Part 1 General

1.1 SECTION INCLUDES

.1 Non-rated steel frames and doors.

.2 Non-rated thermally insulated steel doors.

1.2 RELATED SECTIONS

.1 Section 07 21 00 - Building Insulation.

.2 Section 07 92 00 - Joint Sealants.

.3 Section 08 80 50 - Glazing.

.4 Section 08 71 00 - Door Hardware.

.5 Section 09 91 23 - Interior Painting

1.3 REFERENCES

.1 ASTM A653/A653M-2020 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CAN/ULC-S104-2020 - Fire Tests of Door Assemblies.

.3 CAN/ULC-S105-2020 - Fire Door Frames Meeting the Performance Required by CAN4-S104.

.4 CAN/ULC-S701.1-2022 - Thermal Insulation, Polystyrene Boards.

.5 CGSB 41-GP-19Ma (1984) - Rigid Vinyl Extrusions for Windows and Doors.

.6 CSA G40.20/G40.21-2018 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.7 CSA O151-2017 - Canadian Softwood Plywood.

.8 Canadian Steel Door Manufacturers Association (CSDMA), Recommended Dimensional Standards for Commercial Steel Doors and Frames.

.9 Canadian Steel Door Manufacturers Association (CSDMA), Selection and Usage Guide for Steel Doors and Frames.

.10 NFPA 80-2022 - Standard for Fire Doors and Other Opening Protectives.

1.4 SUBMITTALS FOR REVIEW

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:

.1 Indicate door and frame configurations and finishes, location of cut-outs for hardware reinforcement.

.3 Shop Drawings:

.1 Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.

.2 Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, and finishes.

1.5 QUALITY ASSURANCE

.1 Conform to requirements of Canadian Steel Door and Frame Manufacturers Association standards.

1.6 DELIVERY, STORAGE, AND PROTECTION

.1 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.

.2 Store in vertical position, spaced with blocking to permit air circulation between components.

.3 Store materials on planks or dunnage, out of water and covered to protect from damage.

.4 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc- rich primer.

1.7 COORDINATION

.1 Coordinate the work with frame opening construction, door, and hardware installation.

.2 Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

Part 2 Products

2.1 MATERIALS

.1 Sheet Steel: Galvanized steel to ASTM A653/A653M, commercial grade (CS), Type B:

.1 Coating designation Z275 (G90) for exterior doors and frames,

.2 Coating designation ZF001 (G01) for interior doors and frames.

.2 Reinforcement Channel: To CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

2.2 DOOR CORE MATERIALS

.1 Honeycomb Core: Structural small cell 25.4 mm maximum kraft paper honeycomb, sanded to required thickness.

.2 Polystyrene Core: Rigid extruded fire retardant, closed cell board, density 16 to 32 kg/m^3, thermal values RSI 1.0 minimum, Type 1, in accordance with CAN/ULC-S701.1.

2.3 ADHESIVES

.1 Cores and Steel Components: Manufacturer’s standard adhesive.

.2 Lock Seam: Manufacturer’s standard sealant.

.3 Construction Adhesive: polyurethane construction adhesive, resistant to freezing.

2.4 ACCESSORIES

.1 Expanding Foam Sealant: to Section 07 21 00.

.2 Joint Sealers - Interior: Acrylic latex, to Section 07 92 00.

.3 Joint Sealers - Exterior: Silicone type, to Section 07 92 00; colour to match adjacent wall finish.

.4 Door Silencers: Single stud rubber/neoprene.

.5 Exterior Top Caps: Rigid polyvinylchloride extrusion conforming to CGSB 41-GP- 19MA.

.6 Frame Thermal Breaks: Rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19MA.

.7 Glazing Stops: Formed galvanized steel channel, minimum 16 mm high, accurately fitted, butted at corners and fastened to frame sections with counter-sunk tamper proof sheet metal screws.

.8 Glass: In accordance with Section 08 80 50; Types as indicated.

.9 Paste Filler: Automotive type, sandable.

2.5 FABRICATION - DOORS

.1 Interior Doors - Laminated honeycomb core construction: 16 gauge face sheet thickness, honeycomb core, laminated under pressure to face sheets.

.2 Exterior Doors - Polystyrene insulated and stiffened construction: 16 gauge face sheet thickness.

.3 Longitudinal Edges:

.1 Interior Doors: Adhesive-assisted mechanical interlock and tack-welded.

.2 Exterior Doors: Fully welded; seamless.

.4 Size doors to have 19 mm gap between bottom of door and finished floor.

.5 Mortised, blanked, reinforced, drilled and tapped for templated hardware, in accordance with templates provided by hardware supplier.

.6 Reinforce for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware.

.7 Top and Bottom Channels: Inverted, recessed, welded steel channels.

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

.9 Attach fire rated label to each fire rated door unit. Fire labels to be riveted tags; embossed labeling not acceptable.

2.6 FABRICATION - FRAMES

.1 Interior Frames: 16 gauge face sheet thickness, welded type construction.

.2 Exterior Frames: 14 gauge face sheet thickness, welded type construction, thermally broken.

.3 Provide frame profiles indicated, including custom, extra wide face profiles.

.4 Mortised, blanked, reinforced, drilled and tapped for templated hardware, in accordance with templates provided by hardware supplier.

.5 Reinforce frames wider than 1200 mm with roll formed steel channels fitted tightly into frame head, flush with top.

.6 Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two silencers on frame head at double doors without mullions.

.7 Frames assemblies joined in field to be fully welded, ground and sanded, and all seams to be filled and sanded smooth.

2.7 FINISH

.1 Finish: Field painted in accordance with Section 09 91 23.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that opening sizes and tolerances are acceptable; check floor area within path of door swing for flatness.

.2 Verify doors and frames are correct size, swing, rating and opening number.

.3 Remove temporary shipping spreaders.

3.2 INSTALLATION

.1 Install doors and frames to CSDMA.

.2 Coordinate with wall construction for anchor placement.

.3 Install glazing.

.4 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00

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

.6 Secure anchorages and connections to adjacent construction.

.7 Foam fill shim space at perimeter of frame and open back sections to maintain continuity of thermal envelope.

.8 Brace frames rigidly in position while building-in. Install wood spreaders at third points of frame rebate height to maintain frame width. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.9 Remove wood spreaders after frames have been built-in.

.10 Make allowance for deflection to ensure structural loads are not transmitted to frame product.

.11 Install doors, and hardware in accordance with hardware templates and manufacturer's instructions.

.12 Adjust operable parts for correct clearances and function.

.13 Install door silencers and glazing.

.14 Finish paint in accordance with Section 09 91 23.

.15 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.3 ERECTION TOLERANCES

.1 Maximum Diagonal Distortion: 3 mm measured with straight edges, crossed corner to corner.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 20 00 - Finish Carpentry.

1.2 REFERENCES

.1 ASTM E283/E283M-2019 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

1.3 SUBMITTALS

.1 Submit manufacturer's product data sheets and maintenance data in accordance with Section 01 33 00.

