

PART 1 - GENERAL

1.1 Related Requirements	.1	Section 08 71 00 - Door Hardware.
	.2	Section 08 80 00 - Glazing.
1.2 References	.1	ASTM International (ASTM).
	.1	ASTM A653/A653M-17, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
	.2	Canadian General Standards Board (CGSB)
	.1	CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
	.3	Canadian Standards Association (CSA)
	.1	CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
	.2	CSA W59-13, Welded Steel Construction (Metal Arc Welding).
	.4	Canadian Steel Door Manufacturers' Association (CSDMA)
	.1	CSDMA, Recommended Specifications for Commercial Steel Door and Frame Products 08 11 00, 2006.
	.5	Underwriters' Laboratories of Canada (ULC)
	.1	CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.
	.2	CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.
	.3	CAN/ULC S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
1.3 Action and Informational Submittals	.1	Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

-
- | | | |
|---|----|--|
| | .2 | Shop drawings: |
| | .1 | Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, arrangement of hardware, fire rating and finishes. |
| | .2 | Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings reinforcing, fire rating finishes. |
| | .3 | Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule. |
| <u>1.4 Delivery, Storage and Handling</u> | .1 | Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements. |
|
<u>PART 2 - PRODUCTS</u> | | |
| <u>2.1 Materials</u> | .1 | Hot dipped galvanized steel sheet: to ASTM A653/A653M, 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 A653/A653M, ZF75. |
| <u>2.2 Primer</u> | .1 | Rust inhibitive touch-up only. |
| <u>2.3 Accessories</u> | .1 | Thermal break: rigid polyvinylchloride (PVC) extrusion conforming to CGSB 41-GP-19M. |
| | .2 | 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. |
| | .3 | Metallic paste filler: to manufacturer's standard. |

-
- | | | |
|---|----|---|
| | .4 | Make provisions for glazing as indicated and provide necessary glazing stops. |
| 2.4 Air / Vapour Retarder Interface Sheet | .1 | Provide strip of air / vapour retarder material for tying door frames into wall air / vapour retarder as follows:
.1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
.2 Material width: adequate to provide required air tightness and vapour diffusion control to building air / vapour retarder from interior. |
-
- | | | |
|--------------------------------|----|--|
| 2.5 Frames Fabrication General | .1 | Fabricate frames in accordance with CSDMA specifications. |
| | .2 | Fabricate frames to profiles and maximum face sizes as indicated.
.1 Exterior frames: 1.6 mm thermally broken.
.2 Interior frames: all-welded, one-piece construction, fabricated from 1.6 mm thick sheet steel. |
| | .3 | Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware. |
| | .4 | Prepare frame for door silencers, 3 for single door, 2 at head for double door. |
| | .5 | Manufacturer's nameplates on frames and screens are not permitted. |
| | .6 | Conceal fastenings except where exposed fastenings are indicated. |
| | .7 | Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication. |

2.6 Frame Anchorage

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

2.7 Frames: Welded Type

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

- | | | |
|------------------------------------|----|---|
| <u>2.8 Thermally Broken Frames</u> | .1 | Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19M. |
| | .2 | Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break. |

PART 3 - EXECUTION

- | | | |
|--|----|---|
| <u>3.1 Manufacturer's Instructions</u> | .1 | Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets. |
| <u>3.2 Installation General</u> | .1 | Install labelled steel fire rated doors and frames in accordance with NFPA 80 except where specified otherwise. |
| | .2 | Install doors and frames in accordance with CSDMA Installation Guide. |
| <u>3.3 Frame Installation</u> | .1 | Prior to installation, remove temporary shipping spreaders. |
| | .2 | Set frames plumb, square, level and at correct elevation. |
| | .3 | Secure anchorages and connections to adjacent construction. |
| | .4 | Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary wood spreaders after frames are built-in. |
| | .5 | Make allowances for deflection of structure to ensure structural loads are not transmitted to frames. |

.6 Air/vapour retarder to frame connection.

.1 Door frames require connection to air/vapour retarder to maintain continuity of air/vapour retarder assembly. Connection may be achieved by either of the following methods:

.1 Install interface sheet between frame and wood blocking. Seal interface sheet to air/vapour retarder membrane or transition sheet as applicable.

