

PART 1 GENERAL

1.1 Section Includes

- .1 Non-rated and fire rated rolled steel frames.

1.2 Related Sections

- .1 Section 079200 – Joint Sealers.
- .2 Section 081113 - Standard Steel Doors.
- .3 Section 087100 - Hardware.
- .4 Section 088000 - Glazing.
- .5 Section 099120 - Painting: Field painting of frames

1.3 References

- .1 Canadian Steel Door and Frame Manufacturers Association - Manufacturing Standard for Steel Doors and Frames.
- .2 Canadian Steel Door and Frame Manufacturers Association - Manufacturing Specifications for Steel Doors and Frames.
- .3 Canadian Steel Door and Frame Manufacturers Association - Canadian Fire Labelling Guide for Steel Doors and Frames.
- .4 Canadian Steel Door and Frame Manufacturers Association - Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .5 NFPA No. 80 - Fire Doors and Windows.
- .6 NFPA 252 - Fire Tests for Door Assemblies.
- .7 ULC - List of Equipment and Materials, Volume 2.

1.4 Quality Assurance

- .1 Conform to requirements of Canadian Steel Door and Frame Manufacturers Association standards.
- .2 Fire rated frame construction to conform to ULC, NFPA 252.
- .3 Installed frame assembly to conform to NFPA No. 80 for fire rated class indicated in schedule.

1.5 Regulatory Requirements

- .1 Conform to applicable codes for fire rated frames.

1.6 Shop Drawings and Product Data

- .1 Submit shop drawings and product data to requirements of Section 013400.
- .2 Indicate on shop drawings, frame configuration, anchor types, and spacing, location of cut-outs for hardware, reinforcement, and finish.

1.7 Installation Instructions

- .1 Submit manufacturer's installation instructions to requirements of Section 016000.

1.8 Delivery, Storage and Handling

- .1 Deliver products to site to requirements of Section 016000.
- .2 Store and protect products to requirements of Section 016000.

PART 212 PRODUCTS

2.1 Acceptable Manufacturers

- .3 Shanahan's Manufacturing Ltd.
- .2 Steldor Ltd.
- .3 S.W. Fleming Ltd.
- .4 Baron Metal Industries Ltd.

2.2 Frames/Material

- .1 Exterior Frames: 1.5 mm thick material, core thickness appropriate to grade and model of door.
 - .2 Interior Frames: 1.5 mm thick material, core thickness appropriate to grade and model of door.
 - .3 Provide fire-rated metal frames (1-hr rating) to metal doors at mechanical room, compressor room, electrical room, janitor's room and store room, where rooms are located on plan.
 - .4 Sheet steel: commercial grade steel to ASTM A366-72, Class 1, finished to ASTM A526 W25, wiped zinc finish.
- .1 Frames: 16 gauge base thickness.
 - .2 Floor anchors, channel spreaders and wall anchors: min. 1.6 mm base thickness steel.
 - .3 Guard Boxes: minimum 0.8 mm base thickness steel
 - .4 Glazing stops: minimum 1/16" base thickness steel, screw fixed.
 - .5 Reinforcing channel: to CSA G40.21-M1978, Type 300W.
 - .6 Door bumpers: black neoprene single stud.
 - .7 Primer: to CGSB 1-GP-181M + Amdt-latest edition.

2.3 Accessories

- .1 Glazing Stops: Rolled steel channel shape, mitred corners; prepared for countersink style screws.
- .2 Bumpers: Resilient rubber.

2.4 Protective Coatings

- .1 Primer: Zinc chromate type.

2.5 Fabrication

- .1 Fabricate frames as welded unit.
- .2 Provide metal Z shaped astragals for double doors.
- .3 Fabricate frames with hardware reinforcement plates welded in place.
- .4 Reinforce frames wider than 1200 mm with roll formed steel channels fitted tightly into frame head, flush with top.
- .5 Prepare frame for silencers. Provide three single silencers for single doors on strike side, and two single silencers on frame head at double doors without mullions.
- .6 Attach fire rated label to each frame unit.
- .7 Fabricate frames to CSDFMA standards and as specified herein. Fabricate frames as detailed, to Canadian Steel Door and Frame Manufacturer's Association, "Canadian Manufacturing Specifications for Steel Doors and Frames"; except where specified otherwise.
- .8 Interior and exterior frames of 1.5 mm thick steel mitred and continuously welded on inside of profile. Grind welded joints to smooth uniform finish.
- .9 Provide drywall return on frames installed in drywall partitions.
- .10 Glazed openings: glazing bead, formed channel, minimum 16 mm high, accurately fitted at

