

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A653/A653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM B29-03, Standard Specification for Refined Lead.
 - .3 ASTM B749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CAN/CGSB-82.5-M, Insulated Steel Doors.
 - .3 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .5 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
 - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
- .6 National Fire Protection Association (NFPA)
 - .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
- .7 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-04, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .8 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
 - .3 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

- .4 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
- .5 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SYSTEM DESCRIPTION

- .1 Design Requirements:
 - .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
 - .2 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 for ratings specified or indicated.
 - .3 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.
 - .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware, fire rating, and finishes.
 - .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating, finishes.
 - .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
 - .5 Submit test and engineering data, and installation instructions.
- .4 LEED Submittals: in accordance with Section 01 35 21 - LEED Requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Dispose of packaging and waste materials in appropriate on-site bins for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.5 OPENING SIZE DEFINITIONS

- .1 Width: Widths of openings shall be measured from inside to inside of frame jamb rabbets. (Referred to as "frame rabbet width" or "nominal door width").
- .2 Height: Heights of openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame. (Referred to as "frame rabbet height" or "nominal door height")
- .3 Door Sizes: Doors shall be sized so as to fit the above openings and allow a 3 mm (0.125") nominal clearance at jambs and head of frame. A clearance of 19 mm (0.75") maximum shall be allowed between the bottom of the door and the finished floor (exclusive of floor coverings).
- .4 Tolerances: Doors and frame product shall be manufactured and installed in accordance with the CSDMA's, "Recommended Dimensional Standards for Commercial Steel Doors and Frames".

1.6 POWERSMART REQUIREMENTS

- .1 Insulated steel doors and their frames shall meet the requirements of CAN/CGSB-82.5-M "Insulated Steel Doors".

1.7 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Recycled Content: Supply building materials with recycled materials (post consumer plus ½ post-industrial content) in accordance with LEED Materials and Resources Credits MR 4.1 & 4.2 – Recycled Content.
- .5 Regional Materials: Supply building materials that are regionally extracted, harvested, or recovered within 800km of the project location when shipped by truck, or within 2400km of the project location when shipped by rail, in accordance with LEED Materials and Resources Credit MR 5.1 & 5.2 – Regional Materials.
- .6 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.

- .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
- .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
- .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 MATERIALS

- .1 Steel doors and frames manufactured in accordance with CSDMA.
- .2 Commercial grade steel to ASTM A653, CS, Type B, Coating Designation ZF75 (A25) minimum. Minimum steel thicknesses shall be in accordance with Appendix 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".
- .3 Recycled Content: Steel content to contain $\geq 35\%$ recycled material by LEED definition. (Post consumer plus $\frac{1}{2}$ post-industrial content.)
- .4 Regional Materials: To meet LEED Regional Materials requirements.

2.2 DOOR CORE MATERIALS

- .1 Honeycomb
 - .1 Structural small cell 25.4 mm (1") maximum kraft paper 'honeycomb'. Weight: 36.3 kg (80 lb.) per ream minimum, density: 16.5 kg/m^3 (1.03 pcf) minimum, sanded to required thickness.
 - .2 Fiberglass
 - .1 Loose batt type, density 24 kg/m^3 (1.5 pcf) minimum, conforming to ASTM C553 or ASTM C592.
 - .3 Polystyrene
 - .1 Rigid extruded fire retardant, closed cell board. Density; 16 to 32 kg/m^3 (1 to 2 pcf), thermal values; RSI 1.0 (R 6.0) minimum, Type 1, in accordance with ASTM C578.

2.3 ADHESIVES

- .1 Adhesives, sealants and sealant primers: Low VOC to meet LEED requirements. See Section 01 35 21 – LEED Requirements.
- .2 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
- .3 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

- .4 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMER

- .1 Prime and paint doors in accordance with Section 09 91 23 – Painting.
 - .1 Protect weatherstrips from paint.
 - .2 Provide final finish free of scratches or other blemishes.
- .2 Paints and coatings: Low VOC to meet LEED requirements. See Section 01 35 21 – LEED Requirements.
- .3 Touch-up prime CAN/CGSB-1.181.
 - .1 Maximum VOC limit 50 g/L

2.5 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior top caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Adhesives, sealants and sealant primers: Low VOC to meet requirements of LEED Indoor Environmental Quality Credit EQ – 4.1 Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, October 2003,
 - .2 Sealant: Section 07 92 00 – Joint Sealing.
 - .3 Maximum VOC limit 50g/L.
- .4 Glazing: Section 08 80 50 - Glazing

2.6 FRAME FABRICATION

- .1 Exterior frame product shall be 14 gauge. Exterior frames shall be welded type construction, thermally broken.
- .2 Interior frame product shall be 14 gauge. Interior frames and window assemblies shall be welded type construction.
- .3 Interior transom frames shall be welded type construction. Interior sidelight assemblies shall be welded type construction.
- .4 Frame product shall be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
- .5 Mortised cutouts shall be protected with steel guard boxes (may be omitted on dry wall applications).
- .6 Frame product shall be reinforced where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Drilling and tapping is by others, on site, at time of installation.

- .7 Provide anchorage appropriate to floor, wall and frame construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb. For rebate opening heights up to and including 1520 mm provide two (2) anchors, and an additional anchor for each additional 760 mm of height or fraction thereof, except as indicated below. Frames in previously placed concrete, masonry or structural steel shall be provided with anchors located not more than 150 mm from the top and bottom of each jamb, and intermediate anchors at 660 mm on centre maximum. Fasteners for such anchors shall be provided by others.
- .8 Minimum reinforcing, anchor and other component gauges shall be in accordance with Table 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".
- .9 Each door opening shall be prepared for single stud rubber door silencers, three (3) for single door openings, two (2) for double door openings, except on gasketed frame product.
- .10 Provide LEED compliant Low VOC factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .11 Fire-rated frame products shall be provided for rated openings:
 - .1 Frames, transom and sidelight assemblies shall be listed for conformance with CAN4-S104.
 - .2 Window assemblies shall be listed for conformance with CAN4-S106.
 - .3 All fire-rated frame products shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labeling shall be in accordance with NFPA 80, the listing authority's policies and label materials, and shall identify the manufacturer.
 - .4 Fire-rated frame products shall be constructed as listed for labeling in the Follow-Up Service Procedures/Factory Inspection Manuals issued by the listing agency to individual manufacturers.
- .12 Welded Type Frame Construction:
 - .1 Frame product shall be accurately mitered or mechanically jointed.
 - .2 As defined in Appendix 2 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products", frame product perimeter corner joints shall be:
 - .1 Face welded; continuously welded on the profile faces, with exposed faces filled and ground to a smooth, uniform, seamless surface.
 - .3 Joints at mullions, sills and center rails shall:
 - .1 Be coped accurately, butted and tightly fitted.
 - .2 At intersecting flush profile faces, be securely welded, filled and ground to a smooth, uniform, seamless surface.
 - .3 At intersecting recessed profile faces, be securely welded to concealed reinforcements, with exposed hairline face seams.
 - .4 At all other intersecting profile elements, have exposed hairline face seams.
 - .4 Welding shall conform to CSA W59.

- .5 Where frame product is to be installed prior to the adjacent partition, a floor anchor shall be securely attached to the inside of each jamb profile. Each floor anchor shall be provided with two (2) holes for securing to the floor. For conditions that do not permit the use of a floor anchor, an additional wall anchor, located within 150 mm (6") of the base of the jamb, shall be substituted.
- .6 Weld in two (2) temporary jamb spreaders per door opening to maintain proper alignment during shipment and handling, which shall not be used for installation.
- .7 Glazing stops shall be formed steel channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

2.7 DOOR FABRICATION

- .1 Exterior doors shall be laminated core construction.
- .2 Interior doors shall be welded stiffener construction.
- .3 Longitudinal edges shall be mechanically interlocked, tack welded at top and bottom of door, above and below each edge cutout and at 150 mm (6") on center with visible edge seams.
- .4 Doors shall be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
- .5 Holes 12.7 mm diameter and larger shall be factory prepared, except mounting and through-bolt holes, which are by others, on site, at time of hardware installation. Holes less than 12.7 mm diameter shall be factory prepared only when required for the function of the device (for knob, lever, cylinder, thumb or turn pieces) or when these holes over-lap function holes.
- .6 Doors shall be reinforced where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Drilling and tapping is by others, on site, at time of installation.
- .7 Top and bottom of doors shall be provided with inverted, recessed, welded steel channels. Exterior doors, and where otherwise scheduled by the Architect, shall be provided with flush steel top caps.
- .8 Minimum reinforcing and component gauges shall be in accordance with Table 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".
- .9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .10 Fire-rated doors shall be listed for conformance with CAN4-S104.
 - .1 All fire-rated doors shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labeling shall be in accordance with NFPA 80, the listing authority's policies and label materials, and shall identify the manufacturer.

- .2 Fire-rated doors shall be constructed as listed for labeling in the Follow-Up Service Procedures/Factory Inspection Manuals issued by the listing agency to individual manufacturers.
- .3 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings.
- .11 Laminated Core Construction. (Exterior doors.)
 - .1 Both face sheets for exterior doors shall be formed from a sheet of 16 gauge steel with polyisocyanurate core, laminated under pressure to face sheets.
- .12 Welded Stiffener Construction. (Interior doors.)
 - .1 Both face sheets for interior doors shall be formed from a sheet of 16 gauge steel.
 - .2 Doors shall be reinforced with vertical stiffeners, securely welded to each face sheet at 150 mm on center maximum.
 - .3 Voids between vertical stiffeners shall be filled with batt type insulation.
- .13 Manufacturer's nameplates shall be on hinge face and concealed from exposed view when the door is in a closed position.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.
- .3 Prior to installation, remove temporary shipping spreaders.
- .4 Prior to installation, the area of floor on which the frame is to be installed, and within the path of the door swing, shall be checked and corrected for flatness.
- .5 Door and frame product shall be checked for correct size, swing, rating and opening number.
- .6 The supplier shall be advised of any discrepancies prior to installation.
- .7 Set frames plumb, square, level and at correct elevation.
- .8 Secure anchorages and connections to adjacent construction.
- .9 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 width.

- .10 During the setting of frame product, check and correct as necessary for opening width, opening height, square, alignment, twist and plumb, in accordance with the CSDMA, "Recommended Dimensional Standards for Commercial Steel Doors and Frames".
- .11 Remove wood spreaders after frames have been built-in.
- .12 Make allowance for deflection to ensure structural loads are not transmitted to frame product.
- .13 Install doors, and hardware in accordance with hardware templates and manufacturer's instructions.
- .14 Adjust operable parts for correct clearances and function.
- .15 Install louvers, glazing and door silencers.
- .16 Finish paint in accordance with Section 09 91 23 – Painting.
- .17 Caulk perimeter of frames between frame and adjacent material.
- .18 Maintain continuity of air barrier and vapour retarder.

3.3 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.4 GLAZING

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

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Aluminum entrance doors.