.2 If installation of air/vapour retarder or transition membrane permits, extend air/vapour retarder or transition membrane between frame and wood blocking.

3.4 Finish Repairs

.1 Touch up with primer finishes damaged during installation.

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

3.5 Glazing

.1 Install glazing for doors frames in accordance with Section 08 80 00 - Glazing.

3.6 Schedules

.1 Refer to: Door / Window Schedule for types, sizes and location.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED
REQUIREMENTS

- .1 Section 08 71 00 - Door Hardware.
- .2 Section 08 80 00 - Glazing.

1.2 REFERENCES

- .1 National Fire Protection Association (NFPA).
 - .1 NFPA 252, Standard Method of Fire Tests of Door Assemblies, 2017 Edition.
- .2 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC-S104-10, Standard Method for Fire Tests of Door Assemblies.
- .3 Window & Door Manufacturers Association (WDMA).
 - .1 ANSI/WDMA I.S. 1A-04, Architectural Wood Flush Doors.

1.3 ACTION AND
INFORMATIONAL
SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet.
- .3 Shop Drawings: Indicate door types, sizes, face veneers, core construction, cutouts, and fire ratings.
- .4 Manufacturer's Instructions: Submit manufacturer's installation instructions.

1.4 DELIVERY,
STORAGE, AND HANDLING

- .1 Storage and Protection:
 - .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
 - .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
 - .3 Protect doors from scratches, handling marks and other damage.
 - .4 Store doors away from direct sunlight.

-
- | | | | |
|-----|----------|----|---|
| 1.5 | WARRANTY | .1 | Provide manufacturer's warranty for Work of this Section. |
|-----|----------|----|---|

PART 2 - PRODUCTS

- | | | | |
|-----|-------------|----|--|
| 2.1 | WOOD DOORS | .1 | Solid wood doors: ash species; prefinished with stain, of colour determined by Departmental Representative, and clear coat to suit location.
.1 Exterior doors: 57 mm thick.
.2 Interior doors: 45 mm thick. |
| | | .2 | Fire-rated wood doors: tested in accordance with CAN/ULC-S104 or NFPA 252 to achieve rating as scheduled. |
| 2.2 | GLAZING | .1 | Glass stops: flush hardwood type with mitred corners, of species to match face veneer. |
| 2.3 | FABRICATION | .1 | Bevel vertical edges of single acting doors as follows:
.1 Hinge side: 1.5 mm in 50 mm on hinge side.
.2 Lock side: no greater than 3 mm in 50 mm. |
| | | .2 | Clearances between top and vertical edges of doors and frame shall not exceed 3 mm when measured from pull face of door |
| | | .3 | Factory premachine doors to receive hardware listed in hardware schedule. |

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 ANSI/WDMA I.S. 1A.
- .2 Install doors in accordance with manufacturer's printed instructions.

3.3 CLEANING

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

END OF SECTION

PART 1 - GENERAL

- | | | |
|---------------------------------|----|--|
| <u>1.1 Related Requirements</u> | .1 | Section 08 11 00 - Metal Doors and Frames. |
| | .2 | Section 08 14 16 - Flush Wood Doors. |
| | .3 | Section 08 71 00 - Door Hardware. |
| | .4 | Section 09 91 23 - Painting. |
| <u>1.2 References</u> | .1 | ASTM International (ASTM). |
| | .1 | ASTM A653/A653M-15e1, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process. |
| | .2 | Builders Hardware Manufacturers Association(BHMA). |
| | .1 | ANSI/BHMA A156.1-2016, Butts & Hinges. |
| | .3 | Canadian General Standards Board (CGSB). |
| | .1 | CAN/CGSB-82.5-M88, Insulated Steel Doors. |
| | .4 | Canadian Standards Association (CSA). |
| | .1 | CSA 0132.4-M1980 (R1998), Hinged Exterior Wood Door Frames. |
| <u>1.3 Shop Drawings</u> | .1 | Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. |
| | .2 | Clearly show elevation; construction, thicknesses of materials, hardware and other relevant details and information. |

PART 2 - PRODUCTS

- | | | |
|--------------------------|----|---|
| <u>2.1 Door Assembly</u> | .1 | Door assembly: prehung door and frame assembly. |
| <u>2.2 Door</u> | .1 | Door: prime painted wood door, 45 mm thick, glazed panel embossed face. |
| | .2 | Styles and rails: wood. |
| | .3 | Glazing: insulating glass unit to CAN/CGSB-12.8; clear glass, Low-E, with argon; tempered interior and exterior lite. |