- corners and fastened to frame sections with counter-sunk oval head sheet metal screws at 450 mm maximum centers, 50 mm from each end.
- .11 Butt joints of mullions and transoms: accurately cope, securely weld and grind smooth.
 - .12 Blank, reinforce, drill and tap for mortised butts and strike. Protect cut-outs with guard boxes. Reinforce for surface mounted hardware. Prepare each door for rubber bumpers, three for single door openings and two for double door openings set in head of frame.
 - .13 Top hinge reinforcement: Weld top hinge reinforcement to face of frame.
 - .14 Insulation: provide insulation where scheduled to frame cavities excluding open perimeter. Insulation to be equal to 2 kg density rigid fiberglass board; standard of acceptance AF545.
 - .15 Weld in two channel spreaders per frame to ensure proper frame alignment.
 - .16 Drill and tap for surface applied hardware.
 - .17 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
 - .18 Touch up frames with primer where galvanized finish damaged during fabrication.
 - .19 Provide adjustable jamb anchors for fixing at floor.
 - .20 Construct thermally broken frames using steel core, separating exterior portion of frame from interior portion with polyvinyl chloride thermal breaks.
 - .21 Install 1.6 mm base thickness steel frames to interior openings and openings 1200 mm or less in unsupported width.
 - .22 Install 2.0 mm base thickness steel frames to exterior openings and openings over 1200 mm unsupported width.

2.6 Finish

- .1 Wipe coated galvanize.
- .2 Coat inside of frame profile with bituminous coating at masonry walls.

PART 324 EXECUTION

3.1 Installation

- .1 Install frames in accordance with Canadian Steel Door and Frame Manufacturers Association standards.
- .2 Co ordinate with wall construction for anchor placement.
- .3 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.2 Tolerances

- .1 Maximum Diagonal Distortion: 1.5 mm measured with straight edge, corner to corner.

END OF SECTION

PART 1 GENERAL

1.1 Section Includes

- .1 Non-rated and fire rated rolled steel doors.
- .2 Schedule at end of section 087100.

1.2 Related Sections

- .1 Section 079200 – Joint Sealers.
- .2 Section 081112 - Standard Steel Frames.
- .3 Section 087100 - Hardware.
- .4 Section 088000 – Glazing.
- .5 Section 099120 - Painting: Field painting of doors.

1.3 References

- .1 Except as otherwise specified, comply with requirements of Canadian Manufacturing Standards for Steel Doors and Frames published by Canadian Steel Door and Frame Manufacturers' Association.
- .2 ASTM A653M-96 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot Dip Process
- .3 Canadian Steel Door and Frame Manufacturers Association - Manufacturing Specifications for Steel Doors and Frames.
- .4 Canadian Steel Door and Frame Manufacturers Association - Canadian Fire Labelling Guide for Steel Doors and Frames.
- .5 Canadian Steel Door and Frame Manufacturers Association - Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .6 CGSB 82-GP-5M - Doors, Insulated, Steel.
- .7 NFPA No. 80 - Fire Doors and Windows.
- .8 NFPA No. 252 - Fire Tests for Door Assemblies.
- .9 ULC - List of Equipment and Materials, Volume 2.

1.2 Product Options and Substitutions

- .1 Refer to Division 1 for requirements pertaining to product options and substitutions.

1.3 Fire Rated Doors

- .1 Provide doors produced under label service program of a testing agency acceptable to authorities having jurisdiction.
- .2 Doors to bear testing agency label indicating following:
 - .1 At standard size openings: fire endurance rating.
 - .2 At oversized openings: unclassified as to fire rating.

1.4 Shop Drawings

- .1 Submit shop drawings in accordance with Division 1.
- .2 Clearly indicate each type of door, material, metal thicknesses, mortises, reinforcements, location of exposed fasteners and special features.
- .3 Reference door types to door schedule. Indicate door numbers where applicable.

PART 2 PRODUCTS

2.1 Acceptable Manufacturers

- .1 Shanahan's Manufacturing Ltd.
- .2 Steldor Ltd.
- .3 S.W. Fleming Ltd.
- .4 Baron Metal Industries Ltd.

