DOOR SCHEDULE

No.	RM No./NAME	HDW SET	WDTHxHGT		THK	MAT	FIN	FRR	INSUL	FR MAT	FR FIN	REMARKS
D100a	100 vestibule (ext)	1	9'-7"	7'-0" + 6" header	1 3/4"	GL/AL	CLR ANNODIZED		YES	AL	CLR ANNODIZED	- dual sliding power doors w/asymmetrical sidelites
D100b	101 main library	2	9'-7"	7'-0" + 6" header	1 3/4"	GL/AL	CLR ANNODIZED		YES	AL	CLR ANNODIZED	- dual sliding power doors w/asymmetrical sidelites
D101	101 main library (ext)	3	3'-3"	7'-0"	1 3/4"	GL/AL	DK BRNZ ANNODIZED		YES	AL	DK BRNZ ANNODIZED	- phantom door, within curtain wall system
D102a	102 mpr	4	4'-0"	7'-0"	1/2"	GL	n/a			n/a		- no frame glass door
D102b	102 mpr	5a	4'-0"	7'-0"	1/2"	GL	n/a			n/a		- no frame glass door
D103	103 mpr storage	6	5'-4"	7'-0"	1 3/4"	STL	PAINT			n/a		- no frame double doors
D104	104 office	5b	3'-3"	7'-0"	1/2"	GL	n/a			n/a		- no frame glass door
D105	105 tutorial	4	3'-3"	7'-0"	1/2"	GL	n/a			n/a		- no frame glass door
D106	106 universal w/c	7a	3'-3"	6'-10"	1 3/4"	STL	PAINT			STL	PAINT	
D107-110	(NOT USED)											
D111	111 janitor	8	3'-0"	6'-10"	1 3/4"	STL	PAINT	45 min		STL	PAINT	
D112	112 staff w/c	7b	3'-3"	6'-10"	1 3/4"	STL	PAINT			STL	PAINT	
D113	113 IT room	9	5'-4"	6'-10"	1 3/4"	STL	PAINT			STL	PAINT	- double door
D114	114 storage	8	3'-3"	6'-10"	1 3/4"	STL	PAINT			STL	PAINT	
D115	(NOT USED)											
D116	116 staff room	10	3'-3"	6'-10"	1 3/4"	STL	PAINT			STL	PAINT	- 1/2 lite in door
D117a	117 mech (ext)	11	3'-0"	7'-0"	1 3/4"	STL	PAINT		YES	STL	PAINT	
D117b	117b crawlspace	12	3'-0"	3'-0"	1 3/4"	STL	PAINT	45 min		STL	PAINT	
D118	exterior gate	13	3'-8"	7'-2 1/2"								- see drawings for construction details

NOTES:
- all dimensions are nominal
- see elevations for special requirments
- site confirm all openings

ABBREVIATIONS
AL - aluminum
GL - glass
STL - steel

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 07 26 00 – Vapour Retarders
.2 Section 07 46 13 – Thermofused Membrane Air/Vapour Barrier
.3 Section 07 62 00 – Sheet Metal Flashing and Trim
.4 Section 07 92 00 – Joint Sealants
.5 Section 08 71 00 – Door Hardware
.6 Section 08 80 50 – Glazing
.7 Section 09 91 00 – Painting

1.2. REFERENCES

.1 American Society for Testing and Materials International (ASTM)
  .1 ASTM A 653/A 653M-[06a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  .2 ASTM B 209M, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]
.2 Canada Green Building Council (CaGBC)
  .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).
.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-1.181-[99], Ready-Mixed Organic Zinc-Rich Coating.
  .2 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.
  .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).
  .3 CSA W59.2 –M1991, Welded Aluminum Construction.
.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 Underwriters' Laboratories of Canada (ULC)
  .1 CAN/ULC-S701-[01], Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  .2 CAN4-S104-[M80], Standard Method for Fire Tests of Door Assemblies.
  .3 CAN4-S105-[M85], Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3. 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 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 and NFPA 252 listed by nationally recognized agency having factory inspection services.