-
- | | | |
|------------------------|----|---|
| <u>2.3 Frames</u> | .1 | Frames: kiln-dried pine, finger-jointed, knot-free; to CSA 0132.4-M, pressure preservative treated. |
| | .2 | Clad frames with PVC. |
| <u>2.4 Hardware</u> | .1 | Hinges: to ANSI/BHMA A156.1, brass or bronze construction, standard bearing, minimum size 101 x 101. Finish: satin chrome/nickel. |
| | .2 | Weatherstripping: magnetic type. |
| | .3 | Sweep: vinyl bulb type. |
| | .4 | Threshold: aluminum clad with adjustable crown. |
| <u>2.5 Fabrication</u> | .1 | Assemble components in a secure, neat and workmanlike manner to ensure rigid well-fitted joints. |
| | .2 | Provide blocking in doors to accommodate hardware supplied by Section 08 71 00 - Door Hardware. |
| | .3 | Prehang door using three hinges. Install remaining hardware. |
| | .4 | Provide cut outs for other hardware as specified in Section 08 71 00 - Door Hardware. |

PART 3 - EXECUTION

-
- | | | |
|-------------------------|----|--|
| <u>3.1 Installation</u> | .1 | Install square, level and plumb in accordance with manufacturer's instructions. |
| <u>3.2 Schedules</u> | .1 | Sizes and locations of steel door assemblies are shown on Door / Frame Schedule located on drawings. |

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

- .1 Section 09 29 00 - Gypsum Board.
- .2 Section 21 05 01 - Mechanical General Requirements.
- .3 Section 23 05 54 - Mechanical Identification.

1.2 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit catalogue details for each type of access door and access hatch illustrating profiles, dimensions and methods of assembly.

1.3 Closeout Submittals

- .1 Provide maintenance data for cleaning and maintenance of stainless steel finishes for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 Delivery,
Storage and Handling

- .1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.
- .2 Leave protective covering in place until final cleaning of building.

PART 2 - PRODUCTS

2.1 Access Doors

- .1 All equipment and system components requiring servicing, inspection or adjusting must be easily accessible.

- .2 Where mechanical equipment or system components are concealed in furred ceilings or in walls or partitions access doors will be supplied by the Mechanical Trade Contractor for installation under the section erecting walls and ceilings.
- .3 All openings shall be sufficient size for both removal and maintenance of the concealed equipment sizes:
 - .1 Except as indicated otherwise, to be minimum sizes as follows:
 - (1) For body entry: 610mm x 610mm.
 - (2) For hand entry: 305mm x 305mm.
- .4 Non-rated flush access doors:
 - .1 Door: Fabricate using extruded aluminum frame with gypsum board inlay and structural nylon corner elements. The door is to be taped and finished consistent with the surrounding surface.
 - .2 Frame: Recessed aluminum frame provides edge similar to drywall bead against which wall or ceiling surface can be finished.
 - .3 Hinge: Concealed, two-point pin hinge, non-corroding. Allows door to open 120 degrees. Door can be removed.
 - .4 Latching/Locking Devices: Screwdriver cam latch - standard.
 - .5 Finish: Aluminum frames, gypsum board, nylon and aluminum cam latch. To receive the same finish and paint as the surrounding surface.
- .5 Manufacture each access panel assembly as an integral unit ready for installation.
- .6 Recessed Panel: Form face of panel to provide specified recess for application of finish material. Reinforce door as required to prevent sagging.
- .7 Furnish number of latches required to

hold door in flush smooth pane when closed.

- .8 Fire rated access doors shall be used where fire rated walls and ceilings must be penetrated or accessed.
- .9 Doors in block walls or in tile will be sized to suit the wall module.

2.2 Exclusions

- .1 Lay-in tile ceilings. In this instance, use unobtrusive identification locators. Refer to specification Section 23 05 54 Mechanical Identification.

PART 3 - EXECUTION

3.1 Location

- .1 Location: Ensure that equipment is clearly within view and accessible for operating, inspecting, adjusting, servicing without the need for special tools.
- .2 Access doors are not required where there is a removable acoustic tile ceiling.
- .3 The Mechanical Trade Contractor shall arrange and co-ordinate with the appropriate Trade Contractor to install any additional panels found necessary during the course of construction and commissioning.