2.2 Materials

- .1 Doors to be 18 ga., fully welded, reinforced steel.
- .2 Sheet steel: 18 ga. Base thickness, commercial grade steel to ASTM A366-72, Class 1, finished to ASTM A526 (1975) W25, wiped zinc finish.
- .3 Glazing stops: Minimum 1/16" base thickness sheet steel with W25 (wiped) zinc finish to ASTM A525-80a, screw fixed.
- .4 Door core: To ULC Standards.
 - .1 Hollow steel: Vertically stiffened with steel ribs and all voids filled with semi-rigid fibrous insulation, minimum density 24 kg/cu. m.
- .5 Primer: For touch-up to CGSB 1-GP-181M + Amdt – Latest Edition.

2.3 Fabrication

- .1 Fabricate steel doors as detailed, in accordance with Canadian Steel Door and Frame Manufacturer's Association "Canadian Manufacturing specifications for Steel Doors and Frames", Latest Edition, for hollow steel construction, except where otherwise specified.
- .2 Mortise, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by finish hardware supplier.
- .3 Make provisions for louvers and glazing if requested by Owner and provide necessary glazing stops.
- .4 Construct rail and stile doors in same manner as flush door.
- .5 Construct matching panels in same manner as doors.
- .6 Touch-up doors with primer where galvanized finish damaged during fabrication.

2.4 Finish

- .1 Primer: Wipe coat galvanize.

2.5 Component Parts

- .1 Thickness of component parts as follows unless otherwise specified.
 - .1 Door lock reinforcements: 1.6 mm.
 - .2 Hinge reinforcement: 2.7 mm with top hinge provided with additional reinforcement between hinge template and face of door or frame.
 - .3 Flush bolt reinforcements: 1.6 mm.
 - .4 Reinforcements for surface applied hardware: 1.2 mm
 - .5 Glass mouldings, non-fire rated doors: either snap-on type aluminum or formed steel, screw-fixed or snap-on type, 0.9 mm.
 - .6 Glass mouldings, fire rated doors: formed steel 0.9 mm.
 - .7 Mortar guard boxes: 0.8 mm.
 - .8 Glazed opening reinforcing: 0.9 mm.
 - .9 Jamb spreaders: 1.2 mm.
 - .10 Door end channels: 1.2 mm.

- .11 Astragals: 1.9 mm.
- .2 Glazing stops: minimum 1 mm base thickness sheet steel with W25 (wiped) zinc finish to ASTM A525-80a screw fixed.
- .3 Primer: for touch up to CGSB 1-GP-181M--Amdt-Mar-78.
- .4 All exterior glazed doors to have sealed tempered insulated glass units as per specification Section 08800.

2.6 Door Construction

- .1 Doors:
 - .1 Door to be as manufactured by S.W. Fleming Ltd., or approved equal.
 - .2 Doors to be fabricated as follows:
 - .1 Exterior Doors: To be 1-3/4" thick of not lighter than 18 US ga. wipe coat galvanized steel reinforced doors with continuous 20 ga. min. vertical stiffeners, placed 6" o.c. and welded 6" o.c. max. Insulate doors with fiberglass AF rigid insulation or approved equal. Core material of rigid polyurethane to provide minimum RSI-1.9. Securely bond core material to inside face of both surface sheets. In other respects, these doors to be as specified in this Section.
 - .2 Interior Doors: To be 1-3/4" thick and not lighter than 18 US ga. wipe coat galvanized steel. Doors to be stiffened, insulated and sound deadened with expanded small cell honeycomb core, completely filling inside of door and laminated to inside of door and inside faces of panels with U.S. approved adhesive.
 - .3 Doors to be flush with no face seams.
 - .4 Doors to have vertical, mechanically interlocking seams on hinge and lock edges.
 - .1 All doors to have exterior sheets spot welded at following points:
 - .1 Top and bottom of door on lock edge.
 - .2 Above and below lock preparation.
 - .3 Above and below each hinge on doors' hinge edge.
 - .5 Doors to have 18 ga. steel and channels projection welded to top and bottom of door.
 - .6 Doors to be reinforced for surface-mounted closers or holders.
 - .7 Doors to be mortised, reinforced, drilled and tapped for three template hinges, standard cylinder lock or blank reinforced for push/pull or rim panic.
 - .8 Exterior doors to be provided with steel top caps.
 - .9 Doors to have high frequency angle top hinge reinforcement.
 - .10 Finishing: all doors to be cleaned and sanded, flood coated with air drying paste filler and again sanded to eliminate all unevenness or irregularities.
 - .11 Painting: Prime finish: provide one coat of baked on rust inhibitive primer as recommended by manufacturer. Finish paint by others.
 - .12 Finish Painting: door finish to be wipe coat galvanized steel as per ASTM D2247.
 - .13 Fabricate steel doors as detailed, in accordance with Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames", 1978 for hollow steel honeycomb-core construction except where specified otherwise.
 - .14 Glazed doors: reinforce openings with 0.9 mm thick channel before applying stops and trim.
 - .15 Construct rail and stile doors in same manner as flush doors.