Part 2 Products

2.1 STANDARD ACCESS DOORS

.1 Access Doors and Frames for Attic Space: Flush steel with integral flanged frame, concealed hinge, weatherstripping.

- .1 ASTM E283 Air Leakage: Single Panel (CSA A440 Test Rating) - A1.
- .2 Minimum R15 insulated to provide resistance to heat transfer as required by authority having jurisdiction.
- .3 Provide flange designed for anchorage into wall assemblies. Provide fasteners to suit installation.
- .4 Size: 762 mm x 762 mm; coordinate framing assembly.
- .5 Finish: Factory painted; grey enamel.
- .6 Bolted closure.

Part 3 Execution

3.1 INSTALLATION

.1 Coordinate installation with applicable sections and in accordance with manufacturer's printed instructions.

.2 Adjust door operating components to ensure smooth opening and closing of door.

.3 Paint out with adjacent wall or ceiling finish and in accordance with Section 09 91 23.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 High-lift overhead sectional doors; manual and electric operation.

.2 Operating hardware, track, and supports.

1.2 RELATED SECTIONS

.1 Division 26 - Electrical.

1.3 REFERENCES

.1 ASTM B221M-2021, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.2 ASTM A123/A123M-2017, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 ASTM A216/A216M-2021, Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High- Temperature Service.

.4 ASTM A229/A229M-2018, Standard Specification for Steel Wire, Oil-Tempered for Mechanical Springs.

.5 ASTM A653/A653M-2020, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.6 DASMA 102-2018 - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 SYSTEM DESCRIPTION

.1 Panels:

.1 Exterior Doors: Panelized insulated doors.

.2 Lift Type: High-lift operating style, with track and hardware.

.3 Operation:

.1 Blower Building: Motor operated.

.2 Headworks Building: Manual, chain hoist.

1.5 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Shop Drawings: Indicate opening dimensions and required tolerances, operating mechanisms, connection details, anchorage spacing, hardware locations, support bracket and installation details.

.3 Product Data: Provide component construction, anchorage method, hardware.

.4 Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

.1 Submit in accordance with Section 01 78 00.

.2 Maintenance Data: Include data for shaft and gearing, lubrication frequency, spare part sources.

.3 Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

.1 Perform Work in accordance with DASMA 102.

.2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

.3 Installer: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Insulated Steel Doors: Garaga G-5200, Richards-Wilcox Thermatite ADV200, Wayne- Dalton Thermospan 200.

2.2 MATERIALS

.1 Door sections: 50 mm thick, thermally broken steel-polyurethane-steel sandwich construction.

.2 Steel skins: nominal 20 gauge galvanized steel sheet, factory painted finish; white colour.

.3 End caps: 16 gauge, hot-dipped galvanized steel.

.4 Insulation: foamed-in-place polyurethane core, minimum RSI 2.84.

2.3 DOOR COMPONENTS

.1 Track: commercial duty hardware, high-lift design, 75 mm track size with graduated wedge type closing, fabricated with hot-dipped galvanized steel components. Provide continuous galvanized steel angle track supports welded to jambs (clip angles not acceptable).

.2 Hinge and roller assembly: full floating, grease packed, hardened steel, ball bearing minimum 75 mm diameter, fabricated with hot-dipped galvanized steel components.

.3 Provide pusher springs on standard lift doors.

.4 Provide interior locking hardware; manufacturer’s standard.

.5 Counterbalance: helically wound torsion springs with 100,000 duty cycle rating, aluminum drums with galvanized steel aircraft cables, solid steel shaft, cast steel pulleys.

.6 Weatherstripping: factory installed top seal at header, continuous joint seals between sections, site installed aluminum extrusions with flap seal at jambs.

2.4 ELECTRIC OPERATOR

.1 Electrical jack shaft side mounted operator.

.1 Motor: 1/2 HP; 120V. Verify electrical characteristics with Division 26.

.2 Quantity: One.

.2 Operation:

.1 Hard wired pushbutton stations: 24 VAC control voltage, surface mounted, with "OPEN-STOP-CLOSE" designations on pushbuttons. Mount where directed by Departmental Representative.

.1 Quantity: One per operator.

.2 Emergency operation by chain during power interruption.

.3 Bottom Safety Bar: electro-mechanical reversing edge, to reverse door to open position when coming in contact with object on closing cycle, integral weatherstripping.

.4 Infrared Safety Sensors: low-voltage system consisting of infrared transmitter/receiver designed to reverse door closing upon interruption of IR beam. Mount on door jambs to either side of door opening, mounting height maximum 300 mm above finished floor. All wiring to be run in conduit.

.5 Mounting brackets: designed and fabricated by door installer to support operator, mounted as directed by Departmental Representative. Fabricate from hot dipped galvanized steel angles, size and gauge to suit conditions.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

3.2 INSTALLATION

.1 Install doors and hardware in accordance with manufacturer's instructions.

.2 Support track, rail and operator and secure to supporting structure.

.3 Install operator including electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.

.4 Install infrared safety system.

.5 Lubricate and adjust door operating components to ensure smooth opening and closing of doors.

.6 Adjust weatherstripping to form a weathertight seal.

3.3 ERECTION TOLERANCES

.1 Maximum Variation from Plumb: 1.5 mm.

.2 Maximum Variation from Level: 1.5 mm.

.3 Longitudinal or Diagonal Warp: Plus or minus 3 mm from 3 m straight edge.

.4 Maintain dimensional tolerances and alignment with adjacent work.

3.4 ADJUSTING

.1 Adjust door assembly to smooth operation and in full contact with weatherstripping.

3.5 CLEANING

.1 Clean doors and frames.

.2 Remove temporary labels and visible markings.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Aluminum fixed framing system with operable vents; glazed as scheduled.

.2 Perimeter sealant.

1.2 RELATED SECTIONS

.1 Section 07 27 13 - Modified Bituminous Sheet Air Barrier.

.2 Section 07 92 00 - Joint Sealants.

.3 Section 08 80 50 - Glazing.

1.3 REFERENCES

.1 AA (Aluminum Association) DAF 45-2009 - Designation System for Aluminum Finishes.

.2 AAMA CW-10-2015 - Care and Handling of Architectural Aluminum from Shop to Site.

.3 AAMA/WDMA/CSA 101/I.S.2/A440-2017 - NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.4 AAMA 611-2020 - Voluntary Specification for Anodized Architectural Aluminum.

.5 AAMA 1503-2009 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections.

.6 AAMA 2603-2021 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

.7 AAMA 2605-2020 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

.8 ASTM B209/B209M-2021a - Standard Specification for Aluminum and Aluminum- Alloy Sheet and Plate.

.9 ASTM B221/B221M-2021 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.10 ASTM E283/E283M-2019 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.11 ASTM E330/E330M-14(2021) - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.12 ASTM E331-00(2016) - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

.13 ASTM F588-2017 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.