END OF SECTION

PART 1 - GENERAL

<u>1.1 RELATED Requirements</u>	.1	Section 06 10 00 - Rough Carpentry.
	.2	Section 07 92 10 - Joint Sealing.
	.3	Section 08 80 00 - Glazing.
<u>1.2 REFERENCES</u>	.1	ASTM International (ASTM).
	.1	ASTM D4216-06, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds.
	.2	Canadian General Standards Board (CGSB).
	.1	CAN/CGSB-19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.
	.2	CAN/CGSB 79.1-M91, Insect Screens.
	.3	Canadian Standards Association (CSA).
	.1	AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS - North American Fenestration Standard / Specification for Windows, Doors, and Skylights.
<u>1.3 SHOP DRAWINGS</u>	.1	Clearly show all dimensions, material, profiles, complete glazing system; installation and anchorage details; hardware, colour and all other relevant details and information.
<u>1.4 TEST REPORTS</u>	.1	Submit test reports from approved independent testing laboratories, certifying that windows comply with the requirements of the standards specified herein.
<u>1.5 ENVIRONMENTAL CONDITIONS</u>	.1	Due to the particular characteristics of PVC, take extreme care when installing windows at temperatures below 5EC. In such circumstances, avoid impact to the frame and sash when working at these temperatures.
<u>1.6 MAINTENANCE DATA</u>	.1	Provide operation and maintenance data for cleaning and maintenance of windows for incorporation into maintenance manual.

1.7 WARRANTY

- .1 Contractor hereby warrants windows against air tightness, water tightness and for wind load resistance (in accordance with AAMA/WDMA/CSA 101/I.S.2/A440), defects, broken and loose hardware and malfunction under normal usage.
- .2 Leaking, fading and discoloration, deforming and faulty operation of hardware shall be judged as defective work.

PART 2 - PRODUCTS

2.1 NARROW PROFILE
WINDOWS

- .1 Windows (awning, casement & fixed): extruded PVC; reinforced to accommodate window size.
- .2 Frames:
 - .1 Multi-chamber extrusion, minimum 83 mm wide; 2.2 mm wall thickness.
 - .2 Include frames with 45-minute fire protection rating. Refer to drawings for locations.
- .3 Operation: Type A & B - fixed; Type C - combination casement-unit upper sash and awning lower sash.
- .4 Colour: White.

2.2 HARDWARE

- .1 Hinge: stainless steel.
- .2 Operator: roto-gear operator, colour to match frame.
- .3 Locking handles: die-cast, colour to match frame.

2.3 MATERIALS

- .1 Polyvinyl Chloride (PVC): high impact resistant rigid PVC; to ASTM D4216.
- .2 Glass stops: PVC, snap-in screwless type.
- .3 Fasteners: Series 300 stainless steel; all of sufficient strength to perform the function for which they are intended.
- .4 Glazing splines: extruded EPDM of Durometer appropriate for the function.

-
- | | | |
|-----------------|-----|--|
| | .5 | Sealant: silicone, to CAN/CGSB-19.13-M, classification MCG-2-40-B-L. |
| | .6 | Screens: to CAN/CGSB 79.1-M, Type 2, Class C, Style 2, Black colour, 18 x 14 mesh; extruded aluminum frame of colour to match window frame. |
| 2.4 TRIM | .1 | Trim: snap-in extruded PVC, of profile indicated; size as required; finish to match frame. |
| | .2 | Provide the following trim: nailing flange, sill, extension profile, brick mould. |
| 2.5 FABRICATION | .1 | Shop drawings shall be reviewed before any fabrication begins. |
| | .2 | Shop fabricate and fit all components in accordance with details and reviewed shop drawings. |
| | .3 | Build units square, true, accurate to size, free from distortions, waves, twists, buckles and other defects detrimental to appearance and performance. |
| | .4 | Construct units to size and shapes indicated. Joints to be accurately cut, fitted, assembled and fusion welded to provide neat, weathertight joinery. |
| | .5 | Drain glazing cavity to outside where possible. |
| | .6 | Snap-in trim as required. |
| | .7 | Prepare frame and sash to accommodate glazing as specified in Section 08800. |
| | .8 | Reinforce horizontal mullion above vent to carry load of sealed unit above. |
| | .9 | Equip each operating unit with the following hardware: two friction arms, one roto gear operator and two locking handles. |
| | .10 | Attach screens to interior side using screws. |