2.7 Labeled Fire Doors

- .1 Provide labeled doors and frames constructed in manner tested and approved by U.L.C or W.H.I. for openings requiring fire protection ratings. For metal doors to mechanical, compressor, electrical, janitorial and storage rooms, where rooms are located on plan, provide 1-hr. rating.

PART 3 EXECUTION

3.1 Installation

- .1 Install doors and hardware in accordance with templates and manufacturer's instructions. Maximum permissible warp of 3 mm measured diagonally across door.
- .2 Adjust operable parts for correct function.
- .3 Apply hardware to Class 'A' fire rated doors prior to delivery.

3.3 Adjusting and Cleaning

- .1 Adjust hardware for smooth and balanced door movement.

END OF SECTION

PART 1 GENERAL**1.1 Section Includes**

- .1 Electric overhead sectional door.
- .2 Pre-painted galvanized steel panels.
- .3 Operating hardware and supports.

1.2 Related Sections

- .1 Section 055000 - Metal Fabrications: Steel channel frame for door opening.
- .2 Section 087100 - Hardware: Lock cylinders.

1.3 References

- .1 ASTM A446 - Steel Sheet, Zinc-Coated Galvanized by the Hot Dip Process, Structural Physical Quality.
- .2 ASTM A526 - Steel Sheet, Zinc-Coated Galvanized by the Hot Dip Process, Commercial Quality.
- .3 ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- .4 ASTM B221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- .5 CSA HA Series M - CSA Standards for Aluminum and Aluminum Alloys.
- .6 NEMA - National Electrical Manufacturer's Association.
- .7 ANGI A216.1-1977 NAGDM 102-1976; NAGDM 101-1975.

1.4 System Description

- .1 Panels: Flush steel insulated panels 50 mm thick.
- .2 Heavy duty lift track and hardware. High vertical lift system where possible.
- .3 Electric operation: 3/4 H.P. motor.

1.5 Quality Assurance

- .1 Manufacturer: Company specializing in overhead door construction with three years minimum documented experience.
- .2 Applicator: Company specializing in installing overhead doors with three years documented experience approved by manufacturer.

1.6 Shop Drawings and Product Data

- .1 Submit shop drawings and product data to requirements of Section 013300.
- .2 Indicate on shop drawings, opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations and installation details.
- .3 Provide product data on operating components; describing characteristics.

1.7 Installation Instructions

- .1 Submit manufacturer's installation instructions to requirements of Section 016000.

1.8 Operation and Maintenance Data

- .1 Submit operation and maintenance data under provisions of Section 017900.
- .2 Include data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, spare part sources.

PART 2 PRODUCTS**2.1 Materials / Performance**

- .1 Size – as per drawings. Thickness 51 mm (2")
- .2 Exterior Skin: 24 gauge galvanized steel, ribbed exterior surface, white baked on polyester.
- .3 Interior Skin: 26 gauge galvanized steel, white baked on polyester.
- .4 High-impact polystyrene insulation (R min. = 1.29 W/sqM or 7.35).
- .5 End stiles and center stiles: 16 gauge steel.
- .6 75K cycle springs.
- .7 Heavy duty 75 mm (3") track. Some O.H. doors require low-headroom track – verify.
- .8 Electric Operator with bottom sensory edge.
- .9 Jamb weather seals and top seals.
- .10 Individual lights 3mm DSB (as indicated in the drawings).
- .11 Tumbler key lock.

2.2 Components

- .1 Electric Operator: NEMA Type 1 CSA listed motor; side mounted on cross head shaft; adjustable safety friction clutch, brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter, mounting brackets and hardware.
- .4 Control Station: Standard three button open-close-stop momentary type, control for each electric operator, 24-volt circuit, surface mounted. Include key operated switch located at inside doorjamb.
- .5 Safety Edge: At bottom of door panel, full width; electro-mechanical sensitized type, wired to stop, reverse door upon striking object; hollow rubber covered to provide weatherstrip seal.