1.2 REFERENCES

- .1 Aluminum Association (AA).
 - .1 DAF 45-03, Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA 609-93, Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .3 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .4 Canadian General Standards Board (CGSB).
 - .1 CGSB 1.40-97, Primer, Structural Steel, Oil Alkyd Type.
 - .2 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
 - .3 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.
- .5 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 SYSTEM DESCRIPTION

- .1 Design Criteria.
 - .1 Design frames and doors in exterior walls to:
 - .1 Accommodate expansion and contraction within service temperature range of -35 to 35 degrees C.
 - .2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E330 under wind load of 1.2 kpa submit certificate of tests performed
 - .3 Movement within system.
 - .4 Movement between system and perimeter framing components or substrate.
- .2 Performance Requirements:
 - .1 Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 psf (300 Pa) for single doors and 1.567 psf (75

- Pa) for pair of doors. A single 3'0" x 7'0" (915 x 2134) entrance door and frame shall not exceed 0.50 cfm per square foot. A pair of 6'0" x 7'0" (1830 x 2134) entrance doors and frame shall not exceed 1.0 cfm per square foot.
- .2 Structural: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.
 - .3 Thermal Performance: Computer simulation testing shall be in accordance with NFRC 100/200/500 and AAMA 507-03.
 - .3 Size glass thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20.
 - .4 Provide continuous air barrier and vapour retarder through exterior door / wall system. Primarily in line with inside pane of glass and heel bead of glazing compound.

1.4 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's for caulking materials during application and curing.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate materials and profiles and provide full-size, scaled details of components for each type of door and frame. Indicate:
 - .1 Interior trim and exterior junctions with adjacent construction.
 - .2 Junctions between combination units.
 - .3 Elevations of units.
 - .4 Core thicknesses of components.
 - .5 Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.
 - .6 Location of caulking.
 - .7 Each type of door system including location.
 - .8 Arrangement of hardware and required clearances.
- .3 Submit catalogue details for each type of door and frame illustrating profiles, dimensions and methods of assembly.

1.6 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's Instructions:

- .1 Submit manufacturer's installation instructions.
- .3 Manufacturers' Field Reports: Submit two copies of manufacturers field reports.

1.7 CLOSEOUT SUBMITTALS

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

1.8 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Manufacturer qualifications: company specializing in manufacturing the products specified in this section with minimum three years documented experience.
 - .2 Installer qualifications: company specializing in performing the work of this section with minimum 3 years documented experience.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.9 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .3 Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation

1.10 WARRANTY

- .1 For the Work of this Section, the 12 months warranty period prescribed in the General Conditions is extended to Twenty-four (24).

1.11 POWERSMART REQUIREMENTS

- .1 Thermal Transmittance (U-factor): When tested to CSA Standard A453, the thermal transmittance (U-factor) shall not be more than: $2.7 \text{ W/m}^2 \cdot ^\circ\text{C}$.
- .2 Doors to be fully weather stripped. Leakage through doors to be no greater than 17 l/s per ASTM E283 at 75 Pa.

1.12 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.

- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior

Part 2 Products

2.1 ENTRANCE DOORS

- .1 Product: Kawneer Insulclad series doors or approved equivalent in accordance with B6 Substitutes.
 - .1 Model 560
- .2 Materials:
 - .1 Aluminum (Entrances and Components):
 - .1 Material Standard: ASTM B 221; 6063-T6 alloy and temper.
 - .2 The door stile and rail face dimensions of the 560 Insulclad® entrance door will be as follows:
 - .1 Vertical Stile: 141.3mm
 - .2 Top Rail: 141.3mm
 - .3 Bottom Rail: 179.4mm
 - .2 Major portions of the door members to be 3.2mm nominal in thickness and glazing molding to be 1.3mm thick.
 - .3 Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.
 - .4 Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
 - .5 Thermal separators for door cladding shall be rigid polyvinylchloride (PVC) extrusions and VHB acrylic foam tape.
 - .6 Provide adjustable glass jacks to help center the glass in the door opening.

- .7 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.
- .8 Provide thermally broken doors for exterior.

2.2 ACCESSORIES

- .1 Fasteners: Where exposed, shall be aluminum, stainless steel or plated steel.
- .2 Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.3 RELATED MATERIALS:

- .1 Sealants: See Section 07 92 00 - Joint Sealing.
- .2 Glass: See Section 08 80 50 - Glazing.
- .3 Hardware: Section – 08 71 00 – Door Hardware.

2.4 FINISHES:

- .1 Kawneer Permanodic[®] AA-M12C22A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear).

2.5 FABRICATION

- .1 Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (28.6) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
- .2 Exposed portions of door cladding moldings shall be 3/32" (2.4) thick.
- .3 Aluminum cladding shall be interlocked with PVC separators and applied with VHB acrylic foam tape. There shall be no metal to metal contact, direct or indirect, between the cladding or the cladding attachments and the door structure.
- .4 Accurately fit and secure joints and corners. Make joints hairline in appearance.
- .5 Prepare components with internal reinforcement for door hardware.
- .6 Arrange fasteners and attachments to conceal from view.
- .7 Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.
- .8 Doors and framing to be by same manufacturer.
- .9 Provide structural steel reinforcement as required.
- .10 Fit joints tightly and secure mechanically.

- .11 Conceal fastenings.
- .12 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided under Section 08 71 00 - Door Hardware.
- .13 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure.
- .4 Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
- .5 Set thresholds in bed of mastic and secure.
- .6 Adjusting: Adjust operating hardware for smooth operation.
- .7 Set frames plumb, square, level at correct elevation in alignment with adjacent work.
- .8 Make allowances for deflection of structure to ensure that structural loads are not transmitted to frames.

3.3 GLAZING

- .1 Glaze aluminum doors and frames in accordance with Section 08 80 50 - Glazing.

3.4 CAULKING

- .1 Seal joints to provide weathertight seal at outside and air, vapour seal at inside.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealing. Conceal sealant within the aluminum work except where exposed use is permitted by Contract Administrator.

3.5 FIELD QUALITY CONTROL

- .1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

3.6 CLEANING

- .1 Perform cleaning of aluminum components in accordance with AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .2 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .3 Clean aluminum with damp rag and approved non-abrasive cleaner.
- .4 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.
- .5 Clean glass and glazing materials with approved non-abrasive cleaner.
- .6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS

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

1.2 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one sample of each type of hand entry access door.
- .3 Submit one 300 x 300 mm corner sample of each type of body entry door.

1.3 CLOSEOUT SUBMITTALS

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

1.4 DELIVERY, STORAGE AND HANDLING

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

1.5 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.

- .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 ACCESS DOORS

- .1 Sizes: Except as indicated otherwise, to be minimum sizes as follows:
 - .1 For body entry: 600 x 600 mm.
 - .2 For hand entry: 300 x 300 mm.
- .2 Construction: Rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180°.
- .3 Materials
 - .1 Tiled or marble surfaces and other special areas: Stainless steel with brushed satin or polished finish as directed by Contract Administrator.
 - .2 Other areas: Prime coated steel.
 - .1 Prime and paint to LEED low VOC requirements. See Section 09 91 23 – Painting.

2.2 EXCLUSIONS

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

Part 3 Execution

3.1 LOCATION

- .1 Provide and install access hatches where required for access to fire dampers and other mechanical service locations.
- .2 Location: Locate access doors so that equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Aluminum Association (AA).
 - .1 DAF 45-03, Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA 609.1-02, Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .3 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A167-99, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 - .2 ASTM A276-02a, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
 - .3 ASTM A480/480M-02, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
- .4 Architectural Woodwork Manufacturers' Association of Canada (AWMAC).
 - .1 Quality Standards for Architectural Woodwork 1998.
- .5 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.38-2000, Interior Enamel Undercoat.
 - .2 CAN/CGSB-1.132-M90, Zinc Chromate Primer, Low Moisture Sensitivity.
 - .3 CAN/CGSB-1.213-95, Etch Primer (Pretreatment Coating) for Steel and Aluminum.
 - .4 CGSB 1-GP-198M-2000, Primer, Cementitious, (for Galvanized Surfaces).
 - .5 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
 - .6 CAN/CGSB-12.12-M90, Plastic Safety Glazing Sheets.
 - .7 CAN/CGSB-85.100-M93, Painting.
- .6 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-O141-91(R1999), Softwood Lumber.
 - .2 CAN/CSA-Z808-96, A Sustainable Forest Management System: Guidance Document.
- .7 Environmental Choice Program (ECP).
 - .1 CCD-047-a-1998, Surface Coatings.
 - .2 CCD-048-1998, Surface Coatings - Recycled Water-Borne.
- .8 Fire Commissioner of Canada (FCC).
- .9 National Fire Protection Association (NFPA).
 - .1 NFPA 80-1999, Fire Doors and Fire Windows.

- .10 National Hardwood Lumber Association (NHLA).
 - .1 Rules for the Measurement and Inspection of Hardwood and Cypress - 1998.
- .11 National Lumber Grades Authority (NLGA).
 - .1 Standard Grading Rules for Canadian Lumber - 2000.
- .12 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN4-S104-80, Fire Tests of Door Assemblies.
 - .2 CAN4-S105-85, Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For caulking materials during application and curing.
 - .2 For door materials and adhesives.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate each type of coiling counter door, arrangement of hardware, operating mechanism and required clearances.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 300 mm long pieces of slats.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .4 Manufacturers' Field Reports: submit copies of manufacturers field reports.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for overhead coiling counter doors and hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 and CAN4-S105 for ratings specified or indicated.

- .2 Fabricate and install fire rated coiling metal counter doors in accordance with NFPA 80 to suit fire protection rating required.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .5 All rolling counter doors shall be designed to a standard maximum of 10 cycles per day and an overall maximum of 20,000 operating cycles for the life of the door .

1.6 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Recycled Content: Supply building materials with recycled materials (post consumer plus ½ post-industrial content) in accordance with LEED Materials and Resources Credits MR 4.1 & 4.2 – Recycled Content.
- .5 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 MATERIALS

- .1 Coiling doors.
- .2 Aluminum sheet metal: plain finish utility sheet.

- .3 Aluminum extrusions: Aluminum Association alloy AA6063-T5.

2.2 COILING COUNTER DOORS

- .1 Acceptable Product: Cookson CD10-1 or approved equivalent in accordance with B6 Substitutes.

- .1 Push-up rolling counter door.
.2 Steel.
.3 Face of wall mounted.
.4 Recycled Content: To contain $\geq 50\%$ recycled material by LEED definition. (Post consumer plus $\frac{1}{2}$ post-industrial content.)

.2 Materials

- .1 The door curtain shall be constructed of interconnected strip steel slats conforming to ASTM A-653. The curtain shall be constructed of 22 gauge No. 10 (1-1/4" high by 3/8" deep) slats as designated by The Cookson Company.
.2 The finish on the door curtain shall be Cookson ColorCote consisting of the following:
.1 Hot dipped galvanized G-90 coating consistent with ASTM A-653.
.2 Bonderized coating for prime coat adhesion.
.3 Factory applied Thermosetting Powder Coating applied with a minimum thickness of 2 mils. The color shall be selected by the architect and shall be chosen from standard color charts.
.3 The bottom bar shall be constructed of tubular extruded aluminum measuring 1-5/16" deep by 2-1/4" high with a double vinyl astragal on the bottom edge. The bottom bar shall be the Cookson ColorCote finish as indicated in the curtain section.
.4 The guides shall be constructed of extruded aluminum and measures 1-3/4" square. Each side of the channel portion capturing the curtain shall contain wool pile weatherstripping. The guides shall be the Cookson ColorCote finish as indicated in the curtain section.
.5 The brackets shall be constructed of 3/16" thick die cast aluminum. The brackets shall be the Cookson ColorCote finish as indicated in the curtain section
.6 The barrel shall be steel tubing of not less than 4" in diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the weight of the curtain. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The finish on the barrel shall be one (1) coat of bronze rust-inhibiting prime paint.
.7 The hood shall be fabricated from 24 gauge galvanized steel and shall be formed to fit the square brackets. The finish on the hood shall be the Cookson ColorCote finish as indicated in the curtain section.