1.4. ACTION AND INFORMATIONAL 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 Manitoba, Canada.
  .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware and fire rating and finishes.
  .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and fire rating and finishes.
  .4 Indicate jamb and head details necessary to preserve the fire resistance rating of the assembly in which the door occurs.
  .5 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
.4 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

1.5. DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
.2 Store in vertical position, spaced to provide ventilation between components.
.3 Clean and touch up abrasions or disfigurement caused by shipping or handling with zinc-rich primer.

2. PRODUCTS

2.1. MATERIALS

.1 Sheet Steel: Galvanized steel ASTM A653/A653M, commercial grade (CS), Type B,
  .1 Coating designation G90 for exterior doors and frames
  .2 Coating designation A01 for interior doors and frames
.2 Reinforcement Channel: To CSA G40.20/G40.21, Type44W, coating designation to ASTM A653M, ZF75.
.3 Extruded aluminum: to ASTM B 221

2.2. DOOR CORE MATERIALS

.1 Polyurethane: to CAN/ULC-S704 rigid, modified polyisocyanurate, closed cell board. Density 32 kg/m³. Thermal value R-11.0 minimum.
.2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 450 degrees F for duration determined by Manitoba Building Code requirements. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3. ADHESIVES

.1 Cores and Steel Components: heat resistant, structural reinforced epoxy, resin-based adhesive.
.2 Lock-seam doors: Reinforced epoxy resin, high viscosity, thicksotroptic sealant.

2.4. PRIMER

.1 Rust inhibitive touch-up prime CAN/CGSB-1.181.

2.5. ACCESSORIES

.1 Door hardware: specified in Section 08 71 00.

.2 Glass: specified in Section 08 80 50. Where specified in exterior doors, provide double-glazed, thermally broken, sealed units.

2.6. FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.
.2 Fabricate frames to profiles and maximum face sizes as indicated.
.3 Exterior frames: 16 gauge metal welded, thermally broken type construction.
.4 Interior frames: 16 gauge metal welded type construction.
.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
.6 Protect mortised cutouts with steel guard boxes.
.7 Prepare frame for door silencers, 3 for single door, and 2 at head for double door.
.8 Manufacturer's nameplates on frames and screens are not permitted.
.9 Conceal fastenings except where exposed fastenings are indicated.
.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
.11 Insulate exterior frame components with polyurethane insulation.

2.7. FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.
.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
.3 Provide 2 anchors for rebate opening heights up to 60” and 1 additional anchor for each additional 30” of height or fraction thereof.

2.8. FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.
.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
.5 Securely attach floor anchors to inside of each jamb profile.
.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
.7 Prior to shipment, components shall be designated with an identifier corresponding to the numbering on the approved submittal drawings.

2.9. DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass openings as indicated.
.2 Exterior doors: laminated core construction, 20-gauge face sheet.
.3 Interior doors: laminated core construction, 20-gauge face sheet.
.4 Fabricate doors with longitudinal edges mechanically inter-locked with no visible edge seams.
.5 Doors shall be mortised, blanked, reinforced, drilled and tapped at the factory for template hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
.6 Holes 12.7 mm (0.5") 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 (0.5") 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.

.7 Doors shall be reinforced only, 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.

.8 Reinforce doors where required, for surface mounted hardware. Provide flush PVC top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

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

.10 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Such products shall be listed for conformance with CAN4-S104. All fire-rated doors shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labelling shall be in accordance with NFPA 80.

.11 Manufacturer's nameplates on doors are not permitted.

2.10. DOORS: LAMINATED CORE CONSTRUCTION

.1 Form face sheets for exterior doors from 18 gauge sheet steel with polyisocyanurate core laminated under pressure to face sheets.

.2 Form face sheets for interior doors from 20 gauge sheet steel with polyisocyanurate core laminated under pressure to face sheets.

.3 Laminate vertical steel stiffeners to each face sheet at 6” on center maximum.

.4 Fill voids between vertical stiffeners with fibreglass batt insulation.

2.11. THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

3. EXECUTION

3.1. MANUFACTURER'S INSTRUCTIONS

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

3.2. INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.3. FRAME INSTALLATION

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

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 48” wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of exterior door frames between frame and adjacent material.