PART 3 EXECUTION**3.1 Inspection**

- .6 Verify that substrate openings are ready to receive work and opening dimensions are as indicated on shop drawings.
- .7 Verify that power supply is available.
- .8 Beginning of installation means acceptance of existing surfaces, site conditions.

3.2 Preparation

- .1 Prepare opening to permit correct installation of door unit and air and vapour barrier seal.
- .2 Apply sealer.

3.3 Installation

- .1 Install door unit assembly in accordance with manufacturer's instructions.
- .2 Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- .3 Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- .9 Fit and align door assembly including hardware, level and plumb, to provide smooth operation.
- .10 Coordinate installation of electrical service. Complete wiring from disconnect to unit components.
- .11 Coordinate installation of sealants and backing at frame perimeter as specified in Section 079200.

- .12 Install perimeter trim and closures.

3.4 Tolerances

- .1 Maintain dimensional tolerances and alignment with adjacent work.
- .2 Variation from plumb: 1.5 mm maximum.
- .3 Variation from level: 1.5 mm maximum.
- .4 Longitudinal or Diagonal Warp: Plus or minus 3 mm from 3 m straight edge.

3.5 Adjusting and Cleaning

- .1 Adjust door assembly.
- .2 Clean doors, frames and glazing.
- .3 Remove labels and visible markings.

END OF SECTION

PART 1 GENERAL

1.1 Work Included

- .1 Exterior and interior glazing units.

1.2 Related Work

- .1 Final Cleaning Section 017413.
- .2 Rough Buck and Wood Blocking Section 061000.
- .3 Pre-Engineered Metal Building Section 051220
- .4 Caulking of Joints Between Frames and Other Building Components Section 079200.
- .5 Glazing Section 088000.
- .6 Painting Exposed Wood Surfaces Section 099120.

1.3 Quality Assurance

- .1 Fabricate windows in accordance with CAN3-A440-M84 except where specified elsewhere.

1.4 Shop Drawings

- .1 Submit shop drawings.
- .2 Indicate materials and large scale details for head, jamb and sill, profiles of components, elevations of unit, anchorage details, description of related components.

1.5 Warranty

- .1 Contractor hereby warrants the PVC windows against leakage, defects and malfunction under normal usage for minimum 5 years.

PART 2 PRODUCTS

2.1 Materials

- .1 PVC Windows:
 - .1 Frame: White 3-1/4" main frame (optional sandstone exterior of frame) is constructed from extruded multi-chambered high impact resistant, rigid polyvinylchloride (PVC) with fusion welded corners; base configuration with integral nailing fin (pre-punched for installation) providing 8-1/2" jamb; Configuration and opening sizes as per drawings: bottom operating awning.
 - .2 Sash: Step/lap type sash constructed from extruded, multi-chambered high impact resistant, rigid polyvinylchloride (PVC) with fusion welded mitred corners.
 - .3 Insulating Glass: Dualpane insulating glass with 1/2" (12 mm) airspace(s) featuring Warm Edge spacers, Low E and argon filled .
 - .4 Glazing: Factory glazed with a dual adhesive tape on the exterior with a vinyl snap-on stop mounted on the interior. Reglazable on site.
 - .5 Sash Weatherproofing: Exclusive weatherproofing system with 4 contact points ensures a tight seal against air and water infiltration; includes step/lap protection of hardware from elements. This unique design utilizes co-extruded PVC weatherstripping and Santoprene - well known for its resiliency.
 - .6 Hardware: To ensure smooth operation. Positive locking weathersealed camlock(s) draws sash tight against weatherstripping and provides excellent security; all hardware in white finish.
 - .7 Screen: Aluminum frame with baked enamel white finish; black fibreglass screen cloth 18 x 16 mesh; units removable from interior.

- .9 CCMC Evaluation Listing:
 - .1 CSA Standard CAN3-A440-M90 Test Results:
 - .2 A3 - Air Infiltration
 - .3 B3 - Water Infiltration
 - .4 C4 - Wind Load Resistance
 - .5 Forced Entry - Passed

PART 3 EXECUTION

3.1 Installation

- .1 Set window units in prepared openings plumb, square and level, free from warp, twist or superimposed loads.
- .2 Secure work adequately and accurately to structure in required position, in manner not restricting normal movement of wood windows.