.3 Operation

- .1 Push-up operated doors shall open and close with a maximum of 30 pounds of effort utilizing finger lifts in the bottom bar . This type of operation should not be used for doors over 12 feet wide.

.4 Locking Mechanisms

- .1 The push-up doors shall be secured by means of a concealed sliding bolt deadlock in the bottom bar operated by a thumbturn.

Part 3 Execution

3.1 INSTALLATION

- .1 Door to be installed by authorized distributor.
- .2 Install coiling counter door in accordance with manufacturers' printed instructions.
- .3 Adjust operable parts for correct function and smooth operation.

3.2 CLEANING

- .1 Perform cleaning of aluminum components in accordance with: AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .2 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Clean aluminum with damp rag and approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.3 WARRANTY

- .1 Two year warranty from the time of shipment against defects in workmanship and materials.

3.4 SCHEDULE

- .1 Kitchen:
 - .1 2438 wide x 1220mm high.
 - .2 1829 wide x 1220mm high.
 - .3 1220 wide x 1220mm high.
 - .4 See drawings for locations.
- .2 Liquor Room:
 - .1 1829 wide x 1220mm high.
 - .2 See drawings for location.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Aluminum doors and curtain wall framing systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of framing

1.2 REFERENCES

- .1 Aluminum Association Designation System For Aluminum Finishes (AA)-1997.
 - .1 DAF 45 2003, Designation System For Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA CW-DG-1-96, Aluminum Curtain Wall Design Guide Manual.
 - .2 AAMA CW-10-97, Care and Handling of Architectural Aluminum From Shop to Site.
 - .3 AAMA CW-11-85, Design Wind Loads for Buildings and Boundary Layer Wind Tunnel Testing.
 - .4 AAMA T1R-A1-02, Sound Control for Fenestration Products.
 - .5 AAMA 501-94, Methods of Test for Exterior Walls.
 - .6 AAMA 503-92, Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems.
 - .7 AAMA 611-98, Voluntary Specifications for Anodized Finishes Architectural Aluminum.
 - .8 AAMA 612-02, Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.
 - .9 AAMA 2603-02, Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - .10 AAMA 2604-02, Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- .3 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A36/A36M-103a, Specification for Carbon Structural Steel.
 - .2 ASTM A123/A123M-02, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A167-99, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A653/A653M-03, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM B209-02a, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .6 ASTM B221-02, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

- .7 ASTM E283-91(1999), Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .8 ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .9 ASTM E331-00, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .10 ASTM E413-87(1999), Classification for Rating Sound Insulation.
- .11 ASTM E1105-00, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .4 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB 1.108-M89, Bituminous Solvent Type Paint.
 - .2 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.
- .5 Canadian Standards Association (CSA International).
 - .1 CSA-G40.20/G40.21-98(R2003), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA-S136-01, North American Specification for the Design of Cold-Formed Steel Structural Members.
 - .4 CAN3-S157-M83(R2002), Strength Design in Aluminum.
 - .5 CSA W59.2-M1991(R2003), Welded Aluminum Construction.
- .6 Environmental Choice Program (ECP).
 - .1 CCD-45-95, Sealants and Caulking Compounds.
 - .2 CCD-47-1998, Surface Coatings.
 - .3 CCD-48-95, Recycled Water-Borne Surface Coatings.
- .7 Society for Protective Coatings (SSPC).
 - .1 SSPC - Paint 20 Zinc Rich Coating.
 - .2 SSPC - Paint 25 Alkyd, Zinc Oxide Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.3 SYSTEM DESCRIPTION

- .1 Vertical glazed aluminum curtain wall system includes thermally broken tubular aluminum sections with self supporting framing, shop fabricated, factory prefinished, vision glass, insulated metal panel spandrel infill, column covers,; related flashings, anchorage and attachment devices.
- .2 Assembled system to permit re-glazing of individual glass (and infill panel) units from exterior without requiring removal of structural mullion sections.

1.4 PERFORMANCE REQUIREMENTS

- .1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of system as calculated in accordance with NBC to a design pressure of 1.2 kPa (25 p.s.f.) as measured in accordance with AAMA CW 11, ASTM E330.
- .2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with NBC.
- .3 Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² (0.3 l/s· m²) at a static air pressure differential of 6.24 psf (300 Pa).
- .4 Water Resistance, (static): The test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547. There shall be no leakage at a static air pressure differential of 15 psf (720 Pa) as defined in AAMA 501.
- .5 Exterior system: Structural performance shall be based on Aluminum Association "Specification for Aluminum Structures" or CSA Standard CAN3-S157 "Strength Design in Aluminum". There shall be no deflection in excess of L/175 of the span of any framing member at design load.
- .6 Interior system: Uniform Load: A static air design load of 20 psf (958 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
- .7 Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.17 BTU/hr· ft²· °F (0.98 W/m²· °C).
- .8 Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 85_{frame} and 80_{glass}, or Condensation Index (I): when tested to CSA-A440-00, the Condensation Index shall not be less than 77_{frame} and 76_{glass}.
- .9 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.
- .10 Provide system to accommodate, without damage to components or deterioration of seals:
 - .1 Movement within system.
 - .2 Movement between system and perimeter framing components.
 - .3 Dynamic loading and release of loads.
 - .4 Deflection of structural support framing.
 - .5 Shortening of building concrete structural columns.
 - .6 Creep of concrete structural members.
- .11 Vapour seal with interior atmospheric pressure of 25 mm sp, 22 degrees C, 40% RH: No failure.

- .12 System to provide for expansion and contraction within system components caused by a cycling temperature range of 95 degrees C over a 12 hour period without causing detrimental affect to system components.
- .13 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- .14 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air barrier and vapour retarder.
- .15 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

1.5 PRODUCT DATA

- .1 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .2 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.

1.6 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

1.7 TEST REPORTS

- .1 Submit test reports in accordance with Section 01 33 00 - Submittal Procedures ____.
- .2 Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and supportive data.

1.8 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Manufacturer qualifications: company specializing in manufacturing the products specified in this section with minimum three years documented experience.
 - .2 Installer qualifications: company specializing in performing the work of this section with minimum 3 years documented experience.

- .2 Design structural support framing components to CAN3 S157 under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Manitoba.
- .3 Perform welding Work in accordance with CSA W59.2.
- .4 Pre-Installation Meetings:
 - .1 Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.
 - .2 Convene one week before starting work of this section.

1.9 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Handle work of this section in accordance with AAMA CW-10.
- .3 Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .4 Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation

1.10 WARRANTY

- .1 For the Work of this Section, the 12 months warranty period prescribed in the General Conditions is extended to Twenty-four (24).
- .2 Glazed aluminum curtain wall will stay in place and remain leak proof including coverage for complete system failure in accordance with GC 24, but for Twenty-four (24).

1.11 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.

- .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 INTERIOR “STORE-FRONT” FRAMING

- .1 Product: Kawneer Aluminum Trifab 450 Storefront System.
- .2 Materials
 - .1 Material Standard: ASTM B 221; 6063-T6 alloy and temper.
 - .2 Member Wall Thickness: Each storefront member shall provide structural strength to meet specified performance requirements.
 - .3 Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.
- .3 Accessories
 - .1 Fasteners: Where exposed, shall be Stainless Steel.
 - .2 Gaskets: Glazing gaskets shall be extruded EPDM rubber.
 - .3 Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- .4 Fabrication
 - .1 Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - .2 Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - .3 Prepare components to receive anchor devices. Fabricate anchors.
 - .4 Arrange fasteners and attachments to conceal from view.

2.2 EXTERIOR “CURTAIN-WALL” FRAMING

- .1 Product: Kawneer Aluminum Curtain Wall Series: 7500 Wall[®] or approved equivalent in accordance with B6 Substitutes.
 - .1 Model 7550 triple glazed system.
 - .2 Integral sun-shade system engineered and installed by manufacturer / supplier. Sunshade type and fins as indicated on drawings.
- .2 Materials:

- .1 Aluminum (Curtain Wall and Components):
 - .1 Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - .2 Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - .3 Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.
- .3 Accessories:
 - .1 Fasteners: Where exposed, shall be stainless steel.
 - .2 Gaskets: Interior glazing gaskets shall be black closed cell neoprene sponge in vision area. Exterior glazing gaskets and interior gaskets at spandrel areas shall be black EPDM rubber.
 - .3 Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
 - .4 Thermal Barrier: Kawneer Isoweb[®] Thermal Break: All framing members shall consist of interior and exterior extruded aluminum sections that shall be integrated with two parallel, glass reinforced nylon strips forming a continuous composite assembly.
- .4 Fabrication:
 - .1 Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal. Vertical and horizontal members shall be tubular extrusions designed for shear block corner construction.
 - .2 Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - .3 Prepare components to receive anchor devices. Fabricate anchors.
 - .1 Arrange fasteners and attachments to conceal from view.
- .5 Vandalism Sull-Sashes:
 - .1 Provide and install 6mm acrylic over all exterior glass units.
 - .2 Acrylic to be encased in full-perimeter aluminum sull-sash frames, to size required. Sull sash frame to be installed over aluminum curtain wall frame and should not protrude over clear-glass area. Manufacturer to provide installation method that does not compromise integrity and performance of window unit.
 - .3 Mechanically fasten sull-sash frame to aluminum curtain wall framing with tamper-proof removable fasteners at 305mm o.c. complete with air circulation spacers consisting of 1mm stainless steel washers installed between curtain wall framing and sull-sash frame.

2.3 RELATED MATERIALS:

- .1 Sealants: See Section 07 92 00 - Joint Sealing.
 - .1 Low VOC. See Section 01 35 21 – LEED Requirements.
- .2 Glass: See Section 08 80 50 - Glazing.

2.4 FINISHES:

- .1 Kawneer Permanodic[®] AA-M12C22A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear).

2.5 GENERAL FABRICATION

- .1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .3 Prepare components to receive anchor devices. Install anchors.
- .4 Arrange fasteners and attachments to ensure concealment from view.
- .5 Prepare system components to receive exterior doors, and hardware.
- .6 Reinforce framing members for external imposed loads.
- .7 Visible manufacturer's identification labels not permitted.
- .8 Concealed steel items: galvanized in accordance with CAN/CSA-G164M ASTM A123 to 600 gm/m².

2.6 FABRICATION: CURTAIN-WALL SYSTEM INFILL PANELS

- .1 Fabricate infill panels with metal covered edge seals around perimeter of panel assembly, enabling installation and minor movement of perimeter seal.
- .2 Reinforce interior surface of exterior panel sheet from deflection caused by wind and suction loads.
- .3 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .4 Place insulation within panel, adhered to exterior face of interior panel sheet over entire area of sheet with impale fasteners.
- .5 Ventilate and pressure equalize the air space outside the exterior surface of the insulation, to the exterior.
- .6 Arrange fasteners and attachments to ensure concealment from view.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

- .1 Install curtain wall system in accordance with manufacturer's instructions.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.
- .4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .5 Provide thermal isolation where components penetrate or disrupt building insulation.
- .6 Install sill flashings.
- .7 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials.
- .8 Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .9 Install glass and infill panels in accordance with Section 08 80 50 - Glazing to glazing method required to achieve performance criteria.
- .10 Install perimeter sealant to method required to achieve performance criteria. Type, backing materials, and installation criteria in accordance with Section 07 92 00 - Joint Sealing.

