolt monitoring and latch bolt strike monitoring.
 - .1 Basis of design acceptable product: hatched entry systems 8500 Series or equivalent.
 - .2 Electric strike for mortise style lockset with integrated deadbolt: to CAN4-S104 (ULCS104) fire door conformant and ANSI/BHMA A156.31, Grade 1. Strike to include both the latchbolt monitoring and latchbolt strike monitoring.
 - .1 Basis of design acceptable product: Hatched entry systems 1006 Series or equivalent.
- .3 Butts and hinges:
 - .1 Butts and hinges: to ANSI/BHMA A5112, standard weight, full mortise, five knuckle, non-removable pin, size and finish as stated in Hardware Schedule.
 - .1 Basis of design acceptable Product: Hager BB1279 or equivalent.
- .4 Door Closers and Accessories:
 - .1 Door closers: to ANSI/BHMA A156.4, cast-iron cylinder, heavy duty forged arm, adjustable speed, function and finish as stated in Hardware Schedule.
 - .1 Basis of design acceptable product: Ingersoll-Rand, LCN 4041 Series or equivalent.
- .5 Floor stops: 44.5 mm diameter, 28.6 mm high domed floor mounted door stop, grey rubber bumper.
- .6 Auxiliary locks and associated products: to ANSI/BHMA A156.31, listed in Hardware Schedule.
 - .1 Cylinders: cylinders and keys supplied by owner, cylinders installed by Contractor.
- .7 Door seal/silencer:
 - .1 Door seal of neoprene self-adhesive gasket, black finish.
 - .1 Basis of design acceptable Products: K.N. Crowder Manufacturing, W-66 or Equivalent.
- .8 Automatic Door Bottom:
 - .1 Door seal of extruded aluminum frame and closed cell neoprene seal, surface mounted, closed ends, adjustable automatic retract mechanism when door is open, clear anodized finish.
 - .1 Basis of design acceptable product: K.N. Crowder Manufacturing, CT-50.
- .9 Threshold:

- .1 Stainless steel extruded aluminum.
 - .1 Basis of design acceptable product: K.N. Crowder Manufacturing, CT-64SS.
- .10 Bi-Fold Closet Hardware
 - .1 Complete commercial grade bi-fold door hardware.
 - .1 .1 Basis of design acceptable product: Stanley, BF30-00-36 Bifold Retail Set.

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 noted in Hardware Schedule.
- .2 Supply keys in duplicate for every lock in this Contract.
- .3 Supply 3 master keys for each master key or grand master key group.
- .4 Stamp keying code numbers on keys and cylinders.
- .5 Supply construction cores.
- .6 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 cores & locks when directed 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 after client key locks have been installed.
- .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 11 - 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 11 - Cleaning.
- .2 Waste Management: separate waste materials for reuse and recycling.
 - .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 and fire exit hardware.
- .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 HARDWARE GROUPS

- .1 **Hardware Group HG-01 – Meeting and Quiet Rooms:**

.1	3	STANDARD HINGE	BB1279 127X101 US26D		C26D
.2	1	LOCKSET	CL3161 PZD 626	626	
.3	1	DOOR CLOSER	4041 CUSH		AL
.4	1	DOOR SEAL	KNC W-66		BLK
.5	1	DOOR BOTTOM	KNC CT-52S Surface		626
.6	1	THRESHOLD	KNC CT-64SS		SS
.7	3	DOOR SILENCER	SR64 GRY		GRY
.8	1	FLOOR DOOR STOP	GHS 218B C32D		C32D
- .2 **HARDWARE GROUP HG-02 - Offices:**

.1	3	STANDARD HINGE	BB1279 127X101 US26D		C26D
.2	1	LOCKSET	CL3151 PZD 626	626	
.3	1	DOOR CLOSER	4041 CUSH		AL
.4	1	DOOR SEAL	KNC W-66		BLK
.5	1	DOOR BOTTOM	KNC CT-52S Surface		626
.6	1	THRESHOLD	KNC CT-64SS		SS
.7	3	DOOR SILENCER	SR64 GRY		GRY
.8	1	FLOOR DOOR STOP	GHS 218B C32D		C32D
- .3 **Hardware Group HG-03 – Common Areas:**

.1	3	STANDARD HINGE	BB1279 127X101 US26D		C26D
.2	1	LOCKSET	CL3155 PZD 626	626	
.3	1	DOOR CLOSER	4041 CUSH		AL
.4	3	DOOR SILENCER	SR64 GRY		GRY
.5	1	FLOOR DOOR STOP	GHS 218B C32D		C32D
- .4 **HARDWARE GROUP HG-04 – Security Door:**