3.2 Caulking

- .1 Seal joints between frame members, fixed window units and other non-operating components of window assembly with sealant to provide weathertight seal at outside and air, vapour seal at inside.
- .2 Apply sealant in accordance with Section 07900. Conceal sealant within window components except where exposed use is permitted by Engineer.

END OF SECTION

PART 1 GENERAL

1.1 General

- .1 Comply with the requirements listed in Division 1

1.2 Section Includes

- .1 Hardware for hollow metal doors.

1.3 Related Sections

- .1 Electrical back boxes, conduit, wire runs and 115 vac hook up for electrical hardware and security. Division 26.
- .2 Standard Steel Frames: pressed steel frames. Section 081112

1.4 Quality Assurance

- .1 Meet all of the requirements of the local building code and all other applicable regulations.
- .2 Products listed in Part 2 of this section establishes the minimum requirement for this project. Approved manufactures are listed. Deviation from these specified products will require the supply and installation of the specified products at no cost to the owner. Any equal's request for products other than those specified must be done so, in writing (type written form) listing the specified items then the proposed items. To be performed no later than five (5) working days prior to tender closing.
- .3 Qualified suppliers must have in their employ a certified A.H.C (Architectural Hardware Consultant) as licensed by the Door and Hardware Institute. The supplier must have a minimum of 3 years experience furnishing hardware for similar projects. Only firms that can extend the manufactures warranty for the project are to be considered for suppliers.

1.5 Submittals

- .1 Prepare and submit six (6) copies of a detailed hardware schedule listing product numbers, size, and finish. Include two (2) sets of catalogue cuts of all hardware being supplied.
- .2 Furnish other sections with two (2) complete sets of hardware templates for related fabricating and installation.
- .3 Where electrical hardware is being supplied, provide five (5) sets wiring diagrams showing all wire termination points. Where electrical hardware is being supplied and installed provide the contractor with three (3) sets riser diagrams listing the correct wire runs and back box size as well as 120 vac requirements.
- .4 Where required in Division 1, provide two (2) operating manuals for the owners use. Include copies of the final Hardware Schedule, templates, installation instructions and all maintenance data required.

1.6 Regulatory Requirements

- .1 Conform to National Building Code requirements applicable to fire rated doors, frames, and hardware.
- .2 Conform to ULC and or Warnock Hersey requirements applicable fire rated doors, frames, and hardware.

1.7 Deliver, Handling, and Storage

- .1 Deliver each hardware item in its original package complete with all fasteners, keys, and templates and installation instructions required for proper installation.
- .2 Clearly mark each container with the door opening number and the hardware schedule item number or heading number.

- .3 The contractor must store hardware delivered in a secure area. The storage must contain adequate shelf space to hold all of the hardware off the floor. Ensure the area is kept dry and clean.
- .4 When requested, package items of hardware separately for delivery to other fabricators for their installation.
- .5 Deliver hardware in a timely fashion as not to delay construction schedule. Contractor to keep hardware supplier updated with construction schedule indicating delivery date required.

1.8 Warranty

- .1 Provide a written warranty in the name of the owner, stating that the following products are guaranteed against defects and workmanship for a period of * two (2) years after date of substantial completion, and that the products shall be repaired or replaced if they fail to perform as warranted. *Door closers to have a minimum of ten (10) years warranty, lifetime warranty on the hinges.

PART 2 PRODUCTS

2.1 Butt Hinges

- .1 All butt hinges shall be three knuckle type. Use concealed bearing hinges for all doors with door closers.
- .2 Where the door width exceeds 914mm supply 127mm high hinges. Doors over 2200mm high shall have (2) pair of butts.
- .3 Approved Manufactures: Hager, McKinney, Stanley

2.2 Continuous Hinges & Pivots

- .1 All continuous hinges shall be full height of doors and be a knuckle type with nylon bearings between each knuckle.
- .2 All pivots and or pivot sets shall be of one manufacture. Sets as noted in the hardware groups shall be matching in design for both labelled doors and regular doors. All pivot sets are required to meet ANSI grade one standard as listed in ANSI 156.4. Caps shall be hex type to increase security.
- .3 Approved Manufactures: Pemko, McKinney, Rixson,

2.3 Locks and Latchsets

- .1 Locks and latchsets are to be a cylindrical style lockset. ULC labels for all fire doors. Lever style as specified with through bolt mounting. Interior finish as specified. Locks and latchsets shall be of one manufacture.
- .2 Key all locksets as per owner's instructions, (see door schedule notes). Master keys are to be delivered directly to the owner. Coordinate with General Contractor.
- .3 Approved Manufactures: Yale, Schlage, Sargent

2.4 Door Closers

- .1 Door closers to have full adjustment features including separate valves for backcheck, general speed, and latch speed control.
- .2 All interior closers will have a reduced opening force spring power to meet the barrier free codes of 22N (5 lbs).