3.3 SITE TOLERANCES

- .1 Maximum variation from plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.
- .2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
- .3 Maximum sealant space between curtain wall and adjacent construction: 13 mm.

3.4 MANUFACTURER'S FIELD SERVICES

- .1 Curtain wall product manufacturers to provide field surveillance of installation of their Products.
- .2 Monitor and report on installation procedures and unacceptable conditions.

3.5 CLEANING

- .1 Remove protective materials from prefinished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

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

3.6 PROTECTION

- .1 Protect finished Work from damage.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Aluminum Association (AA), Designation System for Aluminum Finishes (2000)
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-79.1-M91, Insect Screens.
- .3 Canadian Standards Association (CSA) International
 - .1 CSA-A440-00/A440.1-00, A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.
 - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-Z91-M90(R2000), Safety Code for Window Cleaning Operations.

1.2 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate materials and details in full size 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. Indicate location of manufacturer's nameplates.

1.3 TEST REPORTS

- .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
 - .1 Windows classifications high.
 - .2 Insect screens.
 - .3 Air tightness.
 - .4 Water tightness.
 - .5 Wind load resistance.
 - .6 Condensation resistance.
 - .7 Block operation - sliding windows only.
 - .8 Sash strength and stiffness - Operable Awning.
 - .9 Ease of operation - windows with operable lights.
 - .10 Sash pull-off - vinyl windows.
 - .11 Forced entry resistance.
 - .12 Mullian deflection - combination and composite windows.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.6 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Manufacturer qualifications: company specializing in manufacturing the products specified in this section with minimum three years documented experience.
 - .2 Installer qualifications: company specializing in performing the work of this section with minimum 3 years documented experience.
- .2 Pre-Installation Meetings:
 - .1 Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.
 - .2 Convene one week before starting work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .3 Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after installation

1.8 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.

- .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
- .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 PRODUCT

- .1 All windows by same manufacturer.
- .2 Window stickers are not permitted.
- .3 Tri-pane fibreglass windows to CSA-A440/A440.1 supplemented as follows:
 - .1 Sovereign FG 325 series by Duxton or approved equivalent in accordance with B6 Substitutes.
 - .1 Awning and Fixed Lite windows as indicated in Window Schedules.
 - .2 Exterior windows complete with 250 panning perimeter trim by Duxton.
 - .3 82.5mm deep frames.
 - .4 In compliance with CAN/CSA-A440.1, CSA-A440.2 and AAMA 101/I.S.2 standards.
 - .5 Operable window ratings to CSA-A440:
 - .1 Air Tightness: A3
 - .2 Water Tightness: B6
 - .3 Wind Load Resistance: C4
 - .4 Forced Entry: F2
 - .6 Fixed window ratings to CSA-A440:
 - .1 Air Tightness: Fixed
 - .2 Water Tightness: B6
 - .3 Wind Load Resistance: C5
 - .2 Sovereign FG 450 series by Duxton or approved equivalent in accordance with B6 Substitutes.
 - .1 Strip window assembly complete with 250 panning perimeter trim by Duxton.
 - .2 114mm deep frames.
 - .3 In compliance with CAN/CSA-A440.1, CSA-A440.2 and AAMA 101/I.S.2 standards.

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- .4 Fixed window ratings to CSA-A440:
 - .1 Air Tightness: Fixed
 - .2 Water Tightness: B6
 - .3 Wind Load Resistance: C5
 - .4 Material:
 - .1 All frame and sash profiles are made from pultruded fiberglass, having a nominal wall thickness of 2.3 mm (0.090”) with minimum glass content of 60%.
 - .2 Non-structural accessory members may be vinyl or aluminum and identified as such.
 - .5 Construction:
 - .1 Frame and sash corners connected with molded reinforced polymer components and mechanically secured.
 - .2 Joints factory sealed with silicone and neatly fitted together.
 - .3 The perimeter of open-back frames shall be filled with insulation.
 - .6 Finish:
 - .1 Low VOC LEED compliant finish. See Section 01 35 21 – LEED Requirements.
 - .2 Finish shall resist chipping, blistering, chalking, discoloration and aging under normal atmospheric conditions.
 - .3 Colours:
 - .1 Interior: White – low VOC.
 - .2 Exterior: Silver to match silver anodized aluminum.
 - .7 Hardware:
 - .1 Concealed Stainless Steel hinges and Truth operators c/w Multi-point, sequential locking bar. Hardware fastened into patented reinforcements.
 - .8 Weather-stripping:
 - .1 Q-Lon air-seal gasket on interior with Santoprene bulb-type “rain screen” gasket on the exterior to provide double weather barrier.
 - .9 Glass:
 - .1 See Section 08 80 50 – Glazing.
 - .2 Glaze in accordance with CSA-A440/A440.1.
 - .3 Interior windows: Dual-pane 22mm units.
 - .4 Exterior windows: Tri-pane 35mm units.
 - .5 Glazing method - Laid in glazing using polyethylene closed cell adhesive tape on interior and a PVC glass stop locked in from exterior. Ensure a secure and positive seal for the glass.
 - .10 Insect Screens to CAN/CGSB-79.1:
 - .1 Roll-formed aluminum frame with friction fit corner keys.
 - .2 Removable aluminum screen mesh.
 - .3 Rated Heavy Duty.

- .4 Screens mounted on interior of operating windows.
- .11 Vandalism Sull-Sashes:
 - .1 Provide and install 6mm acrylic over exterior window frames as indicated in the drawings.
 - .2 Acrylic to be encased in full-perimeter aluminum sull-sash frames, to size required. Sull sash frame to be installed over window frame and should not protrude over clear-glass area. Manufacturer to provide installation method that does not compromise integrity and performance of window unit.
 - .3 Mechanically fasten sull-sash frame to window frame with tamper-proof removable fasteners at 305mm o.c. complete with air circulation spacers consisting of 1mm stainless steel washers installed between window frame and sull-sash frame.

2.2 FABRICATION

- .1 Fabricate in accordance with CSA-A440/A440.1 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.

Part 3 Execution

3.1 WINDOW INSTALLATION

- .1 Install in accordance with CSA-A440/A440.1/A440.4
- .2 Window shall be plumb and square.
- .3 Window opening to be wrapped with wall air barrier membrane in accordance with Section 07 27 00.01 – Air Barriers.
- .4 Window to be fastened through nailing flange. Lap additional layer Air barrier over nailing flange for complete water and air seal.
- .5 Foam insulate full depth of perimeter cavity. Provide additional anchorage as required to prevent bowing of window frame. See Section 07 21 29.03 – Sprayed Insulation.
- .6 Sealant in accordance with Section 07 92 00 - Joint Sealing.
 - .1 Neatly caulk all around interior perimeter of openings.
 - .2 Rod and caulk all around exterior perimeter of openings. Location of rod and caulk as indicated in the drawings.
- .7 Make all necessary final adjustments to ensure normal and smooth operation.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-69.25-M90/ANSI/BHMA A156.9-1982, Cabinet Hardware.
 - .2 CAN/CGSB-69.27-93/ANSI/BHMA A156.11-1991, Cabinet Locks.
 - .3 CAN/CGSB-69.32-M90/ANSI/BHMA A156.16-1981, Auxiliary Hardware.
 - .4 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.
 - .5 CAN/CGSB-69.36-M90/ANSI/BHMA A156.20-1984, Strap and Tee Hinges and Hasps.

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Hardware List:
 - .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate specified hardware, including make, model, material, function, finish and other pertinent information.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 Closeout Submittals:
 - .1 Provide maintenance data, parts list, and manufacturer's instructions for incorporation into maintenance manual specified in Section 01 78 00 - Closeout Submittals.

1.3 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
 - .1 Store cabinet hardware in locked, clean and dry area.

1.5 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 HARDWARE ITEMS

- .1 Use one manufacturer's product for all similar items.

2.2 CABINET HARDWARE

- .1 Cabinet hardware: to CAN/CGSB-69.25, designated by letter B and numeral identifiers as listed below.
 - .1 Hinges: self closing, all metal, screw mount hinge. Hinge type 8, half overlay, 9 mm crank, finish to steel, nickel-plated.
 - .1 Opening Angle: 120 degrees.

- .2 Acceptable Product: Hafele, Duomatic Hinges, Cat. No. 329.03.512 or approved equivalent in accordance with B6 Substitutes.
- .2 Pulls: surface mounted pull, type D, finished to chrome plated matte.
 - .1 Size: 135 x 30 mm, with hole spacing of 125 mm.
 - .2 Acceptable Product: Hafele, Modern Brass Wire Handles, Cat. No. 116.39.473 or approved equivalent in accordance B6 Substitutes.
- .3 Shelf brackets and standards: shelf brackets, load capacity of 500 kg per pair, for 380 mm wide shelves, finished to steel, grey primed.
 - .1 Acceptable Product: Hafele, Brackets, Cat. No. 287.45.459 or approved equivalent in accordance with B6 Substitutes.
- .4 Drawer slides: bottom edge mounted drawer slides, type rollers, non-self closing with $\frac{3}{4}$ extension.
 - .1 Dynamic load carrying capacity, minimum 100 lbs per pair.
 - .2 Acceptable Product: Hafele, Drawer Runners, $\frac{3}{4}$ Extension, Bottom-Mount, Model EC-438FC, Cat. No. 423.38.345 or approved equivalent in accordance with B6 Substitutes.
- .5 Locks:
 - .1 Cabinet locks: to CAN/CGSB-69.27, designated by letter E and numeral identifiers as listed below.
 - .2 Door and drawer locks: half mortised into back of door or drawer, type Cam Lock, with straight, extended lever.
 - .3 Cylinders: key into keying system as directed.
 - .1 Approved Products: Hafele, Cylinder Module System – Cam Locks, Cat. No. 235.08.303 (horizontal installation in drawers) and Cat. No. 235.08.358 (vertical installation in doors) or approved equivalent in accordance with B6 Substitutes. Finished to zinc die cast, unfinished.
 - .2 Approved Products: Hafele, Cylinder Module System – Lock Cores, Cat. No. 210.04.727 – 107 TA or approved equivalent in accordance with B6 Substitutes. Finish to nickel matte.

2.3 MISCELLANEOUS HARDWARE

- .1 Shelf supports: heavy duty stainless steel, load capacity to 150 kg or 330 lbs.
 - .1 Acceptable Products: Hafele, Hebgo Bracket, Cat. No. 287.44.434.
- .2 Closet hanger bar and supports:
 - .1 Metal pole sockets for metal poles, 2-piece for screw mounting, finished to nickel-plated.
 - .1 Acceptable Product: Hafele, 25 mm Wardrobe Rails Supports, Cat. No. 803.18.743 or approved equivalent in accordance with B6 Substitutes.
 - .2 Extension closet rod with attached end supports and centre support, finished to nickel plated.
 - .1 Acceptable Product: Hafele, Wardrobe Rail, Cat. No. 801.12.205 or approved equivalent in accordance with B6 Substitutes.
 - .3 Closet rod centre support, finished to nickel plated.