.14 CSA-A440S1-2019 - Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS - North American Fenestration Standard/Specification for windows, doors, and skylights.

.15 CSA-A440.2/A440.3-2019 - Fenestration Energy Performance/User Guide to CSA- A440.2-14, Fenestration Energy Performance.

.16 CAN/CSA-A440.4-2019 - Window, Door, and Skylight Installation.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications:

.1 Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

.2 Certifications:

.1 Insulating glass units must be supplied by an IGMAC certified manufacturer.

.2 Provide products of this section with ENERGY STAR label and associated performance certification label, in accordance with ENERGY STAR labeling guidelines.

.3 NAFS Marking Requirements:

.1 Permanent marking indicating the manufacturer in a location visible when the product is installed.

.2 Temporary markings indicating primary and secondary performance designators including;

.1 positive design pressure, where applicable;

.2 negative design pressure, where applicable;

.3 water penetration test pressure; and

.4 Canadian air infiltration and exfiltration level.

.4 Perform Work in accordance with IGMAC for glazing installation methods.

1.5 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit shop drawings:

.1 Indicate materials and details in scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes, fasteners and caulking.

.3 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:

.1 Windows classifications.

.2 Anodized finish, weathering characteristics.

.3 Insect screens.

.4 Air tightness.

.5 Water tightness.

.6 Wind load resistance.

.7 Sash strength and stiffness.

.8 Ease of operation - windows with operable lights.

.9 Forced entry resistance.

.10 Mullion deflection - combination and composite windows.

.4 Product Data:

.1 Submit for each glazing unit located in exterior wall assemblies, as supplied by this Section. Indicate visible light transmittance.

Part 2 Products

2.1 ACCEPTABLE PRODUCTS

.1 Fixed Units:

.1 Frame Depth: Nominal 150 mm minimum.

.2 Acceptable Products:

.1 Alumicor 970 Series.

.2 Anotec 80 Series.

.3 Kawneer 518 Series.

2.2 SYSTEM DESCRIPTION

.1 Windows: Single thickness tubular aluminum sections, factory fabricated, factory finished, vision glass, infill panels, related flashings, anchorage and attachment devices.

.2 Configuration: Fixed and outward opening top hinged sash, with screens on operable vents.

2.3 PERFORMANCE REQUIREMENTS

.1 Conform to performance requirements of AAMA/WDMA/CSA 101/I.S.2/A440 and A440S1-09:

.1 NAFS Primary Designators: Minimum LC-PG50.

.2 Air Leakage Performance: ASTM E283; Air leakage requirements for both infiltration and exfiltration: A3.

.3 Water Penetration Resistance: ASTM E 547 (cyclic static pressure):

.1 Minimum water penetration resistance test pressure: 510 Pa (10.5 psf), and

.1 no water shall penetrate the window assembly and cause wetting of the interior room surfaces;

.2 no water shall pass through the window into the rough opening or assembly adjoining the window below the sill; and

.3 no water shall remain trapped in the window assembly after the test pressure has been released.

.4 Energy Performance: When tested in accordance with CAN/CSA-A440.2

.1 Comply with requirements for North American Energy Star® program.

.2 Energy Rating: 29 minimum.

.3 U value of 0.387 W/m²K.

2.4 MATERIALS

.1 Extruded Aluminum: ASTM B221.

.2 Sheet and Plate Aluminum: ASTM B209, anodizing quality.

.3 Steel Sections: Profiled to suit mullion sections.

.4 Fasteners: Stainless steel.

2.5 COMPONENTS

.1 Frames: Aluminum, thermally broken, profile size as required; applied glass stops of snap-on type.

.2 Reinforced Mullion: Extruded aluminum profile, size as required with integral reinforcement of shaped steel structural section.

.3 Sills: 3 mm thick, extruded aluminum; sloped for positive wash; fit under sash to 13 mm beyond wall face; one-piece full width of opening jamb angles to terminate sill end.

.4 Screens: to CAN/CGSB-79.1-M91.

.1 Type: 1 - standard duty.

.2 Class: C - fixed.

.3 Style: manufacturer's standard.

.4 Insect screening mesh count: manufacturer's standard.

.5 Screen frames: aluminum, colour to match window frames.

2.6 GLASS AND GLAZING MATERIALS

.1 Glass and Glazing Materials: As specified in Section 08 80 00.

2.7 FABRICATION

.1 Fabricate in accordance with CSA PKG.A440-00 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with 380 g/m² zinc coating to CAN/CSA-G164.

2.8 FINISHES

.1 Split Finish Aluminum Finishes: Refer to Drawings for locations.

.1 Exterior Finish: PVDF fluoropolymer paint finish exceeding AAMA 2605 performance requirements; Black colour selected by Departmental Representative.

.2 Interior Finish: Clear anodized to AA-M10C21A31 Architectural Class II (0.4 mils minimum).

2.9 ACCESSORIES

.1 Transition Membrane: To Section 07 27 13.

.2 Fasteners: DT2000 coated or stainless steel.

.3 Perimeter Sealant: Silicone to Section 07 92 00; colour to match aluminum framing.

.4 Expanding Foam Insulation and Sealant: to Section 07 21 00, VOC compliant.

Part 3 Execution

3.1 INSTALLATION

.1 Install windows in accordance the manufacturer's written instructions CAN/CSA- A440.4.

.2 Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

.3 Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

.4 Plumb and align level with adjacent units unless noted otherwise.

.5 After attachment of window assembly into the opening, insulate the rough framed opening at the perimeter of window frame assembly to maintain continuity of air, vapour, and thermal barrier. Insulation must be positioned to the outer half of the wall cavity from the back side of the attachment flange and inward to a minimum of 75 mm (3 inches).

.6 Coordinate attachment and seal of perimeter air and vapour barrier materials.

.7 Insulate space between window frame and rough opening framing using foam-in-place polyurethane insulation.

3.2 ERECTION TOLERANCES

.1 Maximum Variation from Level or Plumb: 1.5 mm/m (0.06 inches every 3 ft) non- cumulative or 12 mm per 30 m (0.5 inches per 100 ft), whichever is less.

3.3 CAULKING

.1 Apply sealant in accordance with Section 07 92 00. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

.2 Seal exterior joints using silicone sealant.

.3 Seal interior joints around window using paintable latex sealant.

3.4 CLEANING

.1 Remove protective material from pre-finished surfaces.

.2 Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

.3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

.2 Furnish and delivery of all finish hardware necessary for all doors. Also hardware as specified herein and as enumerated in "Set Numbers" and as indicated and requested by actual conditions of the building. The hardware shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields, drop plates and all other devices necessary for the proper installation of the hardware.

.3 The Departmental Representative approval of the schedule will not be construed as certifying that the list is complete. Acceptance of the Hardware Schedule does not relieve the supplier of responsibility of errors or omissions.