- .3 Surface mounted closers are to be mounted on the room side of the door wherever possible or as directed by the architect.
- .4 Door closers will be attached with through bolt mounting on aluminum and wood doors.
- .5 Provide all brackets and extension arms as required to suit applications.
- .6 Approved Manufactures: Norton, LCN, Sargent

2.5 Pulls and Plates

- .1 Supply door trim as listed in the hardware schedule. Pulls are supplied with back to back mounting (BTB) or through bolt mounting as required. When push plates are listed with door pulls, install the push plate to conceal the through bolt mounting of the door pull.
- .2 All kickplates, pushplates, and bumper plates must have all sides bevelled and the corners rounded to ensure there are no sharp edges. Supply plates with countersunk holes. The plates will be .050 thick unless otherwise specified. Size to suit door width (less 45mm for single doors, 35mm for double doors). Finishes as specified within the hardware schedule.
- 3. Approved Manufactures: Gallery, Rockwood, Standard Metal

2.6 Door Stops and Holders

- .1 Wall stops are only to be used on proper wall conditions such as block or masonry. Provide proper backing on drywall walls. Supply floor stops with sufficient height to suit the floor condition and undercut of doors.
- .2 Overhead stops and holders shall be installed for a 90-degree stop unless otherwise specified.
- .3 Electro-magnetic door holders will be supplied in the correct voltage as the fire alarm system requires. Contractor to verify the correct voltage required to tie into the fire alarm system, the door must release when signalled by the fire alarm system.
- .4 Approved Manufactures: Rixson, Rockwood, Sargent,

2.7 Door Seals

- .1 Perimeter seals must be supplied to fully cover all gaps between the door, frame, and floor condition to seal against weather, sound, or smoke.
- .2 Frame gasketing must be closed cell neoprene. The extruded housing must have a rib to prevent distortion during installation. Aluminum doors and frames will be equipped with felt inserts by the door supplier.
- .3 Door bottoms will be heavy duty and have an adjustment screw to ensure proper contact with the floor. Supply the correct drop insert for carpet where required.
- .4 Thresholds must be installed to ensure door bottom makes full contact. Exterior door thresholds to be sealed by two (2) continuous beads of silicone.
- .5 Approved Manufactures: Pemko, National Guard, Hager

2.8 Card Access System

- .1 The card access system is used primarily to control access to various parts of the facility. Division 26 shall be responsible for the design, supply, installation and integration of *all components.* (except electric strikes, electric trim, smart pacs, actuators, and the power required to operate these devices. These are to be supplied by Division 8. Division 26 to include all housings, accessories, finishing plates, connectors, cable and wiring as well as the computer equipment, proximity cards/key fobs, proximity readers, door control units, communication boards, and operating software, for a complete and functional card access system. Refer to Division 16 for the card access system requirements.

PART 3 EXECUTION

3.1 Examination

- .1 Verify that door and frame components are ready to receive hardware and that the dimensions are as indicated on the drawings.
- .2 Verify that power is available to power operated devices.
- .3 Beginning of installation is acceptance of existing conditions.

3.2 Installation

- .1 Install hardware in accordance with manufacturer's instructions and templates.
- .2 Make all necessary adjustments to door hardware including door closers, handing of locksets if required, and degree of door swing.
- .3 Mount hardware to suit elevations. Unless otherwise directed by consultant, install the hardware at the following heights from the floor:

Locks/latchsets:	1024mm to centre of strike
Exit Device:	1015mm to centre of strike
Push/Pulls:	1015mm to centre
Deadlock;	1200mm to centre
H/C Switch's:	1200mm to centre

3.3 Abbreviation List

Abbreviation	Actual Name
SCWD	Solid Core Wood Door
PSF	Pressed Steel Frame
HMD	Hollow Metal Door
IHMD	Insulated Hollow Metal Door
45min UL	¾ Hour Fire Rating Required

3.4 Hardware Schedule

- .1 Refer to plans for hardware groupings.