- .1 Acceptable Product: Hafele, Wardrobe Center Support, Cat. No. 801.02.250 or approved equivalent in accordance with B6 Substitutes.
- .3 Bench supports: heavy duty support finished to steel, grey primed, load capacity to 500 kg or 1100 lbs.
 - .1 Acceptable Products: Hafele, Hebgo Bracket, Cat. No. 287.45.459 or approved equivalent in accordance with B6 Substitutes.

2.4 FASTENINGS

- .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .2 Exposed fastening devices to match finish of hardware.
- .3 Use fasteners compatible with material through which they pass.

2.5 KEYING

- .1 Cabinet locks to be keyed alike in groups and master keyed. Submit keying schedule for approval.
- .2 Provide keys in duplicate for every lock in this Contract.
- .3 Provide three masterkeys.
- .4 Stamp keying code numbers on keys and cylinders.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.
- .2 Install key control cabinet and establish key control set-up.

3.3 ADJUSTING

- .1 Adjust cabinet hardware for optimum, smooth operating condition.
- .2 Lubricate hardware and other moving parts.
- .3 Adjust cabinet door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 DEMONSTRATION

- .1 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 Contract Administrator.
- .2 Maintenance Staff Briefing.
 - .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
- .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 SCHEDULE

- .1 Cabinet drawers: group A.
 - .1 1 set drawer slides Hafele, Cat. No. 423.38.345.
 - .2 1 lock - body: Hafele, Cat. No. 235.08.303; lock core: Hafele, Cat No. 210.04.727.
 - .3 1 handle pull Hafele, Cat. No. 116.39.473.
- .2 Cabinet swinging doors: group B.
 - .1 1 pair hinges B01262 626.
 - .2 1 lock – body: Hafele, Cat. No.235.08.358; lock core: Hafele, Cat. No. 210.04.727.
 - .3 1 handle pull Hafele, Cat. No. 116.393473.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
 - .3 After approval samples will be returned for incorporation in the Work.
- .3 Hardware List:
 - .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 Closeout Submittals
 - .1 Provide operation and maintenance data for door closers, locksets, door holders and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
 - .1 Store finishing hardware in locked, clean and dry area.

1.5 MAINTENANCE

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

1.6 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

- .1 Locks and latches:
 - .1 Bored and preassembled locks and latches: Sargent 11 line as stated in Hardware Schedule.
 - .2 Cylinders: Schlage C keyway .
- .2 Butts and hinges:
 - .1 Butts and hinges: Mckinney as listed in Hardware Schedule.
- .3 Exit devices: Sargent 80 series as listed in Hardware Schedule.
- .4 Door Closers and Accessories:
 - .1 Door controls (closers): Sargent as listed in Hardware Schedule.
- .5 Door Operators:
 - .1 Power assist and low energy power operated doors: Sargent 4000 series as listed in Hardware Schedule.
- .6 Auxiliary locks and associated products: Sargent as listed in Hardware Schedule.
- .7 Architectural door trim: Gallery as listed in Hardware Schedule.
- .8 Auxiliary hardware:
 - .1 Rixon overhead stops as listed in Hardware Schedule.
 - .2 Ives flushbolts as listed in Hardware Schedule.
 - .3 Automatic flush bolts: Ives as listed in Hardware Schedule.
- .9 Door bottom seal: KN Crowder as listed in Hardware Schedule.
- .10 Thresholds (Interior): 5 mm wide x full width of door opening, extruded aluminum , serrated surface. Acceptable product: CT-65 by K.N. Crowder Manufacturing Inc. See Door and Frame Schedule for locations.
- .11 Weatherstripping:
 - .1 Head and jamb seal:
 - .1 KN Crowder as listed in Hardware Schedule.
 - .2 Door bottom seal:
 - .1 KN Crowder as listed in Hardware Schedule.
- .12 Astragal: AK Draftseal as listed in Hardware Schedule.

2.3 MISCELLANEOUS HARDWARE

- .1 Indexed key control system: Telkee Key Cabinet AWC 150

2.4 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.

2.5 KEYING

- .1 Prepare detailed keying schedule in conjunction with City of Winnipeg and Community Centre master keying system. Schlage keyway on interior doors. Best cylinders on exterior doors.
 - .1 Masterkeying system must be coordinated with the Contract Administrator.
- .2 Provide keys in duplicate for every lock in this Contract.
- .3 Provide three masterkeys for each MK or GMK group.
- .4 Key groups for Sinclair Park Community Centre are as follows:
 - .1 Group 1: Front Door (only).
 - .2 Group 2: Office and Boardroom area.
 - .3 Group 3: Kitchen, Pantry and Liquor Room Doors.
 - .4 Group 4: All other Main Floor Doors.
 - .5 Group 5: All Basement Doors.
- .5 Stamp keying code numbers on keys and cylinders.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.
- .2 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .3 Install key control cabinet.
- .4 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .5 Remove exterior construction cores when directed by Contract Administrator; install permanent cores and check operation of locks.

3.3 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 DEMONSTRATION

- .1 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 Contract Administrator.
- .2 Maintenance Staff Briefing:
 - .1 Brief maintenance staff regarding:

- .1 Proper care, cleaning, and general maintenance of projects complete hardware.
- .2 Description, use, handling, and storage of keys.
- .3 Use, application and storage of wrenches for door closers, locksets, and fire exit hardware.
- .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 SCHEDULE

.1 Hardware Components:

.1	Hinge	McKinney (MCK)
.2	Flush Bolt	Gallery Specialty Hardware Ltd. (GSH)
.3	Removable Mullion	Sargent (SAR)
.4	Cylinder	Best Access System (BAS)
.5	Lockset	Sargent (SAR)
.6	Privacy Set	Sargent (SAR)
.7	Exit Device	Sargent (SAR)
.8	Deadlock	Sargent (SAR)
.9	Push Plate	Gallery Specialty Hardware Ltd. (GSH)
.10	Door Pull	Gallery Specialty Hardware Ltd. (GSH)
.11	Push/Pull	Gallery Specialty Hardware Ltd. (GSH)
.12	Door Closer	Sargent (SAR)
.13	Drop Plate	Sargent (SAR)
.14	Automatic Operator	Sargent (SAR)
.15	Kick Plate	Gallery Specialty Hardware Ltd. (GSH)
.16	Floor Stop	Gallery Specialty Hardware Ltd. (GSH)
.17	Overhead Holder/Stop	Rixon – Firemark (RF)
.18	Weatherstripping	Furnished by others (FBO)
.19	Weatherstripping	K.N. Crowder Mfg., Inc. (KNC)
.20	Astragal	K.N. Crowder Mfg., Inc. (KNC)
.21	Sweep Strip	K.N. Crowder Mfg., Inc. (KNC)
.22	Door Bottom - Auto	K.N. Crowder Mfg., Inc. (KNC)
.23	Threshold	K.N. Crowder Mfg., Inc. (KNC)
.24	Actuator	Sargent (SAR)

.2 Door List:

	Door#	Hardware Set #
.1	B01	7
.2	B02	22
.3	B03	20
.4	B17	7

.5	B19	19
.6	B20	7
.7	B22	20
.8	M01	1
.9	M02	2
.10	M03	2
.11	M04	21
.12	M05	5
.13	M06	6
.14	M07	6
.15	M08	5
.16	M09	7
.17	M10	18
.18	M11	9
.19	M12	9
.20	M13	10
.21	M14	11
.22	M15	12
.23	M16	12
.24	M17	11
.25	M18	8
.26	M19	12
.27	M20	14
.28	M21	14
.29	M22	10
.30	M23	10
.31	M24	13
.32	M25	13
.33	M26	15
.34	M27	16
.35	M28	17

.3 Hardware Sets:

Hardware Set #1

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 386 4 x 4 NRP	26D
1.0	EA	Cylinder	Best Cylinder	626
1.0	EA	Exit Device	8406	32D/Leaf#1
1.0	EA	Exit Device	8410	32D/Leaf#2
2.0	EA	Door Pull	1180-2 12	C32D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Drop Plate	350B	EN

1.0	EA	Automatic Operator	4051 x 4001D		EN
2.0	EA	Overhead Holder/Stop	6-236		626
1.0	EA	Weatherstripping	by aluminum door supplier		
1.0	Set	Astragal	W-4x W-40P	Alum	
2.0	EA	Sweep Strip	W-13S 36		Alum
1.0	EA	Threshold	CT-65 72		Alum
2.0	EA	Actuator	4296H		32D

Hardware Set #2

Pair M02, M03

Qty	UOM	Item Type	Items Series/Description		Finish
6.0	EA	Hinge	TA 786 4 x 4		26D
2.0	EA	Push/Pull	5000-2/1180-2		C32D
1.0	EA	Door Closer	351 UO	EN	
1.0	EA	Drop Plate	350B		EN
1.0	EA	Automatic Operator	4051		EN
2.0	EA	Overhead Holder/Stop	6-236		626
2.0	EA	Actuator	4296H		32D

Hardware Set #5

Single M05, M08

Qty	UOM	Item Type	Items Series/Description		Finish
3.0	EA	Hinge	TA 714 4 x 4		C26D
1.0	EA	Privacy Set	11U65 OL		26D
1.0	EA	Kick Plate	80A 10 x 1 less than door width		C32D
1.0	EA	Floor Stop	280B		626

Hardware Set #6

Single M06, M07

Qty	UOM	Item Type	Items Series/Description		Finish
3.0	EA	Hinge	TA 786 4 x 4		26D
1.0	EA	Deadlock	SC 4878		626
1.0	EA	Push Plate	80A 10 x 20		C32D
1.0	EA	Door Pull	4612-2		C32D
1.0	EA	Automatic Operator	4051		EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width		C32D
1.0	EA	Floor Stop	280B		626
2.0	EA	Actuator	4296H		32D

Hardware Set #7

Single B01, B03, B17, B20, M09

Qty	UOM	Item Type	Items Series/Description		Finish
3.0	EA	Hinge	TA 714 4 x 4 NRP		C26D
1.0	EA	Lockset	SC 11G04 OL		26D
1.0	EA	Door Closer	351 UO	EN	
1.0	EA	Kick Plate	80A 10 x 1 less than door width		C32D
1.0	EA	Floor Stop	280B		626

Hardware Set #8

Pair M18

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 786 4 x 4	26D
1.0	EA	Removable Mullion	980	Prime
2.0	EA	Exit Device	SC 8804	32D
2.0	EA	Door Pull	1180-2 12	C32D
1.0	EA	Door Closer	351 UO	EN/Leaf#2
1.0	EA	Drop Plate	350B	EN/Leaf#2
1.0	EA	Automatic Operator	4051 x 4001D	EN/Leaf#1
2.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
2.0	EA	Overhead Holder/Stop	6-336	626
2.0	EA	Actuator	4296H	32D/Leaf#1

Hardware Set #9

Pair M11, M12

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 386 4.5x 4.5 NRP	26D
1.0	EA	Removable Mullion	980	Prime
2.0	EA	Exit Device	8810	32D
2.0	EA	Door Closer	351 UO	EN
2.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
2.0	EA	Overhead Holder/Stop	6-336	626
2.0	EA	Weatherstripping	W-51/3 x 2/7	Alum
2.0	EA	Sweep Strip	W-13S 36	Alum
1.0	EA	Threshold	CT-10	Alum