2.6 PERFORMANCE
REQUIREMENTS

- .1 Performance: narrow profile windows to comply with requirements of AAMA/WDMA/CSA 101/I.S.2/A440. Classification as listed below.
 - .1 Fixed unit: minimum R-PG40FW; CAI=A2
 - .2 Awning: minimum R-PG40A; CAI=A2
 - .3 Casement: minimum R-PG40C; CAI=A2

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install work plumb, square, level, free from warp, twist and superimposed loads, and in accordance with manufacturer's instructions.
- .2 Properly locate windows in rough opening using shims. Shims should provide for needed expansion on all four sides of window unit. Place shims at locations of fastener holes on window.
- .3 Ensure there is no restriction of the linear expansion and contraction of windows. Accordingly, the joint between the window and rough opening must have an adequate tolerance.
- .4 Provide nailing fin or installation strap, as recommended by manufacturer, for anchoring of window. Fasten through fin or strap using screws.
- .5 Space fasteners at 500 mm o.c., keeping a minimum 200 mm from corners and joints. If possible, fasten close to hinge on operating windows.

3.2 GLAZING

- .1 Glaze windows in the fabrication shop using appropriately sized glazing spline. Site glazing will be allowed when circumstances dictate.
- .2 Apply silicone sealant to outside spline channel groove corners. Install glazing spline, taking care not to stretch it, and seal corners with silicone.

- .3 Place setting blocks a minimum of 100 mm from corners of insulated glazing unit, in locations recommended by window manufacturer, and secure to sash or frame with clear silicone sealant.
- .4 Centre glazing unit in opening. Allow a minimum of 5 mm between edge of glazing unit and inside edge of sash or frame and place glazing unit on setting blocks. Ensure that metal surround is not exposed above stop.
- .5 Install interior glazing stop with glazing spline inserted.

3.3 CAULKING

- .1 Prepare joint and apply sealant in accordance with Section 07 92 10 - Joint Sealing.
- .2 Caulk joints between members and other non-operating components with sealant to provide weathertight seal at outside and air seal at inside.

END OF SECTION

PART 1 - GENERAL

1.1 Related
Requirements

- .1 Section 01 61 00 - Common Product Requirements.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 08 11 00 - Metal Doors & Frames.
- .5 Section 08 14 16 - Flush Wood Doors.
- .6 Section 26 27 26 - Wiring Devices.

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 American National Standards Institute (ANSI) and Builders Hardware Manufacturers Association (BHMA).
 - .1 ANSI / BHMA A156.1, Butts and Hinges.
 - .2 ANSI / BHMA A156.2, Bored and Preassembled Locks and Latches.
 - .3 ANSI / BHMA A156.3, Exit Devices.
 - .4 ANSI / BHMA A156.4, Door Controls (Closers).
 - .5 ANSI / BHMA A156.6, Architectural Door Trim.
 - .6 ANSI / BHMA A156.8, Door Controls - Overhead Holders.
 - .7 ANSI / BHMA A156.14, Sliding and Folding Door Hardware.
 - .8 ANSI / BHMA A156.15, Closer/Holder Release Device.
 - .9 ANSI / BHMA A156.16, Auxiliary Hardware.
 - .10 ANSI / BHMA A156.17, Self-closing Hinges and Pivots.
 - .11 ANSI / BHMA A156.18, Materials and Finishes.
 - .12 ANSI / BHMA A156.21, Thresholds
 - .13 ANSI / BHMA A156.22, Door Gasketing Systems

- .14 ANSI / BHMA A156.28, Keying Systems
- .15 ANSI / BHMA A156.31, Electric Strikes

1.3 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 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware legend number,
 - .3 After approval samples will be returned for incorporation in the Work.
- .3 Hardware List:
 - .1 Submit a door hardware schedule by a certified Architectural Hardware Consultant (AHC).
 - .2 Indicate specified hardware cross referencing the legend codes and include make, model, material, function, size, finish and other pertinent information.
 - .3 As part of the "hardware list" provide a point to point wiring diagram for all electronic hardware sets.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 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.