END OF SECTION

PART 111111112 GENERAL

1.2 Section Includes

- .2 Glass and glazing for exterior windows and door lites.

1.33 Related Sections

- .1 Section 079200 - Joint Sealers: Sealant and back-up material.
- .2 Section 085313 - PVC Windows: Glazing.

1.4 References

- .4 ASTM E84 - Surface Burning Characteristics of Building Materials.
- .5 CAN/CGSB-12.1M -Glass, Safety, Tempered or Laminated.
- .6 CAN/CGSB-12.3M - Glass, Polished Plate or Float, Flat, Clear.
- .7 CAN/CGSB-12.4M - Glass, Heat Absorbing.
- .8 CAN/CGSB-12.5M - Mirrors, Silvered.
- .9 CAN/CGSB-12.8M - Insulating Glass Units.
- .10 CAN/CGSB-12.12M - Glazing Sheets, Plastic, Safety.
- .11 CAN/CGSB-19.13M -Sealing Compound, One Component, Elastomeric, Chemical Curing.
- .12 CGSB 19-GP-2M -Glazing Compound, Non-hardening, Modified Oil Type.
- .13 CGSB 19-GP-5M - Sealing Compound, One Component, Acrylic Base, Solvent Curing.
- .14 CGSB 19-GP-14M - Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .15 CGSB 19-GP-18M - Sealing Compound, One Component, Silicone Base, Solvent Curing.
- .16 CGSB 19-GP-22M - Sealing Compound, Mildew Resistant, for Tubs and Tile.
- .17 CGSB 19-GP-23 - Guide to the Selection of Sealants on a Use Basis.
- .18 IGMAC Insulated Glass Manufacturers Association of Canada - Quality Standard Specification.
- .19 IGMAC - Glazing Recommendations for Sealed Insulating Glass Units.
- .20 FGMA -Glazing Manual Glazing Sealing Systems Manual.

1.521 Quality Assurance

- .22 Conform to FGMA - Glazing Manual, IGMAC - Quality Standard Specification and Glazing Recommendations for Sealed Insulated Glass Units for glazing installation methods.
- .23 Select glazing compounds and sealants in accordance with CGSB 19-GP-23, glass manufacturer's instructions.

PART 3624 PRODUCTS

2.7 Manufacturers - Flat Glass Materials

- .25 AFG Glass OR PPG Canada Inc (basis of design).

2.826 Flat Glass Materials (Note: not all materials listed may be in the Scope of Work).

- .27 Float Glass Type FG-A: CAN2-12.3M, glazing quality, 6 mm thick, clear on clear and Heat Treated.
- .28 Tempered Float Glass: to CAN/CGSB 12.1 – M90 'A' quality, 6 mm thick minimum.
- .6 All exterior glazing units to be double pane insulated tempered glass units, complete with low emissivity treatment including glazing in exterior doors.

2.929 Manufacturers - Sealed Insulating Glass Materials

- .30 AFG. OR PPG CANADA INC (basis of design).

2.1031 Sealed Insulating Glass Materials

- .32 Insulated glass units – Commercial Type SG-A: CAN2-12.8M 1GMAC; double pane tempered, with glass elastomer edge seal, outer pane of 6mm clear float glass with Comfort USE Coating E-PS on surface #2 by AFG or approved equal; inner pane of 6mm clear float glass; total unit thickness of 25mm minimum.
 - .1 Exterior Window Glazing: tempered double pane with outer pane of 6mm clear float glass with Comfort USE Coating E-PS coating on surface #2 by AFG or approved equal; inner pane of 6mm clear float glass.

2.5 Glazing Compounds

- .1 Glazing compound: Type recommended by manufacturer.

2.6 Glazing Accessories

- .1 Glazing Clips: Manufacturer's standard type.

PART 41133 EXECUTION

3.12 Inspection

- .34 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready for work of this Section. Beginning of installation means acceptance of existing substrate.

3.1335 Preparation

- .36 Clean contact surfaces with solvent and wipe dry.
- .37 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .38 Prime surfaces scheduled to receive sealant.

3.1439 Cleaning

- .40 After installation, mark pane with an 'X' by using plastic tape or removable paste.
- .41 Remove glazing materials from finish surfaces.
- .42 Remove labels after Work is complete.

END OF SECTION