Hardware Set #10

Pair M13, M22, M23

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 714 4 x 4 NRP	C26D
2.0	EA	Flush Bolt	408-12	26D
1.0	EA	Lockset	SC 11G04 OL	26D
2.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
2.0	EA	Overhead Holder/Stop	6-336	626

Hardware Set #11

Single M14, M17

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 786 4 x 4	26D
1.0	EA	Deadlock	SC 4877	626
1.0	EA	Push Plate	80A 10 x 20	C32D
1.0	EA	Door Pull	4612-2	C32D
1.0	EA	Door Closer	351 H	EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Floor Stop	280B	626

Hardware Set #12
 Single M15, M16, M19

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 714 4 x 4	C26D
1.0	EA	Lockset	SC 11G04 OL	26D
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Floor Stop	280B	626

Hardware Set #13
 Single M24, M25

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 714 4 x 4	C26D
1.0	EA	Lockset	SC 11G05 OL	26D
1.0	EA	Floor Stop	280B	626

Hardware Set #14
 Single M20, M21

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 386 4 x 4 NRP	26D
1.0	EA	Cylinder	Best Cylinder	626
1.0	EA	Exit Device	8804	
1.0	EA	Door Pull	1180-2 12	C32D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Drop Plate	350B	EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Overhead Holder/Stop	6-336	626
1.0	EA	Weatherstripping	W-51/3 x 2/7	Alum
1.0	EA	Sweep Strip	W-13S 36	Alum
1.0	EA	Threshold	CT-10	Alum

Hardware Set #15
 Single M26

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 714 4 x 4 NRP	C26D
1.0	EA	Lockset	SC 11G37 OL	26D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Floor Stop	280B	626

Hardware Set #16
 Single M27

Qty	UOM	Item Type	Items Series/Description	Finish
4.0	EA	Hinge	TA 786 4 x 4	26D
1.0	EA	Exit Device	SC 12-8813 713-ETP	32D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Floor Stop	280B	26D
1.0	EA	Weatherstripping	W-21 17	Black
1.0	EA	Door Bottom Auto	CT-52 36	Alum

Hardware Set #17

Pair M28

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 386 4 1/2" x 4 1/2" NRP	26D
1.0	EA	Removable Mullion	980	Prime
2.0	EA	Cylinder	Best Cylinder	626
2.0	EA	Exit Device	8804	
2.0	EA	Door Pull	1180-2 12"	C32D
2.0	EA	Door Closer	351 UO	EN
2.0	EA	Drop Plate	350B	EN
2.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
2.0	EA	Overhead Holder/Stop	6-236	626
2.0	EA	Weatherstripping	W-51/3 x 2/7	Alum
2.0	EA	Sweep Strip	W-13S 36"	Alum
1.0	EA	Threshold	CT-65 72"	Alum

Hardware Set #18

Pair M10

Qty	UOM	Item Type	Items Series/Description	Finish
8.0	EA	Hinge	TA 786 4 x 4	26D
1.0	EA	Removable Mullion	980	Prime
2.0	EA	Exit Device	SC 8804	32D
2.0	EA	Door Pull	1180-2 12	C32D
1.0	EA	Door Closer	351 UO	EN/Leaf#2
1.0	EA	Drop Plate	350B	EN/Leaf#2
1.0	EA	Automatic Operator	4051 x 4001D	EN
2.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
2.0	EA	Overhead Holder/Stop	6-436	626
2.0	EA	Actuator	4296H	32D

Hardware Set #19

Single B19

Qty	UOM	Item Type	Items Series/Description	Finish
3.0	EA	Hinge	TA 786 4 x 4	26D
1.0	EA	Exit Device	SC 12-8813 713-ETP	32D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Kick Plate	80A 10 x 1 less than door width	C32D
1.0	EA	Floor Stop	280B	26D
1.0	EA	Weatherstripping	W-21 17	Black
1.0	EA	Door Bottom Auto	CT-52 36	Alum

Hardware Set #20

Pair: B03, B22

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 714 4 1/2 x 4 NRP	C26D
1.0	EA	Flush Bolt	FB457 12"	626
1.0	EA	Lockset	SC 11G04 OL	26D

1.0	EA	Door Closer	1430 UO	EN
1.0	EA	Weatherstripping	W-21 20'	Black
1.0	EA	Astragal	DS151C x CP 84"	Alum
1.0	EA	Automatic Door Bottom	CT-52- 36"	Alum

Hardware Set #21

Pair M04

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 386 4 1/2" x 4 1/2" NRP	26D
1.0	EA	Removable Mullion	980	Prime
1.0	EA	Cylinder	Best Cylinder	626
1.0	EA	Exit Device	8804	32D
2.0	EA	Door Pull	1180-2 12"	C32D
1.0	EA	Door Closer	351 UO	EN
1.0	EA	Drop Plate	350B	EN
1.0	EA	Automatic Operator	4051 x 4001D	EN
2.0	EA	Overhead Holder/Stop	6-236	626
1.0	EA	Weatherstripping	W-50 1/3 x 2/7	Alum
2.0	EA	Sweep Strip	W-13S 36"	Alum
1.0	EA	Threshold	CT-65 72"	Alum
2.0	EA	Actuator	4296H	32D

Hardware Set #22

Pair B02

Qty	UOM	Item Type	Items Series/Description	Finish
6.0	EA	Hinge	TA 786 4 1/2 x 4 1/2	26D
1.0	EA	Removable Mullion	12-980	PR
2.0	EA	Exit Device	SC 12-8813 713-ETP	32D
2.0	EA	Electronic Door Closer	350 EHT 120V AC	EN
2.0	EA	Kick Plate	80A 10" x 1 1/2" less than door width	C32D
2.0	EA	Floor Stop	280B	26D
1.0	EA	Weatherstripping	W-21 17'	Black
2.0	EA	Door Bottom – Auto	CT-52 36"	Alum

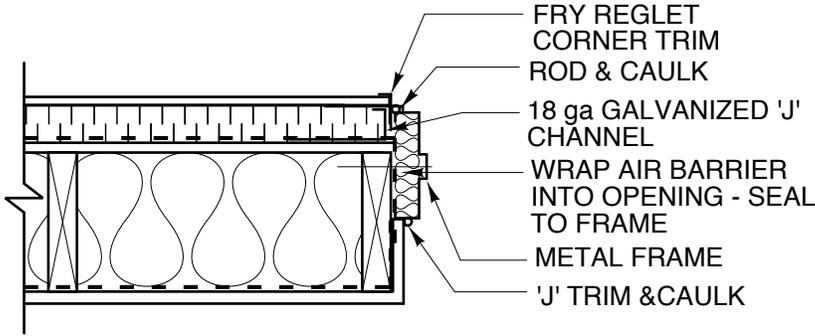
DOOR NO.	SIZE	TYPE	MATERIAL	FINISH	CORE	RATING	INSUL.	HARD WARE	FRAME TYPE	MATERIAL	FINISH	RATING	REMARKS
M01	2-914x2134	E	ALUM					1	1	ALUM			HANDICAP OPENER
M02	2-914x2134	E	ALUM					2	3	ALUM			HANDICAP OPENER
M03	2-914x2134	F	METAL	PAINT			INSUL.	2	5	W.M.F.	PAINT		HANDICAP OPENER
M04	2-914x2134	F	METAL	PAINT			INSUL.	21	2	W.M.F.	PAINT		HANDICAP OPENER
M05	914x2134	A	METAL	PAINT				5	5	W.M.F.	PAINT		INSTALL DOOR GRILLE AS PER MECHANICAL
M06	914x2134	A	METAL	PAINT				6	7	W.M.F.	PAINT		HANDICAP OPENER & INSTALL DOOR GRILLE AS PER MECHANICAL
M07	914x2134	A	METAL	PAINT				6	7	W.M.F.	PAINT		HANDICAP OPENER & INSTALL DOOR GRILLE AS PER MECHANICAL
M08	914x2134	A	METAL	PAINT				5	5	W.M.F.	PAINT		INSTALL DOOR GRILLE AS PER MECHANICAL
M09	914x2134	A	METAL	PAINT		3/4 HR		7	4	W.M.F.	PAINT	3/4 HR	THRESHOLD - CT-65 & WEATHERSTRIPPING & INSTALL RATED DOOR GRILLE AS PER MECHANICAL
M10	2-1016x2134	D	METAL	PAINT				18	7	W.M.F.	PAINT		THRESHOLD - CT-65 & HANDICAP OPENER
M11	2-914x2134	A	METAL	PAINT			INSUL.	9	2	W.M.F.	PAINT		
M12	2-914x2134	A	METAL	PAINT			INSUL.	9	2	W.M.F.	PAINT		
M13	2-914x2134	A	METAL	PAINT				10	7	W.M.F.	PAINT		THRESHOLD - CT-65
M14	914x2134	C	METAL	PAINT				11	7	W.M.F.	PAINT		THRESHOLD - CT-65
M15	914x2134	C	METAL	PAINT				12	5	W.M.F.	PAINT		
M16	914x2134	C	METAL	PAINT				12	5	W.M.F.	PAINT		
M17	914x2134	A	METAL	PAINT				11	6	W.M.F.	PAINT		THRESHOLD - CT-65
M18	2-762x2134	D	METAL	PAINT				8	8	W.M.F.	PAINT		THRESHOLD - CT-65 & HANDICAP OPENER
M19	1016x2134	A	METAL	PAINT				12	8	W.M.F.	PAINT		THRESHOLD CT-65 & INSTALL DOOR GRILLE AS PER MECHANICAL
M20	914x2134	A	METAL	PAINT			INSUL.	14	2	W.M.F.	PAINT		
M21	914x2134	A	METAL	PAINT			INSUL.	14	2	W.M.F.	PAINT		
M22	2-762x2134	A	METAL	PAINT				10	6	W.M.F.	PAINT		INSTALL DOOR GRILLE AS PER MECHANICAL
M23	2-762x2134	A	METAL	PAINT				10	6	W.M.F.	PAINT		THRESHOLD CT-65 & INSTALL DOOR GRILLE AS PER MECHANICAL
M24	914x2134	A	METAL	PAINT				13	5	W.M.F.	PAINT		600 SIDE LITE
M25	914x2134	A	METAL	PAINT				13	5	W.M.F.	PAINT		600 SIDE LITE
M26	914x2134	A	METAL	PAINT				15	5	W.M.F.	PAINT		THRESHOLD CT-65 & 600 SIDE LITE
M27	1220x2134	C	METAL	PAINT		3/4 HR		16	4	W.M.F.	PAINT	3/4 HR	HOLD OPEN/ LOCKABLE
M28	2-813x2134	C	METAL	PAINT			INSUL.	17	2	W.M.F.	PAINT		
M29	914x2134	A	METAL	PAINT		3/4 HR			4	W.M.F.	PAINT	3/4 HR	THRESHOLD - CT-65
B01	914x2134	A	METAL	PAINT		3/4 HR		7	19	W.M.F.	PAINT	3/4 HR	WEATHERSTRIPPING
B02	2-813x2134	B	METAL	PAINT		3/4 HR		22	9	W.M.F.	PAINT	3/4 HR	HOLD OPEN
B03	2-813x2134	A	METAL	PAINT		3/4 HR		20	9	W.M.F.	PAINT	3/4 HR	
B04	Existing												
B05	Existing												
B06	Existing												INSTALL DOOR GRILLE AS PER MECHANICAL
B07	Existing												INSTALL DOOR GRILLE AS PER MECHANICAL
B08	Existing												
B09	Existing												
B10	Existing												
B11	Existing												
B12	Existing												
B13	Existing												
B14	Existing												INSTALL DOOR GRILLE AS PER MECHANICAL
B15	Existing												INSTALL DOOR GRILLE AS PER MECHANICAL
B16	Existing												
B17	914x2134	A	METAL	PAINT				7	9	W.M.F.	PAINT		
B18	Existing												
B19	914x2134	B	METAL	PAINT		3/4 HR		19	9	W.M.F.	PAINT	3/4 HR	
B20	914x2134	A	METAL	PAINT		3/4 HR		7	9	W.M.F.	PAINT	3/4 HR	WEATHERSTRIPPING
B21	914x2134	A	METAL	PAINT		3/4 HR			4	W.M.F.	PAINT	3/4 HR	
B22	2-610x2032	A	METAL	PAINT		3/4 HR			9	W.M.F.	PAINT	3/4 HR	REMOVE EXISTING DOOR-WIDEN OPENING FOR NEW DOOR & WEATHERSTRIPPING
B23	4000 x 2450												HUF COR PARTITION DOOR HARDWARE BY MANUFACTURERS