.4 Hardware should not be ordered unless a corrected copy of the shop drawings is reviewed and returned from the specification writer and bearing the approval of the Departmental Representative.

.5 Aluminum Door hardware is to be ordered immediately after approval of shop drawings and shipped directly to the Aluminum Door supplier.

.6 Furnish, deliver and install all finish hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware group indicated by actual conditions at the project site.

.7 The electrical hardware shall include the furnishing of plug in connections and final connections of Low voltage wiring at the door opening. Electrical hardware devices to be installed by section 08 71 00 with all final connection with termination above the frame. Electric hardware devices for the proper operation and application of the hardware noted by connection notes in the hardware schedule. Power, conduit, low voltage wire to junction box above the frame. Connection of the card readers, maglocks and high voltage wire by the electrical section Division 28.

.8 Division 28 to provide high voltage wiring and conduit to the door opening or power supplies including conduit to hardware locations.

1.2 RELATED SECTIONS

.1 03 10 00 – Concrete Forming and Accessories

.2 06 20 00 – Finish Carpentry

.3 06 40 00 – Architectural Woodwork

.4 07 92 00 – Joint Sealants

.5 08 11 13 – Standard Metal Doors and Frames

1.3 REFERENCES

.1 American National Standards Institute (ANSI) A117.1 Specification

.1 ANSI/BHMA A156.1-2021, Butts and Hinges.

.2 ANSI/BHMA A156.26-2021, Continuous Hinges.
.3 ANSI/BHMA A156.13-2017, Mortise Locks.
.4 ANSI/BHMA A156.3-2020, Exit Devices.
.5 ANSI/BHMA A156.4-2019, Door Controls (Closers)
.6 ANSI/BHMA A156.5-2020, Auxiliary Locks and Associated Products.
.7 ANSI/BHMA A156.6-2021, Architectural Door Trim.
.8 ANSI/BHMA A156.7-2016, Template Hinge Dimensions.
.9 ANSI/BHMA A156.8-2021, Door Controls - Overhead Holders.
.10 ANSI/BHMA A156.15-2021, Closer/ Holder Release Device.
.11 ANSI/BHMA A156.16-2018, Auxiliary Hardware.
.12 ANSI/BHMA A156.18-2020, Materials and Finishes.
.13 ANSI/BHMA A156.19-2019, Power Assist and Low Energy Power Operated Doors.
.14 ANSI/BHMA A156.21-2019, American National Standards for Thresholds.
.15 ANSI/BHMA A156.22-2021, Door Gasketing and Edge Seal Systems.
.16 ANSI/BHMA A156.24-2018, Delayed Egress Locks.
.17 ANSI/BHMA A156.25-2018, Electrified Locking Devices.
.18 ANSI/BHMA A156.29-2017, American National Standards for Exit Locks, Exit Locks with Alarms, Exit Alarms, Alarms for Exits.
.19 ANSI/BHMA A156.30-2020, American National Standards for High Security Cylinders.
.20 ANSI/BHMA A156.31-2019, American National Standards for Electric Strikes and Frame Mounted Actuators.

.2 Canadian Standards Association (CSA)

.1 CSA B651-2018 - Accessible Design for the Built Environment.

.3 Canadian Steel Door Manufacturer’s Association (CSDMA).

.1 Standard Hardware Locations in Accordance with the Canadian Steel Door and Frame Association Guidelines.
.2 Recommended locations for Architectural Hardware for Wood Flush Doors.

.4 National Fire Protection Agency(NFPA)

.1 NBC - National Building Code – Latest Edition
.2 NFPA-80 - Standard for Fire Doors and Windows – Latest Edition
.3 NFPA101 - Life Safety Code – Latest Edition
.4 NFPA-105 - Smoke and Draft Control – Latest Edition

1.4 ABBREVIATIONS

.1 The following abbreviations are applicable to this section:

.1 AHC Architectural Hardware Consultant
.2 ALD ALF Aluminum Door and Frame
.3 ATMS/STMS Arm/Strike to Template with Machine Screws

.4	BB or FBB	Ball Bearing Hinges
.5	BC	Back Check
.6	BTB	Back to Back
.7	B3E or B4E	Bevel 3 or 4 sides
.8	C to C, C/L	Centerline to Centerline
.9	CDC	Certified Door Consultant
.10	CMK	Construction Masterkeyed
.11	CSC	Construction Specifications Canada
.12	CSK	Countersunk Screw Holes.
.13	Cyl.	Cylinder of a lock
.14	Deg.	Degree of opening
.15	DEL	Delay Action
.16	DHI	Door and Hardware Institute
.17	DR	Door
.18	FC	Full Cover
.19	FS	Fail Safe
.20	FSE	Fail Secure
.21	FTMS	Full template machine screws
.22	½ TMS	Half template machine screws
.23	GMK	Grand Masterkeyed
.24	KA/KD	Keyed Alike, Keyed Different
.25	HMD/PSF	Hollow Metal Door, Pressed Steel Frame
.26	LH/RH	Left Hand, Right Hand
.27	LHR/RHR	Left Hand Reverse, Right Hand Reverse
.28	MK or MKD	Master Keyed
.29	NBC	National Building Code
.30	NRP	Non removable pin
.31	TB/SB	Thru Bolts, Sex Bolts
.32	TJ	Top Jamb
.33	ULC	Underwriters Laboratories Canada
.34	WD	Wood Door

1.5 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer’s printed product literature, specifications and data sheets in accordance with Section 01 33 00.

.2 Samples:

.1 Upon Departmental Representative request submit samples of door hardware. Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.2 After approval samples will be returned for incorporation in the Work.

.3 Hardware List:

.1 Submit detailed hardware list and keying schedule. Hardware Schedule is to be submitted as per DHI vertical format which is in the "Sequence and Format for Hardware Schedules".

.2 Indicate specified hardware including make, model, material, function, size, finish and other pertinent information.

.3 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Departmental Representative.

.4 Keying Schedule to be in accordance with DHI manual "Keying Systems Names and Nomenclature". Key schedule is not to hold up the processing of the hardware list.

.5 Wiring Diagrams will only be supplied after the final approval of the Hardware Schedule. Submit wiring diagrams as requested for proper installation of electrical, electrical-mechanical and electrical-magnetic products.

.4 Manufacturer's Instructions: Submit manufacturer's installation instructions.

.5 Closeout Submittals: Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware and fire exit hardware for incorporation into Operations and Maintenance Manuals specified in Section 01 78 00.

.6 Provide guarantee.

.1	Closers	10 year
.2	Mortise Locks	10 year mechanical / 2 year electrical
.3	Electronic Closer	2 year
.4	Exit Device	3 years
.5	Hinges	Lifetime of Building
.6	All other Hardware	1 year

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Meet requirements of National Building Code of Canada and other applicable regulations.

.3 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

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

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

.6 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accord with requirements of Contract Documents and are functioning properly.