.6 Maintain continuity of air barrier and vapour retarder.

3.4. DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:

.1 Hinge side: 1.0 mm, Latchside & Head: 1.5 mm, Finished Floor: 13 mm

.3 Adjust operable parts for correct function.

3.5. 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.

3.6. FIELD PAINTING

.1 Paint in accordance with Section 09 91 00 – Painting & 09 97 19 – Painting Exterior Metal Surfaces.

.1 Touch up damaged surfaces and surfaces without shop coat with primer to NACE No.3/SSPC-SP-6 except as specified otherwise. Apply in accordance: MPI Architectural Painting Specification Manual.

3.7. GLAZING

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

3.8. CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 03 30 00 – Cast-in-Place Concrete
.2 Section 04 22 00 – Concrete Unit Masonry
.3 Section 07 26 00 – Vapour Retarders
.4 Section 07 46 13 – Thermofused Membrane Air/Vapour Barrier
.5 Section 07 62 00 – Sheet Metal Flashing and Trim
.6 Section 07 92 00 – Joint Sealants
.7 Section 08 71 00 – Door Hardware
.8 Section 08 80 50 – Glazing
.9 Section 09 91 00 – Painting

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-10-[97], Care and Handling of Architectural Aluminum From Shop to Site.
  .2 AAMA CW-11-[85], Design Wind Loads for Buildings and Boundary Layer Wind Tunnel Testing.
  .3 AAMA T1R-A1-[02], Sound Control for Fenestration Products.
  .4 AAMA 611-[98], Voluntary Specifications for Anodized Finishes Architectural Aluminum.
  .5 AAMA 612-[02], Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.
  .6 AAMA 2603-[02], Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
  .7 AAMA 2604-[02], Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
  .8 AAMA 2605-[02], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
.3 American Society for Testing and Materials International, (ASTM).
  .1 ASTM A 36/A 36M-[103a], Specification for Carbon Structural Steel.
  .2 ASTM A 123/A 123M-[02], Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  .3 ASTM A 167-[99], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  .4 ASTM A 653/A 653M-[03], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  .5 ASTM B 209-[02a], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  .6 ASTM B 221-[02], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  .7 ASTM C 794-[01], Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
  .8 ASTM C 1401-[02], Guide for Structural Sealant Glazing.
  .9 ASTM E 283-[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.
  .10 ASTM E 330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.

.11 ASTM E 331-[00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
.12 ASTM E 413-[87(1999)], Classification for Rating Sound Insulation.
.13 ASTM E 1105-[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 Canada Green Building Council (CaGBC)
.1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

.5 Canadian General Standards Board (CGSB).
.1 CGSB 1.132M-[90], Zinc Chromate Primer, Low Moisture Sensitivity.
.2 CAN/CGSB 1.181-[99], Ready-Mixed, Organic Zinc-Rich Coatings.

.6 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.

.7 Environmental Choice Program (ECP).
.1 CCD-45-[95], Sealants and Caulking Compounds.
.2 CCD-47-[1998], Surface Coatings.

.8 Society for Protective Coatings (SSPC).
.1 SSPC - Paint 20 Zinc Rich Coating.

1.3. SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.
.3 Provide framing member structural and physical characteristics, calculations, dimensional limitations, and special installation requirements.
.4 Provide wrenches and tools required for maintenance of equipment.
.5 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

1.4. SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Manitoba, Canada.
.3 Indicate layout, dimensions, elevations, detail sections of members and sill conditions, materials, finishes, recesses, hardware including mounting heights, anchors and reinforcements, provisions for expansion and contraction, methods of joining sheet metal and joint locations, [glass types and] glass thicknesses, glazing details, types of sealants, details of other pertinent components of the work, and adjacent construction to which work of this section is attached.
.4 Identify installation tolerances required, assembly conditions, routing of service lines, locations of operating components, controls and boxes.
.5 Indicate door signs.

1.5. SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit sample 12” x 12” in size illustrating prefinished aluminum surface, finish, colour, texture, specified glass units, insulated infill panels and glazing material.