.1	3	STANDARD HINGE	BB1279 127X101 US26D		C26D
.2	1	LOCKSET	ML 2057 PSM 626		626
.3	1	ELECTRIC STRIKE	HES 8500-852K-630 LBM/LBSM		630
.4	1	DOOR CLOSER	4041 CUSH		AL
.5	1	DOOR SEAL	KNC W-66		BLK
.6	1	DROP BOTTOM	KNC CT-52S SURFACE		626
.7	1	THRESHOLD	KNC CT-64SS		SS
.8	3	DOOR SILENCERS	SR64 GRY		GRY
.9	1	FLOOR DOOR STOP	GHS 218B C32D		C32D
- .5 **HARDWARE GROUP HG-05 – Room 306:**

.1	3	STANDARD HINGE	BB1279 127X101 US26D		C26D
.2	1	LOCKSET	ML2059 PSM 626		626

.3	1	ELECTRIC STRIKE	HES 1006CDB-630 LBM/LBSM	630
.4	1	DOOR CLOSURE	4041 CUSH	AL
.5	1	DOOR SEAL	KNC W-66	BLK
.6	1	DROP BOTIOM KNC	CT-52S SURFACE	626
.7	1	THRESHOLD KNC	CT-64SS	SS
.8	3	DOOR SILENCERS	SR64 GRY	GRY
.9	1	FLOOR DOOR STOP	GHS 218B C32D	C32D

END OF SECTION

PART 1 GENERAL**1.1 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C 542-94(1999), Specification for Lock-Strip Gaskets.
 - .2 ASTM D 790-02, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D 1003-00, Test Method for Haze and Luminous Transmittance of Plastics.
 - .4 ASTM D 1929-96(R2001)e1, Test Method for Determining Ignition Temperature of Plastics.
 - .5 ASTM D 2240-02b, Test Method for Rubber Property - Durometer Hardness.
 - .6 ASTM E 84-01, Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM F 1233-98, 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-12.11-M90, Wired Safety Glass.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA Certification Program for Windows and Doors 2000.
- .4 Environmental Choice Program (ECP).
 - .1 CCD-045-95, Sealants and Caulking.
- .5 Flat Glass Manufacturers Association (FGMA).
 - .1 FGMA Glazing Manual - 1997.

1.2 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 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 Closeout Submittals:
 - .1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .1 Provide testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.
 - .2 Provide shop inspection and testing for glass.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 SITE CONDITIONS

- .1 Environmental 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.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Divert metal cut-offs from landfill by disposal into on-site Metal recycling bin.
- .3 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.
- .4 Divert unused caulking and sealant materials from landfill through disposal at special wastes depot.
- .5 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- .6 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .7 Dispose of corrugated cardboard, polystyrene, and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

PART 2 PRODUCTS

2.1 MATERIALS: FLAT GLASS

- .1 Safety Glass (**GL-01**): to CAN/CGSB-12.1, transparent, 13 mm thick.
 - .1 Type 2-tempered.
 - .2 Class B-float.
 - .3 Category 1.

2.2 MATERIALS: WINDOW FILM

- .1 Window Film (**WF-01**):
 - .1 Adhesive Colour: Clear
 - .2 Adhesive Type: Pressure-sensitive
 - .3 Application Temperature (C): +10°C to +38°C (air and substrate)
 - .4 Design Pattern: to be determined by departmental representative.
 - .5 Opacity: Translucent
 - .6 Removal Method: Removable without heat and/or chemicals from supported substrates.
 - .7 Surface Finish: Matte
 - .8 Surface Type: Flat
 - .9 Thickness (film): 70-140 µm
 - .10 Usage: Interior
 - .11 Width: 1.27m
- .2 Window Film (**WF-02**):
 - .1 Adhesive Colour: Clear
 - .2 Adhesive Type: Pressure-sensitive
 - .3 Application Temperature (C): +10°C to +38°C (air and substrate)
 - .4 Design Pattern: to be determined by departmental representative.
 - .5 Opacity: Translucent
 - .6 Removal Method: Removable without heat and/or chemicals from supported substrates.
 - .7 Surface Finish: Matte
 - .8 Surface Type: Flat
 - .9 Thickness (film): 70-140 µm
 - .10 Usage: Interior
 - .11 Width: 1.27m

2.3 MATERIALS

- .1 Sealant: In accordance with Section 07 92 00 - Joint Sealants.

2.4 ACCESSORIES

- .1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D 2240, to suit glazing method, glass light weight and area.

- .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 tape:
 - .1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; black colour.
- .4 Glazing splines: resilient silicone, extruded shape to suit glazing channel retaining slot, clear colour.
- .5 Glazing clips: manufacturer's standard type.
- .6 Lock-strip gaskets: to ASTM C 542.