1.7 PRODUCT DELIVERY, HANDLING & STORAGE

.1 Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00.

.2 Package each item of hardware including fastenings, separately or in like groups of hardware, with necessary screws, keys, instructions and installation templates.

.3 All items of hardware should be itemized and tagged as per the approved Finish Hardware Schedule.

.4 Hardware for Aluminum Doors to be shipped directly to the Aluminum Door supplier. Hardware for Aluminum Doors will be ordered immediately after approval of shop drawings. Delays in ordering the Aluminum Door hardware will not be accepted.

.5 Shortages will not delay installation.

.6 Items damaged in shipment will be replaced properly with proper material.

.7 All Hardware shall be handled in a manner to avoid damage, marking and scratching.

.8 Hardware is to be inventoried on site and confirmed by the Contractor and Hardware Supplier.

.2 Storage and Protection:

.1 Store hardware in locked, clean and dry area.

1.8 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 74 21.

.2 Collect and separate metal, plastic, paper packing and corrugated cardboard and deposit in appropriate on site recycling bins.

.3 Dispose of corrugated cardboard, plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.9 MAINTENANCE

.1 Provide maintenance materials in accordance with Section 01 78 00.

.2 Provide three sets of maintenance tools for closers, locks and exit devices as well as a complete set of installation instructions.

.3 After the building is occupied, arrange for an appointment with the owner to instruct them of proper use, service, adjusting and maintenance of the hardware furnished in this section.

.4 Extra Material if required.

1.10 INSPECTION

.1 The hardware supplier shall arrange at least four visits to the job site.

.1 Visit project at time of delivery of hardware and inspect the personnel who will be looking after the installation and issuing of hardware at the job site. Delivered hardware to be received, sorted and itemized at the jobsite with contractor.

.2 Second visit will be required for key meeting with the owner/representative at a location at their request.

.3 Third visit will take place when about sixty percent of hardware is installed.

.4 Check all hardware on site and correct any errors or shortages. Co-ordinate with contractor to determine proper time for visit.

.5 Fourth visit shall take place just prior to building turnover. All hardware shall be checked for proper installation and adjustment. Any errors shall be corrected and adjustments made. Check the key system and furnish a report along with maintenance manuals detailing any errors found.

.6 Cost of this service will be included as part of this Section and is not covered by any allowance amount.

Part 2 Products

2.1 HARDWARE ITEMS

.1 Only locksets and latchsets listed are acceptable for use on this project.

.2 Use one manufacturer's products only for all similar items.

.3 Manufacturer's Listed:

.1 Hinges

.1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.2 Continuous Hinges

.1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.3 Locks

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.4 Exit Devices

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.5 Closers

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.6 Overhead Stops

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.7 Flatware

.1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.8 Floor/Wall Stops

.1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.9 Weatherstrip/Thresholds

.1 Pemko – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.10 Key Cabinet

.1 Telkee, 60 Starlifter Ave. Dover Delaware 19901-9254.

2.2 DOOR HARDWARE

.1 All fasteners to come complete with the hardware as described. Hardware supplier must be Advised immediately if required fasteners are not enclosed with hardware.

.2 Hardware must be installed with fasteners supplied by the manufacturer.

.3 Hinges Butts and hinges: to ANSI/BMHA A156.1, as listed in Hardware Schedule.

.1 Non removable pins (NRP) for all exterior and out swinging secure doors.

.2 Exterior hinges and hinges in wet areas of stainless steel, brass or bronze.

.3 Interior hinges of plated steel, unless otherwise noted.

.4 Size and quantity to be as the manufacturers hinge selection guide.

.5 Unless otherwise scheduled, supply (1) hinge for every 762mm of door height.

.6 The width of hinges shall be sufficient to clear all trim.

.7 All hinges to be five-knuckle design and ball bearing.

.8 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.

.9 Finish to Dull Chrome 26D.

.10 Standard of Acceptance:

.1	Specified	Acceptable Alternates	
.2	McKinney	Hager	Stanley
.3	TA2714	BB1279	FBB179
.4	TA2314	BB1191	FBB191
.5	TA3786	BB1168	FBB168
.6	TA3386	BB11699	FBB199

.4 Continuous Geared Hinges: to ANSI/BMHA A156.26.

.1 Provide continuous hinges of the type and style noted in the Hardware legend.

.2 To be non-handed and completely reversible.

.3 Material: Extruded tempered aluminium.

.4 Material Standard: 6063-T6 Alloy.

.5 Configuration: Three interlocking extrusions in pinless assembly, installed to full height of door.

.6 Type: Full Mortise: 45mm for extra heavy duty weights.

.7 Length: Full height less 25mm.

.8 Strength: Heavy Duty – 27 bearings each leaf for 2108mm, minimum door weight 245 kg.

.9 Mortise Fasteners: TEK, #12 x ¾" inch, FHUC, Philips head screws.

.10 Size to suite door height complete with installation aids and fasteners to suit door an frame conditions.

.11 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.

.12 Finish to Anodized Aluminum US28.

.13 Standard of Acceptance:

.1	Specified	Acceptable Alternates
.2	McKinney	Pemko Hager (Roton)
.3	MCK-12HD	CFM83SLFHD 780-112HD

.5 Mortise locks and latches: to ANSI/BMHA A156.13, Series 1000 mortise lock, grade 1, designed for function as stated in Hardware Schedule.

.1 Locks shall meet or exceed the requirements of ANSI/BHMA A156.13 Series 1000, Operational Grade 1, and Security Grade 1 with all standard trims.

.2 Meets or exceeds impact requirements of ASTM F1577-95b Detention Locks for Swinging Doors.

.3 Locks shall be easily re-handed without opening the lock body.

.4 Multi-functional lock body to make it easy to change functions in the field.

.5 Locks shall comply with UL10C and UBC.

.6 Construction: Lock functions shall be manufactured in a single-sized case formed from 2.6mm steel minimum.

.7 Locks shall have field adjustable, beveled, armored front, with a 3mm thickness minimum.

.8 Locks shall have a one piece, 19mm throw anti-friction stainless steel latch.

.9 Deadbolts, where specified, shall be full one inch 25mm throw made of one- piece hardened stainless steel.

.10 Locks shall have a 70mm backset, standard.

.11 Electrical functions Fail Safe and Fail Secure, Voltage 12VDC or 24VDC Regulated. Full wave rectification installed inside the lockbody. Current .25 at 24VDC and .5 at 12VDC. UL and CUL listed for use on fire doors. Operating temperature: Max 66 (C) degrees and Min. -35(C) degrees.

.12 Strikes shall be non-handed with a curved lip. Strikes for pairs of doors to be supplied with short lip strike (82-0229). Not to extend beyond the face of the door.

.13 To ensure proper alignment, trim, knobs or levers, shall be through-bolted and fully interchangeable between rose and escutcheon.

.14 Lever handles: "LNL" design.