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 The Hardware supplier must have a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) in good standing, as full-time staff in their local branch.
- .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 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
 - .1 Store finishing hardware in locked, clean and dry area on shelving and off the floor.

- | | | |
|--|----|---|
| <u>1.6 Waste Disposal and Management</u> | .1 | Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal. |
| | .2 | Remove from site and dispose of packaging materials at appropriate recycling facilities. |
| | .3 | Dispose of corrugated cardboard polystyrene plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program. |
| <u>1.7 Maintenance</u> | .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

- | | | |
|---------------------------|----|--|
| <u>2.1 Hardware Items</u> | .1 | Use one manufacturer's products only for similar items. |
| <u>2.2 Door Hardware</u> | .1 | Butt and continuous hinges: |
| | .1 | Butt: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Legend. |
| | .1 | Provide non-removable pins (NRP) on all lockable out swinging doors. |
| | .2 | All hinges shall be five knuckle ball bearing type, size and quantity as per manufacturer's recommendations. |
| | .2 | Spring Hinges: to ANSI/BHMA A156.17, meets NFPA80 standard for 3 hour fire doors, finished to 26D. |
| | .2 | Locks and latches: Locks & cylinders shall be of the same manufacturer. |
| | .1 | Bored and preassembled locks and latches: to ANSI/BHMA A156.2, series 4000 bored lock, grade 1, designed for function c/w cylinder and keyed to the existing system. |
| | .1 | Lever handles: plain design, contour angle return. |

- .2 Roses: round 3" convex
- .3 Exit devices: to ANSI/BHMA A156.3, type, function, grade 1 & style as listed in Hardware Legend, finished to 630.
- .4 Door Closers and Accessories:
 - .1 Door controls (closers): to ANSI/BHMA A156.8
 - .2 Door controls (overhead holders): to ANSI/BHMA A156.8, designated by letter C and numeral identifiers listed in Hardware Schedule, finished to 630 on exterior doors & 652 on interior doors.
- .5 Electric strikes to ANSI/BHMA A156.31 finished to 630.
 - .1 Electric Strikes shall meet ANSI/UL 1034 endurance and force grade 1 standard, stainless steel housing, keeper and face plate, fail secure 24vdc unless stated otherwise, continuous duty & fire rated for fire rated openings.
- .6 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers listed in Hardware Legend, finished to 630.
 - .1 Door protection plates: kick plate type J102, 1.27 mm thick stainless steel with 3 bevelled edges, 38 mm less than the door width (LDW) on single doors and 25.4mm LDW on pairs, finished to 630.
 - .2 Push/Pull units: type, material and size as listed in Hardware Legend, finished to 630.
- .7 Sliding and folding door hardware: to ANSI/BHMA A156.14, designated by letter D and numeral identifiers listed in Hardware Legend.
 - .1 Bi-passing sliding door hardware: double leg steel tack with fascia and hangers, as listed for door weight.
 - .2 All sets packed complete with fasteners as required.
- .8 Auxiliary hardware: to ANSI/BHMA A156.16, designated by letter L and numeral identifiers listed in Hardware Schedule finished to 26D or 32D.