NOTE: ALL NEW METAL DOORS TO BE PAINTED AS SPECIFIED
NOTE: ALL NEW ALUMINUM DOORS AND FRAMES ANODIZED

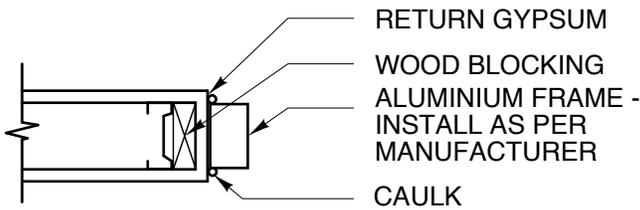
NOTE: W.M.F - WELDED METAL FRAME
ALUM - ALUMINUM

DOOR & FRAME SCHEDULE

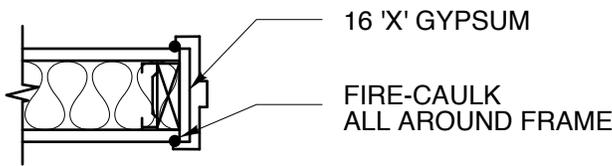
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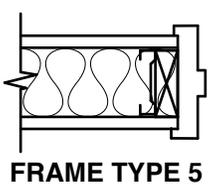
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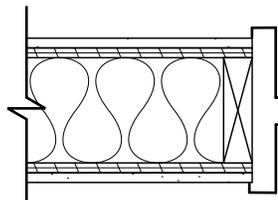
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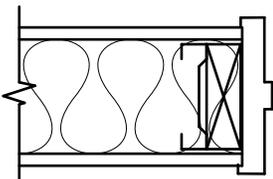
FRAME TYPE 4 - FIRE-RATED INTERIOR



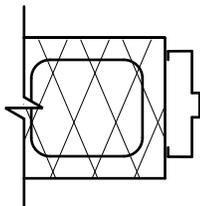
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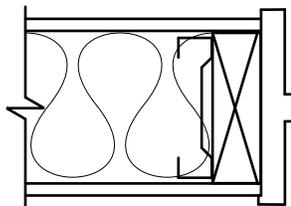
FRAME TYPE 8



FRAME TYPE 6



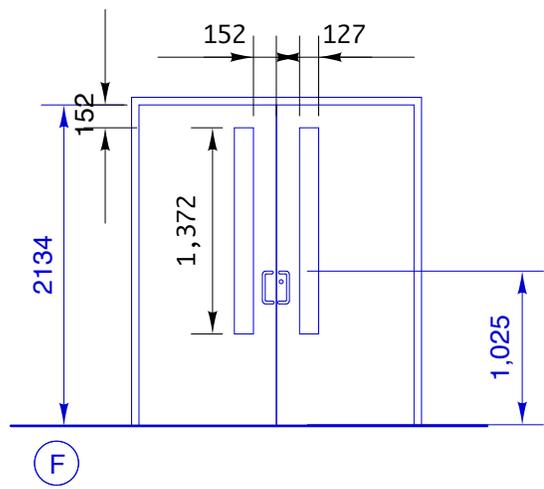
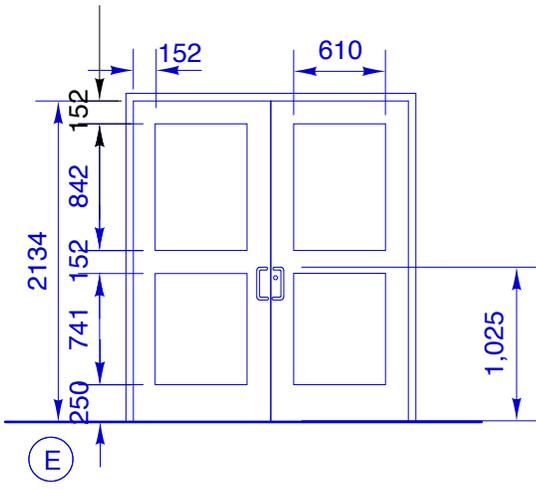
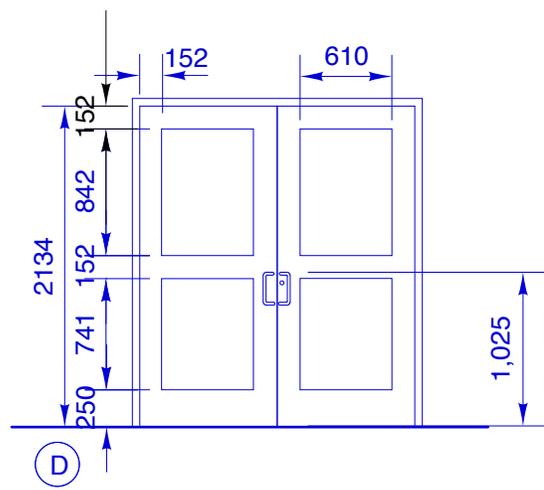
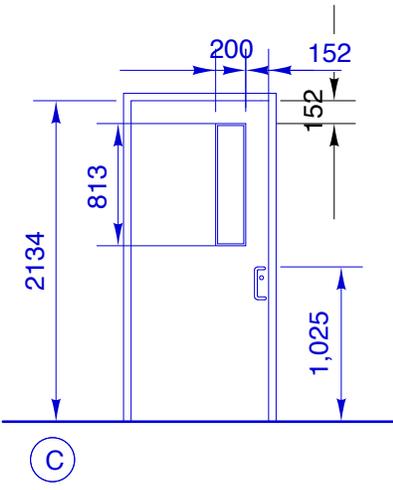
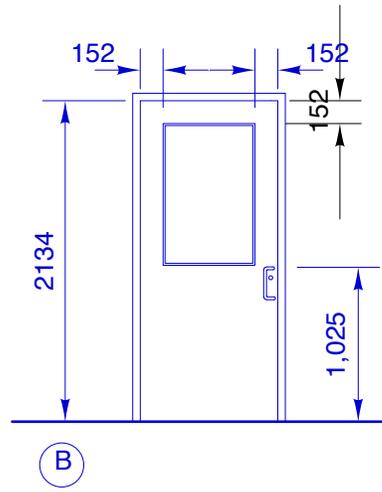
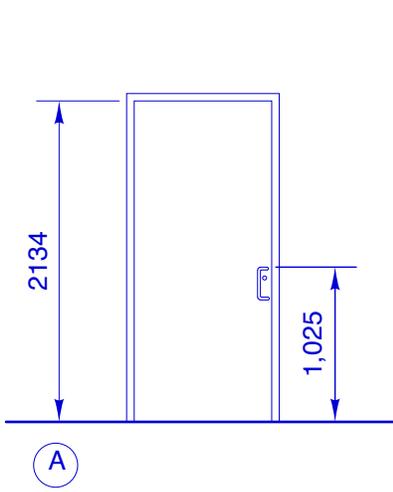
FRAME TYPE 9



FRAME TYPE 7

DOOR, FRAME AND OPENING NOTES:

1. ALL GLAZING IN DOORS SHALL BE TEMPERED. ALL GLAZING IN RATED DOORS SHALL BE GEORGIAN WIRED GLASS.
2. EXTERIOR METAL DOORS SHALL BE INSULATED.
3. INSULATE ALL AROUND EXTERIOR DOOR FRAMES.
4. INSULATE ALL AROUND CORRIDOR SOUND WALLS.
5. DOOR AND FRAME SUPPLIERS SHALL REFER TO WALL TYPES FOR REQUIRED FRAME DEPTHS. FAILURE TO DO SO WILL BE THE RESPONSIBILITY OF THE SUPPLIER.
6. REFER TO THE DRAWINGS FOR INTERIOR DOOR GLAZING AND SIELITE PROFILES.
7. CAULK AND SEAL ALL EXTERIOR FRAMES TO AIR BARRIER.
8. GLAZING IN EXTERIOR DOORS SHALL BE DOUBLE HERMETICALLY SEALED AND 6 mm TEMPERED UNITS.
9. ADD EQUIVALENT GYPSUM BOARD TO DOOR ROUGH OPENING WHERE THE WALL IS SHOWN TO BE FIRE RATED.
10. DOOR SUPPLIER TO REVIEW AND ADVISE ARCHITECT OF ANY DISCREPANCIES AND/OR OTHERWISE AS REQUIRED.



Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI/ASTM E330-02, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C542-94(1999), Specification for Lock-Strip Gaskets.
 - .2 ASTM D790-02, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D1003-00, Test Method for Haze and Luminous Transmittance of Plastics.
 - .4 ASTM D1929-96(R2001)e1, Test Method for Determining Ignition Temperature of Plastics.
 - .5 ASTM D2240-02b, Test Method for Rubber Property - Durometer Hardness.
 - .6 ASTM E84-01, Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM F1233-98, Test Method for Security Glazing Materials and Systems.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.
 - .3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
 - .4 CAN/CGSB-12.4-M91, Heat Absorbing Glass.
 - .5 CAN/CGSB-12.5-M86, Mirrors, Silvered.
 - .6 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
 - .7 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .8 CAN/CGSB-12.9-M91, Spandrel Glass.
 - .9 CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting.
 - .10 CAN/CGSB-12.11-M90, Wired Safety Glass.
 - .11 CAN/CGSB-12.12-M90, Plastic Safety Glazing.
 - .12 CAN/CGSB-12.13-M91, Patterned Glass.
- .4 Canadian Standards Association (CSA International).
 - .1 CSA A440.2-98, Energy Performance Evaluation of Windows and Sliding Glass Doors.
 - .2 CSA Certification Program for Windows and Doors 2000.
- .5 Environmental Choice Program (ECP).
 - .1 CCD-045-95, Sealants and Caulking.
- .6 Flat Glass Manufacturers Association (FGMA).