.15 Roses: round.

.16 Finished to 26D.

.17 Standard of Acceptance:

.1	Specified	Acceptable Alternates	
.2	Sargent	Corbin	Yale
.3	8200 – Series	ML2200	8800

.6 Exit Devices: to ANSI/BMHA A156.3, Grade 1.

.1 Modern touch pad type, fabricated of brass, bronze, stainless steel or aluminum.

.2 UL listed for Accident Hazard or Fire Exit Hardware as required.

.3 Hex key dogging standard on non fire-rated exit devices. Cylinder dogging where specified.

.4 Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be ULC labeled fire exit hardware.

.5 Include all electrified functions as specified.

.6 Device Length as per manufacturer's guidelines.

.7 The design of the exit device shall eliminate the necessity of removing the device from the door for standard maintenance or keying changes.

.8 Trim as specified shall be through-bolted.

.9 All vertical rod in pairs to be less bottom rod where noted.

.10 Extension rods are required as per manufacturer's requirements.

.11 Electronic exit devices to have Linx quick connectors (QC).

.12 Exit devices to suite doors over 45mm where required.

.13 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Sargent	Corbin	Yale
.3	8800 - Series	ED5200	7100
.4	8700 - Series	ED5400	7110
.5	8600 - Series	ED5800	7120
.6	8500 - Series	ED4200	7200
.7	8400 - Series	ED4800	7220

.7 Door controls (closers): to ANSI/BMHA A156.4 as listed in Hardware Schedule.

.1 Modern type, surface applied.

.2 All closers for both interior and exterior doors shall be the product of one manufacturer and be matched in style.

.3 Surface closers shall be adjustable to provide sizes 1 through 6 and comply with ADA.

.4 Full rack and pinion construction.

.5 Closing speed, latching speed and backcheck shall be controlled by key operated valves.

.6 Captivated valves.

.7 Delayed action feature shall be available and controlled by a separate valve.

.8 Delayed action shall be available in addition to, not in lieu of, backcheck.

.9 The one piece closer body shall be of die cast aluminum alloy with 14% silicon minimum content. An increase of 15% in closing power shall be provided by means of adjustment of the arm leverage at the foot connection. (Standard Arm).

.10 All arms shall be finely finished with heavy duty forged steel main arm.

.11 Two mounting positions of the closer shall meet all requirements. Standard mountings shall provide 120° door opening and alternate mounting 180° door opening.

.12 All closers shall be suitable for standard, top jamb, parallel arm and track type applications when provided with proper brackets and arms.

.13 Closer covers shall be of high impact plastic material of flame retardant grade.

.14 Secured by machine screws.

.15 Spring power shall be continuously adjustable over the full range of closer sizes and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be tamper proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and backcheck.

.16 All closer to have a forged steel main arm and forged forearm for parallel arm closers.

.17 Finish to Aluminum 689.

.18 Standard of acceptance:

.1	Specified	Acceptable Alternates:	
.2	Sargent	Norton	Corbin
.3	1431	8500	DC6200
.4	351	7500	DC3000
.5	422	2800ST	DC5000

.8 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule, finished to stainless steel 32D.

.1 Door protection plates: kickplates type, 1.3 mm thick stainless steel, 203mm high, unbevelled edges, width less 40mm push side, width less 25mm on pull side for single doors. Width less 25mm for pairs. Finished to stainless steel 630.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates		
.2	Rockwood	Standard Metal	Ives	Hager
.3	K1050	K10A	8400	190S

.9 Door controls - overhead stop: to ANSI/BMHA A156.8, heavy duty construction, BHMA Grade 1 Certified, heavy duty architectural bronze construction.

.1 UL Classified: The 590 and 690 stops are UL 10B and UL 10C classified as miscellaneous fire door accessories.

.2 Corrosion resistance: Brass construction provides corrosion resistance in a variety of conditions.

.3 Holder Selector: 590 and 690 series holders are equipped with a turn knob to activate and deactivate the hold open function

.4 Thru bolts capture channel and end caps.

.5 Heavy duty shock spring absorbs load and gradually stops door.

.6 Blade shim required for all Aluminum Doors.

.7 Sized as per manufacturer’s guidelines. Take into account other hardware mounted on doors.

.8 Finishes

.1 Exterior to stainless steel, 26D.

.2 Interior to steel sprayed finish, EN.

.9 Standard of acceptance:

.1	Specified	Acceptable Alternates
.2	Rixson	Sargent
.3	#1 (Concealed)	690
.4	#9 (Surface)	590
.5	#2 (Concealed)	1530
.6	#10 (Surface)	1540

.10 Door Stops and Holders and Auxiliary hardware: to ANSI/BMHA A156.16 designated by letter L and numeral identifiers as listed in Hardware Schedule finished to 26D.

.1 Floor stops dome style classification. Low dome or High dome. Die cast brass. Stops to be sized according to door clearances, thresholds or undercuts as noted in the Door Schedule. Fasteners to suite floor conditions.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	441	S101	FS13
.4	443	S103	FS17
.5	483	S110	FS441

.2 Wall stops classification, convex or concave, cast brass or bronze. Fasteners to suite wall conditions.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	406	S121	WS406CV
.4	409	S123	WS406CC

.11 Thresholds and Weatherstripping Thresholds: to ANSI/BMHA A156.21.

.1 Saddle threshold 152.4 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC.

.2 Panic threshold 93.7 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert.

.3 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	PEMKO	KN Crowder	Hager
.3	179AP	CT-39P	552W
.4	252 x 3AFG	CT45A	421S
.5	251 x 226AFG	CT49A	515S

.12 Door Gasketing and Edge Seal Systems: to ANSI/BMHA A156.22.

.1 Head and Jamb seal:

.1 Extruded aluminum frame and neoprene insert, clear anodized finish.

.2 Surface overhead stops and exit device strikes to mount on top of weatherstrip to provide continuous seal.

.3 Adhesive backed black “Santoprene” to provide smoke, light and sound control. Fire labeled 1 1/2hrs.

.4 Standard of acceptance:

.1 Specified	Acceptable Alternates	
.2 PEMKO	KN Crowder	Hager
.3 319S	W-14S	878S
.4 290APK	W20N	881S
.5 2891AS	W20S	881S
.6 S88B	W22	726S
.7 288B	W21	726S

.2 Door bottom seal:

.1 Extruded Aluminum frame and nylon brush sweep, clear anodized finish.

.2 Heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open, clear anodized finish.

.3 Standard of acceptance:

.1 Specified	Acceptable Alternates	
.2 PEMKO	KN Crowder	Hager
.3 3452CNB	W35-1	770SB
.4 18100CNB	W24S	801SB
.5 4301	CT-52	747S

.3 Astragal:

.1 Flat overlapping extruded aluminum by door height with pile insert.

.2 Meeting astragal extruded aluminum frame with brush insert by each door by door height, clear anodized finish.