- .9 Thresholds:
 - .1 Saddle type: 127 mm wide x 12.7 mm high x full width of door opening, extruded aluminum mill finish, serrated surface.
 - .2 Saddle type w/bumper 127 mm wide x 19 mm high overall x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and neoprene door seal insert.
- .10 Smoke, Weather & Sound Gasket:
 - .1 Head and jamb seal:
 - .1 Extruded aluminum frame and silicone insert type W2 in the Hardware legend is to have the extrusion dimensions of 38.1 mm wide x 6.35 mm high and designed to provide full perimeter seal compatible with parallel arm closers and exit device strikes, clear anodized 628 finish.
 - .2 Adhesive backed, bulb type, silicone material.
 - .2 Door bottom seal:
 - .1 Sweep: Extruded aluminum frame and nylon brush sweep, clear anodized 628 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 All cylinders shall have interchangeable cores, construction and master keyed as directed to the existing system. Prepare detailed keying schedule in conjunction with Departmental Representative.
 - .2 Provide the following keys & cores;
 - .1 1 key for every lock in this contract.
 - .2 6 construction keys
 - .3 3 master keys
 - .4 12 keyed construction cores.
 - .5 1 control key.
 - .3 Stamp keying code numbers on keys and cylinders.
 - .4 Send all permanent cores and keys via courier to 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 Exterior doors having W2 stop applied weatherstrip; install the weatherstrip in one continuous uninterrupted piece across the head and down each jamb. Install parallel closer arm shoes and surface strikes on top of the weatherstrip extrusion.
- .4 Install the H3 spring hinge in the center location and adjust to bring the door in the closed but not latched position.
- .5 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.
- .6 Upon completion, remove construction cores when directed by Departmental Representative, 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 manufacture'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.
 - .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.
- 3.6 Legend .1 Hinges:
- .1 Butt type
 - .1 H1 A5111, non-ferrous, heavy weight, 26D
 - .2 H1A A8111, ferrous, heavy weight, 26D
 - .3 H2 A5112, non-ferrous, standard weight, 26D
 - .4 H2A A8112, ferrous, standard weight, 26D
 - .5 H3 set consisting of 1-K81071F & 2- A5112, 26D.
 - .2 Locks & Latches:
 - .1 Cylindrical, Grade 1
 - .1 L1 F86 Storeroom, 626
 - .2 L1A F75 Passage, 626
 - .3 L1B F76 Privacy, 626
 - .4 L1C F109 Entrance, 626
 - .3 Exit Devices
 - .1 Rim, Type 1,
 - .1 E1 08, Lever x Cyl x Cyl., 630.
 - .4 Push & Pulls; Combination
 - .1 P1
 - .1 J501 Push Bar, 25.4mm dia. x 101mm LDW, 630
 - .2 J402 Pull, offset, 25.4 x 229mm, 630
 - .5 Closers and Operators;
 - .1 Closers, Heavy Duty, Grade 1
 - .1 C1 C02021, push side -CS HD Parallel Arm w/ stop, 689.

- .2 Closers, Standard Duty, Grade 1
 - .1 C2 CO2021, push side, Parallel Arm, 689.
 - .2 C2A CO2011, pull side, Standard Mount, 689.
- .6 Stops and Holders;
 - .1 Overhead Type
 - .1 S1 CO2541, Stop, Type 2, Surface, 630/652.
 - .2 Floor
 - .1 S2 L12161, Dome, high or low to suit, 26D.
 - .3 Wall Type
 - .1 S3 L52101, Convex, 32D.
 - .2 S3A L52251, Concave, 32D.
- .7 Thresholds and Gasket;
 - .1 Sweeps
 - .1 W1 R3A335, x door width, 628
 - .2 Gasket
 - .1 W2 R3E165, x 3 sides, 628
 - .2 W2A ROE154/5, x 3 sides, C.
 - .3 Thresholds
 - .1 W3 J36130, w/Stop, 127mm W. x 19mm H., 719
 - .2 W J32100, Flat, Saddle 425, 127mm W x 12.7mm H., 719.
- .8 Plates;
 - .1 Kick Plates
 - .1 K1 J102, Kick, 127mm high, 630.
 - .2 K1A J102, Kick, 914mm High, 630.
- .9 Miscellaneous;
 - .1 Sliding Door Hardware Sets
 - .1 M1
 - .1 D8751 Track, Qty 1- 36kg w/ valance x opening width
 - .2 D8731 Hangers, Qty 2- 54kg
 - .3 D8451 Guide, Qty 1- parallel door floor guide
 - .4 D8771 Stops, Qty 2- track applied heavy duty type
 - .5 D0781 Pulls, Qty 2- flush type 40mm

- .2 Electronic Hardware Sets;
 - .1 EH1; for single doors with card access.
 - .1 Card Reader: by access control provider.
 - .2 Power Supply: by access control provider.
 - .3 Electric Strike: Grade 1 to suit jamb & lock.