1.6. PRE-INSTALLATION MEETINGS

.1 Convene 2 weeks prior to commencing 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 Handle work of this section in accordance with AAMA CW-10.
.3 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings, which bond when exposed to sunlight or weather.

1.8. ENVIRONMENTAL REQUIREMENTS

.1 Do not install sealants when ambient and surface temperature is less than 5 degrees C.
.2 Maintain this minimum temperature during and after installation of sealants.

1.9. SEQUENCING

.1 Co-ordinate the work of this section with installation of firestopping, air barrier placement, vapour retarder placement, flashing placement, installing duct work to rear of louvres, and components or materials.

1.10. WARRANTY

.1 Warranty: include coverage of repair or replacement of components or entire units which fail in materials workmanship. Failures include but are not necessarily limited to, structural failures including excessive deflection, excessive leakage or air infiltration, faulty operation of operators (speed control) and hardware, deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. PRODUCTS

2.1. SYSTEM DESCRIPTION

.1 Design requirements: design power assist and low energy power operated doors to applicable requirements of ANSI/BHMA A156.19.
.2 Performance requirements:
  .1 Automatic door equipment to accommodate medium frequency pedestrian traffic of 30 cycles per hour, and weight of doors.
.3 Operator equipment: CSA approved.
.4 Automatic locks and panic hardware to non-fire rated exit doors: ULC listed and labelled.

2.2. EQUIPMENT

.1 Horton Automatics:
  .1 Profiler Series 2000B Elite Type 110 Biparting O-SX-SX-O
    .1 Asymmetrical sidelites to align centre of door with structural space frame above.
    .2 Header mounted Apex sensor system both sides of doors including hold open beams.
    .3 Provide electromechanical strike tied into fob and keypad reader for non-key entry.

2.3. 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 structural sealant glazing system as calculated in

accordance with Manitoba Building Code.

.2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with Manitoba Building Code.

.3 Limit mullion/glazing deflection to flexure limit of glass; with full recovery of glazing materials.

.4 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.

.5 Design for thermal movement of door and screen framing system caused by ambient temperature as applicable by NBC MB without causing buckling, failure of seals, undue stress on fasteners or other detrimental effects, and to prevent transmission of stress to operators.

.6 Design for dimensional distortion of components during operation.

.7 Prevent condensation in pneumatic lines.

.8 Eliminate possibility of water accumulating and freezing in door power units.

.9 Supply manual operation for opening and closing of doors during electrical power failure and when power is manually switched off.

.10 Include fully adjustable operators for opening and closing speeds, checking speeds, hold open time and cancellation on activation of fire alarm and smoke detection system, building door control system or security system.

.11 Limit air infiltration through assembly to 1.5L/s maximum per meter of door crack as per tested to ASTM E 283 at pressure differential of 75 Pa.

.12 Exterior thermally broken door units and screen framing to remain free of condensation on interior (warm side) surface of sealed insulated glass and frame when indoor design temperature is 20 degrees C, inside design relative humidity is 35%, outside winter design temperature for the location is -25 degrees C and resultant minimum Temperature Index is 63%, and when calculated and tested to CAN/CSA-A440 and CAN/CSA-A440.1.

.13 Design exterior screen framing systems with no water penetration (excluding edges at operable doors) to CAN/CSA-A440, and when tested to ASTM E 331.

.14 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

.15 Design equipment to operate at ambient temperatures between -40 degrees C and 170 degrees C.

2.4. MATERIALS

.1 Extruded aluminum: to ASTM B 221.

.2 Sheet aluminum: to ASTM B 209.

.3 Sheet Steel: ASTM A653; galvanized.

.4 Bituminous paint: CAN/CGSB 1.108, Type [1] [2] , without thinner.

.5 Glass units: see Section 08 80 50 – Glazing.

.6 Fire Safety Materials: see Section 07 84 00 – Fire Stopping.

.7 Sealant: as per manufacturer's instructions.

.8 Steel brackets as required.