- .1 FGMA Glazing Manual - 1997.
- .7 Laminators Safety Glass Association (LSGA).
 - .1 LSGA Laminated Glass Design Guide 2000.

1.2 SYSTEM DESCRIPTION

- .1 Performance Requirements:
 - .1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
 - .1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
 - .2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to a design pressure of 1 kPa as measured in accordance with ANSI/ASTM E330.
 - .3 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.

1.3 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 Closeout Submittals:
 - .1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

- .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 SITE CONDITIONS

- .1 Environmental Requirements:
 - .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.6 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.
- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Regional Materials: Supply building materials that are regionally extracted, harvested, or recovered within 800km of the project location when shipped by truck, or within 2400km of the project location when shipped by rail, in accordance with LEED Materials and Resources Credit MR 5.1 & 5.2 – Regional Materials.
- .5 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 MATERIALS: FLAT GLASS

- .1 Regional Materials: Glass to meet LEED Regional Materials requirements.
- .2 Safety glass: to CAN/CGSB-12.1.
 - .1 Type 2-tempered.
 - .2 Class B-float.
- .3 Wired glass: to CAN/CGSB-12.11.

- .1 Type 1-Polished both sides (transparent).
- .2 Wire mesh styles 3-Square.
- .4 Plastic glazing: to CAN/CGSB-12.12, 6 mm thick.
 - .1 Material: acrylic, clear.
 - .1 Where indicated on window schedule.
 - .2 Category: 2.
 - .3 Light Transmission: Minimum 80%.
 - .5 Patterned glass: to CAN/CGSB-12.13.
 - .1 Type 2-Tempered.
 - .2 Styles A-Figured one surface.
 - .3 Surface treatment: Etching.
 - .4 AFG Glass Matelux or approved equivalent in accordance with B6 Substitutes.
 - .6 Low emissivity (LOW E) glass:
 - .1 Thickness 4mm or as determined by manufacturer for window sizing.
 - .2 Comfort Ti-AC 40 low-e coating or approved equivalent in accordance with B6 Substitutes.
 - .1 Metallic coating: soft, sputtered.
 - .2 Light transmittance: 0.69
 - .3 Shading co-efficient: 0.45
 - .4 U-Value: 0.3 h-ft²·°F/Btu
 - .5 Tempered panes where indicated by window schedule.

2.2

MATERIALS: SEALED INSULATING GLASS

- .1 Exterior insulating glass units: to CAN/CGSB-12.8, triple unit, 35mm thickness.
 - .1 Glass thickness: As indicated in window schedule and to Building Code requirements. Minimum 3mm.
 - .2 Inter-cavity space thickness: 12.7mm or to width required to accommodate glazing thickness. Warm edge, low conductivity spacers. Super spacer or approved equivalent in accordance with B6 Substitutes.
 - .3 Glass coating: single low-e Comfort Ti-AC 40 or approved equivalent in accordance with B6 Substitutes.
 - .4 Install acid etched interior pane on south facing gym windows.
 - .1 Matelux or approved equivalent in accordance with B6 Substitutes.
 - .5 Solar Heat Gain Co-efficient: 0.29
 - .1 Based on 1200mmx1500mm high Duxton Series 325 fixed.
 - .6 U-value: 0.2 h-ft²·°F/Btu
 - .1 Based on 1200mmx1500mm high Duxton Series 325 fixed.
 - .7 Manufacture glass units with dual seal to CGSB 12.8-90 and certified by the Glass Manufacturer's Association.

2.3 MATERIALS

- .1 Sealant: Section – 07 92 00 – Joint Sealing.

ACCESSORIES

- .2 Setting blocks: by manufacturer, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.
- .3 Spacer shims: by manufacturer, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
- .4 Glazing tape and caulking by manufacturer.
 - .1 To meet LEED low VOC requirements.
- .5 Glazing splines: by manufacturer, extruded shape to suit glazing channel retaining slot, or as recommended by window manufacturer.
- .6 Glazing clips: manufacturer's standard type.
- .7 Lock-strip gaskets: to ASTM C542.
- .8 Mirror attachment accessories:
 - .1 Concealed stainless steel clip wall attachments.
 - .2 Vandal-resistant mounting.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

- .1 Verify that openings for glazing are correctly sized and within tolerance.
- .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

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

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

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, below sight line. Seal corners by butting tape and dabbing with sealant.
- .3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- .4 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .5 Rest glazing on setting blocks and push against tape and heel head of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.
- .6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape 6 mm below sight line.
- .7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.
- .8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION: MIRRORS

- .1 Set mirrors with clips. Anchor rigidly to wall construction.
- .2 Place plumb and level.

3.6 CLEANING

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

3.7 PROTECTION OF FINISHED WORK

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

3.8 SCHEDULE

- .1 Mirrors where indicated in Washroom plans and elevations.
- .2 Refer to Drawings, Door schedules and Window schedules for Window and Door glazing.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 The Aluminum Association Inc. (AAI)
 - .1 AAI DAF-45-2003, Designation System for Aluminum Finishes - 9th Edition.
- .2 Air Movement and Control Association International (AMCA)
 - .1 AMCA 500-D-98, Laboratory Methods of Testing Dampers for Rating.
 - .2 AMCA 500-L-99, Laboratory Methods of Testing Louvers for Rating.
 - .3 AMCA 501-03, Application Manual for Air Louvers.
 - .4 AMCA 511-99(R2004), Certified Ratings Program for Air Control Devices.
- .3 American National Standards Institute (ANSI)
 - .1 ANSI H35.1/H35.1M-06, Alloy and Temper Designation Systems for Aluminum.
- .4 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A167-99(2004), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A653/A653 M-05a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM A1008/A1008M-05b, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable.
 - .4 ASTM B32-04, Standard Specification for Solder Metal.
 - .5 ASTM B209-04, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .6 ASTM B221-05a, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .7 ASTM B370-03, Standard Specification for Copper Sheet and Strip for Building Construction.
 - .8 ASTM D523-89(1999), Standard Test Method for Specular Gloss.
 - .9 ASTM D822-01, Standard Practice for Filtered Open-Flame Carbon-Arc Exposure of Paint and Related Coatings.
- .5 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.213-2004, Etch Primer (Pretreatment Coating of Tie Coat) for Steel and Aluminum.
 - .2 CAN2-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.
 - .2 Indicate fabrication and erection details, including anchorage, accessories, and finishes.
- .4 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.
 - .1 Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.
- .5 Closeout Submittals:
 - .1 Provide operation and maintenance data for manual or motorized operated louvres for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to the site in undamaged condition.
- .2 Storage and Protection:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Protect louvres from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .3 Waste Management and Disposal:
 - .1 Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.4 LEED REQUIREMENTS

- .1 See Section 01 35 21 - LEED Requirements.
- .2 LEED Submittals: Submit LEED supporting documentation in accordance with Section 01 35 21 - LEED Requirements.

- .3 Waste Management and Disposal: Dispose of packaging and waste materials in appropriate on-site bins for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Indoor Environmental Quality Credit EQ 4 – Low - Emitting Materials.
 - .1 LEED Indoor Environmental Quality Credit EQ 4.1 – Low-Emitting Materials: Adhesives and Sealants.
 - .1 Low VOC complying with SCAQMD Rule #1168, Latest edition.
 - .2 LEED Indoor Environmental Quality Credit EQ 4.2 – Low-Emitting Materials: Paints and Coatings.
 - .1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition.
 - .3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition.

Part 2 Products

2.1 MATERIALS

- .1 Weather resistant louvres, with bird screens made to withstand a wind load of not less than 1.44 kilopascals (30 p.s.f.)
- .2 Wall louvers: complete with AMCA certified ratings program seal for air performance and water penetration in accordance with AMCA 500-D AMCA 500-L and AMCA 511.
- .3 Ratings to indicate water penetration of 0.06 kilograms or less per square meter of free area at free velocity of 244 meters per minute.
- .4 Aluminum extrusions: to Aluminum Association alloy AAI DAF-45, ANSI H35.1/H35.1M, ASTM B221 alloy 6063-T5.
- .5 Nails and fasteners: same material as fabricated items.
- .6 Primer: to CAN/CGSB-1.213 aluminum surfaces.
- .7 Screens:
 - .1 Insect screens: 0.3 mm diameter aluminum wire 18 x 14 mesh with 60% free area, secured to aluminum frame.
- .8 Extruded aluminum louvres:
 - .1 Construct louvres from aluminum extrusions of minimum 3 mm thickness to sizes and shapes indicated.
 - .2 Arrange blades, mullions and frame extrusions as indicated.
 - .3 Install concealed vertical stiffeners spaced to meet required loads.

- .4 Complete louvre assembly to have % free area required by Mechanical drawings and specifications.
- .9 Adjustable louvres:
 - .1 Construct manually adjustable louvres from aluminum extrusions of minimum 3 mm thickness.
 - .2 Arrange blades, mullions and frame extrusions as indicated.
 - .3 Center pivot stormproof type blades with two reinforcing bosses with pinions operating in self-lubricating nylon bearings.
 - .4 Arrange blades to be operated by concealed drive arms at each jamb. Connect drive arms by torsion bars operating in nylon bearings.
 - .5 Equip louvre blades and sills with vinyl gasket weather seals. mechanically fasten vinyl gaskets to ends of louvre blades to provide jamb weather seal.
 - .6 Complete louvre assembly to have % free area area required by Mechanical drawings and specifications.
- .10 Door louvres:
 - .1 Construct door louvres from aluminum extrusions minimum 3mm thick.
 - .1 Minimum free area of 35 % or as indicated in Mechanical drawings and specifications.
 - .2 Provide fasteners to suit louvre material.
 - .2 Use sight-proof blades.
 - .3 Provide separate adjustable trim member for clamping louvre in opening.
 - .4 Miter frame and trim members at corners and secure rigidly with corner brackets.
 - .5 Secure interior frame with countersunk tamperproof screws.
- .11 Brick vents:
 - .1 Construct brick vents from fibreglass steel aluminum extrusions minimum 3 mm thick with 6 mm structural ribs: sizes of brick vents as indicated.
 - .2 Attach insect screen to interior face of vent.
 - .3 Provide weepholes at 125 mm on centre.
 - .4 Apply protective masking cover on exposed surfaces before shipping.

2.2 FINISHES

- .1 Clear anodized finish.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install louvres and vents where indicated.
- .2 Set adjustable louvre blades for uniform alignment in open and closed positions.
- .3 Adjust louvres so moving parts operate smoothly.
- .4 Attach insect screen to inside face of louvre or vent.
- .5 Repair damage to louvres and vents to match original finish.
- .6 Install wall louvers using flanges or as appropriate for wall construction and in accordance with manufacturer's recommendations. To meet Contract Administrator's approval.

3.3 CLEANING

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

3.4 PROTECTION

- .1 Where aluminum contacts metal other than zinc, paint dissimilar metal with primer and two coats of aluminum paint.
- .2 Paint metal in contact with mortar, concrete, or other masonry materials with alkali-resistant coatings.
- .3 Paint wood or other absorptive materials that may become repeatedly wet and in contact with metal.

3.5 SCHEDULE

- .1 Refer to Mechanical Drawings.
- .2 Refer to Architectural Elevations.
- .3 Where indicated in drawings and specifications. Note especially:
 - .1 Mechanical drawings.
 - .2 Building elevation drawings.

END OF SECTION