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 EXAMINATION

- .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.

3.3 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.

3.4 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND TAPE)

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .5 Place glazing tape on free perimeter of glazing in same manner described.
- .6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .7 Knife trim protruding tape.

3.5 INSTALLATION: INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Cut glazing tape to length and install against permanent stops, projecting 1.6 mm above sight line.
- .3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .4 Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of light or unit.
- .5 Install removable stops, with spacer shims inserted between glazing and applied stops at 600 mm intervals, 6 mm below sight line.
- .6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.
- .7 Trim protruding tape edge.

3.6 INSTALLATION: INTERIOR - WET METHOD COMPOUND AND COMPOUND

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims at 600 mm centres, 6 mm below sight line.
- .3 Locate and secure glazing light using glazers' clips.
- .4 Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.7 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking.
- .3 Remove glazing materials from finish surfaces.
- .4 Remove labels after work is complete.
- .5 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.8 PROTECTION OF FINISHED WORK

- .1 After installation, mark light with an "X" by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

END OF SECTION

PART 1 GENERAL

.1

1.2 REFERENCES

- .1 The Aluminum Association Inc. (AAI)
 - .1 AAI DAF-45-2003, Designation System for Aluminum Finishes - 9th Edition.
- .2 Air Movement and Control Association International (AMCA)
 - .1 AMCA 500-D-98, Laboratory Methods of Testing Dampers for Rating.
 - .2 AMCA 500-L-99, Laboratory Methods of Testing Louvers for Rating.
 - .3 AMCA 501-03, Application Manual for Air Louvers.
 - .4 AMCA 511-99(R2004), Certified Ratings Program for Air Control Devices.
- .3 American National Standards Institute (ANSI)
 - .1 ANSI H35.1/H35.1M-06, Alloy and Temper Designation Systems for Aluminum.
- .4 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 167-99(2004), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A 1008/A 1008M-05b, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable.
 - .3 ASTM D 523-89(1999), Standard Test Method for Specular Gloss.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Shop Drawings:
 - .1 Indicate fabrication details, including anchorage, accessories, and finishes.
- .4 Samples:
 - .1 Where colour is not indicated, submit manufacturer's standard colours to Departmental Representative for selection.
- .5 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.
 - .1 Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.
- .6 Closeout Submittals:
 - .1 Provide operation and maintenance data for manual or motorized operated louvers for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.

- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .3 Deliver materials to the site in undamaged condition.
- .2 Storage and Protection:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Protect louvers from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .3 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 Stainless steel sheet: to ASTM A 167, type 316 with satin finish.
- .2 Nails and fasteners: same material as fabricated items.
- .3 Gaskets: vinyl.
- .4 Prefinished steel sheet.
- .5 Door louvers (LV-01):
 - .1 Construct door louvers from stainless steel minimum 18 ga. thick.
 - .1 No free area. Provide 18 ga. primed steel sheet to blank off the back of the louver, primed and painted.
 - .2 Provide fasteners to suit louver material.
 - .2 Use standard blades.
 - .3 Provide separate adjustable trim member for clamping louver in opening.
 - .4 Miter frame and trim members at corners and secure rigidly with corner brackets.
 - .5 Secure interior frame and blank off sheet with countersunk tamperproof screws.
- .6 Door louvers (LV-02):
 - .1 Construct door louvers from stainless steel minimum 18 ga. thick.
 - .1 Minimum free area of 35 %.
 - .2 Provide fasteners to suit louver material.
 - .2 Use standard blades.
 - .3 Security Mesh Barrier: 10/12 Gauge steel wire mesh primed and painted.
 - .4 Provide separate adjustable trim member for clamping louver in opening.
 - .5 Miter frame and trim members at corners and secure rigidly with corner brackets.
 - .6 Secure interior frame with countersunk tamperproof screws.

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

- .1 Install louvers where indicated.
- .2 Set adjustable louver blades for uniform alignment in open and closed positions.

- .3 Adjust louvres so moving parts operate smoothly.
- .4 Attach security screen to inside face of louver or vent.
- .5 Repair damage to louvres to match original finish.

3.3 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.4 PROTECTION

- .1 Paint copper or copper-bearing alloys in contact with dissimilar metal with heavy-bodied bituminous paint or separate with inert membrane.
- .2 Where aluminum contacts metal other than zinc, paint dissimilar metal with primer and two coats of aluminum paint.
- .3 Paint metal in contact with mortar, concrete, or other masonry materials with alkali-resistant coatings such as heavy-bodied bituminous paint.
- .4 Paint wood or other absorptive materials that may become repeatedly wet and in contact with metal with two coats of aluminum paint or coat of heavy-bodied bituminous paint.

END OF SECTION