.3 Standard of acceptance:

.1 Specified	Acceptable Alternates	
.2 PEMKO	KN Crowder	Hager
.3 357CS	W8S	835S
.4 18061CNB	W-25S	802SB
.5 3672A	W8P	835

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 FINISHES

.1	Description	Material	BMHA
.2	Exterior Hinges	Stainless Steel Metal, Satin	630
.3	Interior Hinges	Satin Chromium Plated	626
.4	Locks	Stainless Steel Metal, Satin	630
.5	Exit Devices	Satin Chromium Plated	626
.6	Closers	Aluminum Powder Coated	689
.7	Flatware	Stainless Steel Metal, Satin	630
.8	All other items	Satin Chromium Plated	626

2.5 KEYING

.1 All locks to be masterkeyed to a new factory registered masterkey system. All locks to be masterkeyed as per the owners instructions.

.2 All cylinders to be Sargent Degree Series Series.

.3 All cylinders to be interchangeable cores.

.4 All cylinders to be construction master keyed.

.5 All locks and cylinders to be visually keyed.

.6 Consult with the Architect/Engineer and the owner and secure written approval of the complete keying layout prior to placing lock order with the factory.

.7 Grand masterkeys and masterkeys shall be sent directly to the owner by registered mail, return receipt if requested.

.8 Supply:

.1	Masterkeys	5 per group
.2	Construction Masterkeys	5
.3	Control Keys – Construction Cores	3
.4	Control Keys – Permanent Cores	3
.5	Change Keys/Lock	4

2.6 KEY CONTROL

.1 Provide a key control system, including envelopes, labels with self-locking clips, receipt forms, 3-way visible card index, temporary markers and permanent markers and standard metal cabinet. Allow for 150% of the number of locks required on the project.

.2 Provide complete cross index system set up by the Hardware Supplier and place keys on markers and hooks in the key cabinet as determined by the final key schedule.

.3 Install and give instruction to owner on how the system is to be used.

.4 Provide hinged-panel type cabinet for wall mounting.

.5 Standard of acceptance: Lund 1200.

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.

.4 Wiring Diagrams: Provide any special information, voltage requirements and wiring diagrams to other trades requiring such information.

3.2 INSTALLATION

.1 Install door hardware in accordance with manufacturer's instructions, using special tools and jigs. Fit accurately and apply securely. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.

.2 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 Manufacturers' Association.

.3 Installation is to be done by a qualified tradesman, if technical assistance is required contact the hardware supplier.

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

.5 Install key control cabinet.

.6 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.

.7 Remove construction cores and locks when directed by Contractor; install permanent cores and check operation of locks.

.8 Hardware should not be installed until all finishing is complete.

.9 All hardware to be installed level plumb and true.

.10 All operating parts to work freely and smoothly.

.11 Exterior thresholds to be set in exterior sealants.

.12 Install Power Operators as per manufacturer's instructions and by a qualified installer.

.13 Access control to be installed by a certified installer.

.14 High voltage wiring by Division 28. Low voltage wiring by access control supplier.

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.

.4 All defective or damaged hardware will have to be repaired or replaced at the contractors expense.

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 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key to Owner's Representative.

.2 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.2 Proper care, cleaning, and general maintenance of projects complete hardware.

.3 Description, use, handling, and storage of keys.

.4 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.

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

3.6 FIELD QUALITY CONTROL

.1 An inspection report will be required 6 months after substantial completion by a qualified Architectural Hardware Consultant to note any deficiencies. The inspection should include checking each lock against the key schedule to make sure the correct locks and cylinders are on the proper doors.

3.7 PROTECTION

.1 Protection must be given to all products and finishes until such time as the owner accepts the project.

3.8 CERTIFICATION

.1 After installation, Hardware Supplier is to have a regular member of the Architectural Hardware Consultants'' (AHC) Association inspect and certify in writing that all items and their installations are in accordance with specified requirements.

3.9 DOOR HARDWARE SETS

.1 The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

.2 The supplier is responsible for handing and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.

.3 Products listed in the Door Hardware Sets must meet the requirements described in the specification sections noted.

3.10 HARDWARE SCHEDULE

.1 **Set: 1.0**

Single D002, 914 x 2134 x 45, Hollow Metal x Hollow Metal,
Single D003, 914 x 2134 x 45, Hollow Metal x Hollow Metal,
Single D005, 914 x 2134 x 45, Hollow Metal x Hollow Metal,
Single D006, 914 x 2134 x 45, Hollow Metal x Hollow Metal,
Single D007, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Rim Exit Device, Classroom	CPC 64 8813 ETL	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	351 CPS	EN	SA
1	Drop Plate	351D	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Threshold	253x3AFG x Door Width		PE
1	Threshold	1842APK x Door Width		PE
1	Gasketing	2891AS x 3 Sides		PE
1	Bracket	BKT050SP		PE
1	Sweep	3452CNB x Door Width		PE

Notes:
WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL. MOUNTING BRACKET BKT050SP TO BE USED TO SUPPORT CLOSER FOOT IF REQUIRED.

.2 **Set: 2.0**

Single D013, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Storeroom/Closet Lock	CPC 8204 LNL	US26D	SA
1	Core	DG1 6300	US15	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

.3 **Set: 3.0**

Single D011, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Storeroom/Closet Lock	CPC 8204 LNL	US26D	SA
1	Core	DG1 6300	US15	SA
1	Conc Overhead Hold Open	1-X26	652	RF
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO

.4 **Set: 4.0**

Single D009, 914 x 2134 x 45, Hollow Metal x Hollow Metal, 45 min
Single D012, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Storeroom/Closet Lock	CPC 8204 LNL	US26D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	1431 O	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

.5 **Set: 5.0**

Single D010, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Privacy Lock	CPC 8265 LNL LB	US26D	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

.6 **Set: 6.0**

Single D014, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Passage Latch	CPC 8215 LNL	US26D	SA
1	Door Closer	1431 O	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Gasketing	S44BL x 3 Sides		PE
1	Gasketing	ACP112BL/2		PE
1	Concealed Door Bottom (HM Doors)	420APKL x Door Width		PE

.7 **Set: 7.0**

Single D008, 914 x 2134 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Passage Latch	CPC 8215 LNL	US26D	SA
1	Concealed Overhead Holder	1-X26	630	RF
1	Surface Closer	422 CTB2 (Pull Side)	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO

.8 **Set: 8.0**

Single D001, 3048 x 3048 x 45, Other x , Single D004, 3048 x 3048 x 45, Other x ,

1	By Door Manufacturer	Hardware	00

.9 **Set: 9.0**

Single Misc, 900 x 2134 x 45, None x None,

5	Master Key	Master Keys	SA
5	Control Key	Construction Master Keys	SA
3	Master Key	Control Keys - Construction Cores	SA
3	Master Key	Control Keys - Permanent Cores	SA
2	Control Key	Extra Keys per Lock	SA
1	Master Key	Visual Keying (Cylinder and Keys)	SA
25	Keyblank	Key Blanks	SA
1	Key Cabinet	BH-570-40-3	LU

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Glass and glazing for sections referencing this section for Products and installation.