3.7 Schedule

Location	Door No.	Fire Rating	Hinges/Pivots	Locks & Latches	Exit Devices	Push & Pulls	Closers	Stops & Holders	Kickplates	Sweeps & Bottoms	Gasket	Thresholds	Miscellaneous	Electronics	Remarks
Exterior															
Main Ent.	101		H1	L1			C1		K1	W1	W2	W3		EH1	Card entry
Rear Entrance	106a		H2	L1			C1		K1	W1	W2	W3			
First Floor															
Water Ent.	101a												M1		Bypass doors
Electrical	101b												M1		Bypass doors
Vestibule	101c		H1A			P1	C1		K1						
PPE Storage	103		H2A	L1A				S1							
PPE Storage	103a		H2A	L1A				S1							
WR	105		H3	L1B				S1							
Training Rm.	106		H2A	L1A				S2							
Office	107		H2A	L1C				S2							
BF WR	108		H3	L1B				S1							
Electrical Rm	109	45	H2A	L1A			C2		K1A		W2A				
Second Floor															
Stair 200	201	45	H1A	L1A			C2A	S3	K1A						
Living Space	202		H2A	L1A				S2							
Service Room	202a	45	H2A	L1			C2	S3	K1A		W2A				
Ext. Terrace	202b		H2	L1C			C1		K1	W1	W2	W3			
Ext Terrace	202c														By door supplier.
WR	203		H2A	L1B				S3A							
Bedroom	204		H2A	L1C				S1							
Bedroom	205		H2A	L1C				S3A							
Exterior Exit	206		H2	L1			C1		K1A	W1	W2	W3			
Bedroom	207		H2A	L1C				S3A							
Bedroom	208		H2A	L1C				S1							

End of Section

PART 1 - GENERAL

- | | | |
|---------------------------------|----|---|
| <u>1.1 Related Requirements</u> | .1 | Section 07 92 10 - Joint Sealing. |
| | .2 | Section 08 53 00 - PVC Windows: glass and glazing of PVC windows. |
| <u>1.2 References</u> | .1 | ASTM International (ASTM). |
| | .1 | ASTM C920-14, Specification for Elastomeric Joint Sealants. |
| | .2 | Canadian General Standards Board (CGSB) |
| | .1 | CAN/CGSB-12.1-2017, Tempered or Laminated Safety Glass. |
| | .2 | CAN/CGSB 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing. |

PART 2 - PRODUCTS

- | | | |
|-----------------------------|----|---|
| <u>2.1 Glass</u> | .1 | Safety glass: to CAN/CGSB-12.1, Type 1 - laminated, or Type 2 - tempered Class B. |
| | .2 | Exterior doors and non-rated windows: insulating vision glass units, to CAN/CGSB-12.8, double unit, 25 mm overall thickness.' |
| | .1 | Glass: to CAN/CGSB-12.1, CAN/CGSB-12.3 and CAN/CGSB-12.10. |
| | .2 | Glass thickness: 6 mm each lite. |
| | .3 | Glass coating: surface number 2, low "E" 366. |
| | .4 | Inert gas fill: argon. |
| | .5 | Inner and outer lites to be tempered glass. |
| | .6 | Heat strengthened glass to be used when lites exceed 1500 mm in any direction. |
| | .3 | Exterior window with 45-minute fire-protection rating: insulating glass units, to CAN/CGSB-12.9, double unit. |
| | .1 | Transparent wireless glass ceramic fire-rated glazing for exterior windows. |
| | .2 | Thickness: 5 mm. |
| | .3 | Weight: 2.5 kg/m ² . |
| <u>2.2 Glazing Material</u> | .1 | Acrylic sealant: to CAN/CGSB 19-GP-5M. |

- .2 Sealant: silicone, to ASTM C920, Type S, Grade NS, Class 35, uses NT, G, M, A and O.
- .3 Glazing tape: polyisobutylene; shimmed or unshimmed.

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.

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 Wood Installation

- .1 Check opening before glazing to make certain it is square, plumb and secure.
- .2 Apply bead of acrylic sealant between fixed stop and glass, and to form bedding for glass.

- .3 Set in glass, and secure with removable stop. Butter removable stop with acrylic sealant before securing.
- .4 Remove excess from glass and stop before it sets.

3.4 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.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.5 Glazing Schedule

- .1 Supply and install glass for the following items. Refer to door schedule for door and frame type, glass type and fire ratings used for this project.
- .2 Nonfire-rated:
 - .1 Hollow steel borrowed lite and frames: 6 mm thick safety glass.
- .3 Exterior doors and non-rated windows: insulating glass units.
- .4 Windows with 45-minute fire-protection rating: insulating glass units with ceramic glass.

END OF SECTION