1.2 RELATED SECTIONS

.1 Section 08 11 13 - Standard Metal Doors and Frames.

.2 Section 08 51 13 - Aluminum Windows.

1.3 REFERENCES

.1 IGMAC (Insulated Glass Manufacturers Association of Canada) - Quality Standard Specification.

.2 GANA - Glazing Manual and Glazing Sealing Systems Manual.

.3 CAN/CGSB 12.1-M90 - Tempered or Laminated Safety Glass.

1.4 SYSTEM DESCRIPTION

.1 Glass and glazing materials of this section shall provide continuity of building enclosure air barrier and vapour retarder.

.2 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass.

.3 Limit glass deflection to flexure limit of glass with full recovery of glazing materials, whichever is less.

1.5 SUBMITTALS

.1 Product Data on Glass Types Specified: Provide structural, physical and environmental characteristics, size limitations, and special handling or installation requirements.

.2 Samples: Submit two samples 300 x 300 mm in size, illustrating unit coloration and design.

1.6 QUALITY ASSURANCE

.1 Perform Work in accordance with GANA Glazing Manual and IGMAC for glazing installation methods.

.2 Select glazing compounds and sealants in accordance with glass manufacturer’s instructions.

Part 2 Products

2.1 GLASS MATERIALS AND SCHEDULE

.1 Glazing for Interior Use and Borrowed Lights:

.1 Tempered Glass: CAN/CGSB 12.1 clear; 6 mm thick unless noted otherwise.

.2 Insulating Glass Units (IGU): 25 mm (1 inch) total thickness.

.1 Outer Panes: Clear float glass.

.2 Inner Pane: Clear float glass, Low-E on surface #3.

.1 Low-E Coating: PPG Solarban 60, Cardinal LoE-272 or approved equal.

.3 Interpane Space: argon gas filled, low conductivity spacers.

.4 SHGC: maximum of 0.6 on south facing eleavtison, 0.3 all other locations.

.5 Visible Light Transmittance: minimum 0.66.

2.2 GLAZING COMPOUNDS

.1 Sealant: manufacturer's standard to attain specified performance criteria.

2.3 GLAZING ACCESSORIES

.1 Setting Blocks: Neoprene, EPDM or Silicone, 80 to 90 Shore A durometer hardness.

.2 Spacer Shims: Neoprene, Silicone, 50 to 60 - Shore A durometer hardness.

.3 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device.

.4 Glazing Splines: Resilient silicone extruded shape.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that openings for glazing are correctly sized, within tolerance and clean.

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.

.4 Prepare glazing cut-outs for installation of accessories.

3.3 GLAZING METHODS

.1 Verify that selected sealants and glazing tapes are compatible.

.2 Perform glazing as required by frame manufacturer to achieve specified performance criteria.

.3 Completed exterior glazed assemblies to provide full perimeter air and vapour seal to the glazed frames and be pressure equalized.

3.4 CLEANING

.1 Remove glazing materials from finish surfaces.

.2 Remove labels after Work is complete.

.3 Clean glass.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 The work of this Section includes all louvres installed within exterior wall assemblies as indicated on Architectural and Mechanical Drawings.

1.2 RELATED SECTIONS

.1 Section 04 26 16 - Veneer Masonry.

.2 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

.1 AAMA 2605-2020 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

.2 Air Movement and Control Association International, Inc.

.1 AMCA Standard 500-L-2015, Laboratory Methods of Testing Louvers for Rating.

.2 AMCA Publication 501-2017, Application Manual for Louvers.

.3 American Society for Testing and Materials (ASTM).

.1 ASTM B211/B211M-2019, Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.

.2 ASTM B209/B209M-2021, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate Metric.

.4 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

1.4 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data: indicate the following.

.1 Air flow and water entrainment performance test results.

.2 Material types and thickness.

.3 Shop Drawings: indicate the following.

.1 Include elevations, sections and specific details for each louvre.

.2 Show anchorage details and connections for all component parts.

.3 Schedule of insulated blank-offs.

Part 2 Products

2.1 MATERIALS

.1 AMCA Performance: A 1220 mm x 1220 mm unit shall conform to the following: 50% free area.

.2 Wind Driven Rain Performance: AMCA certified and licensed to bear the AMCA seal.

.3 Construction: welded with exposed joints ground flush and smooth.

.4 Material: extruded aluminum alloy 6063-T5.

.5 Blade: stormproof pattern with centre watershed in blade, reinforcing bosses and maximum blade length of 1500 mm.

.6 Frame, head, sill and jamb: 150 mm deep one piece extruded aluminum, minimum 3 mm thick with approved caulking slot, integral to unit.

.7 Mullions: at 1500 mm maximum centres, visible style.

.8 Fastenings: stainless steel SAE-194-8F with SAE-194-SFB nuts and resilient neoprene washers between aluminum and head of bolt, or between nut, washer and aluminum body.

.9 Screen: 12 mm mesh, 2 mm diameter wire aluminum birdscreen on inside face of louvres in formed U-frame.

.10 Size: Sizes as shown on drawings.

.11 Acceptable Manufacturers:

.1 C/S Storm Resistant Louvres.

.2 EH Price Model DE635.

.3 Ventex Model 2620.

.4 or approved equal

2.2 ACCESSORIES

.1 Joint Sealers: Silicone, colour matched to louvres, to Section 07 92 00.

2.3 FABRICATION

.1 Material: Heads, sills, jambs and mullions to be one-piece structural aluminum members with integral caulking slot and retaining beads. Frame depth 102 mm.

.2 Blades to be one-piece aluminum extrusions with front lip gutter designed to catch and direct water to sill.

.3 Louvers to be supplied with sill flashings formed from minimum 26 gauge aluminum to profiles indicated. Sill flashings to have welded side panels. Louvers and sill flashings to be installed in accordance with the manufacturer's recommended procedures to ensure complete water integrity performance of the louver system.

.4 Louvers to be mechanically assembled using stainless steel or aluminum fasteners.

.5 Include supports, anchorage, and accessories required for complete assembly.

2.4 ALUMINUM FINISHES

.1 Finish Coatings: Conform to AAMA 611.

.1 Exposed Aluminum Surfaces: PVDF fluoropolymer paint finish exceeding AAMA 2605 performance requirements; Black colour selected by Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

.1 Examine openings to receive the work. Do not proceed until any unsatisfactory conditions have been corrected.

3.2 INSTALLATION

.1 Install louvres with screens where indicated.

.2 Provide blank-offs to locations indicated and to reverse of all non-ducted louvre openings.

.3 Install sills as indicated.

.4 Repair damage to louvres to match original finish.

.5 Caulk perimeter of frames.

END OF SECTION