2.5. COMPONENTS

.1 Sliding panels and sidelites: 1 3/4" deep with narrow profile, intermediate 2 1/4" wide horizontal rail, 4" tall bottom rail

.2 Jambs/Frame: 1 3/4" deep by 4" wide

.3 Breakout panels: swing out 90 degrees with no more than 50lbf of force applied at the lock stile to open. Torsion spring to re-close panel after pushed in path of egress. ETL listed as exit way and NFPA 101 compliant.

.4 Threshold: Shall be aluminum, 1/2" tall by 4" wide.

.5 Hardware: ANSI A156.5, Grade 1, 2-point locking provided and installed in strike rail shall

include:

.1 Hookbolt latch (5/8" laminated s.s.), latching into adjacent electromechanical strike.
.2 3/8" hex-bolt into breakout carrier frame.
.3 Keyed 1 5/32" cylinder mounted on exterior side with 31/32" backset, thumbturn on interior side.
.4 Provide electromechanical strike tied into fob and keypad reader for non-key entry.

.6 Air/Vapour barrier: specified in Section 07 46 13 – Thermofused Membrane Air/Vapour Barrier, tie into adjacent construction.
.7 Sealant and Backing Material: as specified in manufacturer's written instructions.

2.6. FABRICATION

.1 Fabricate frame 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 and hairline and weatherproof.
.3 Prepare components to receive anchor devices. Install anchors to allow for installation tolerances.
.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.

2.7. FINISHES

.1 Finish Coatings: Conform to AAMA 2603.
.2 Exterior Exposed Aluminum Surfaces: Clear anodized, to 0.0007" thickness.
.3 Interior Aluminum Surfaces: Clear anodized, to 0.0007" thickness.
.4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.
.5 Shop and Touch-Up Primer for Steel Components: SPCC Paint 25 red oxide.
.6 Touch-Up Primer for Galvanized Steel Surfaces: SPCC Paint 20 zinc rich.
.7 Extent of Finish:
.1 Apply factory coating to all surfaces exposed at completed assemblies.
.2 Apply finish to surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
.3 Apply touch-up materials recommended by coating manufacturer for field applications to cut ends and minor damage to factory applied finish.
.4 Seal all joints w/ clear caulk on interior.

3. EXECUTION

3.1. EXAMINATION

.1 Verify dimensions, tolerances, and method of attachment with other work, and compatibility of materials in the structural sealant glazing system.
.2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.
.3

3.2. INSTALLATION

.1 Install aluminum-framed door units 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, aligning with adjacent work.

.5 Install sill flashings.

.6 Co-ordinate attachment and seal of perimeter air and vapour barrier materials.

.7 Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.8 Install glass and infill panels in accordance with Section 08 80 50 - Glazing, to utilize the glazing system manufacturer's recommended glazing methods.

.9 Joint Sealing

.1 Install perimeter sealant as per manufacturer’s written instructions.

.2 Install fire-safe in areas indicated.

3.3. CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Remove protective material from prefinished aluminum surfaces.

.3 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.

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

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

.6 After installation, installer will clean product surfaces and lubricate operating equipment for optimum condition and safety. Advise contractor of precautions required through the remainder of the construction period, to ensure that doors will be without damage or deterioration at the time of acceptance.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

3.4. PROTECTION & ADJUSTMENT

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by glazed aluminum curtain wall installation.

.3 Adjustment: AAADM certified technician to inspect and adjust installation. Comply with ANSI A156.10.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 03 30 00 – Cast-in-Place Concrete
.2 Section 04 22 00 – Concrete Unit Masonry
.3 Section 07 26 00 – Vapour Retarders
.4 Section 07 46 13 – Thermofused Membrane Air/Vapour Barrier
.5 Section 07 62 00 – Sheet Metal Flashing and Trim
.6 Section 07 92 00 – Joint Sealants
.7 Section 08 71 00 – Door Hardware
.8 Section 08 80 50 – Glazing
.9 Section 09 91 00 – Painting

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 611-[98], Voluntary Specifications for Anodized Finishes Architectural Aluminum.
  .7 AAMA 612-[02], Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.
  .8 AAMA 2603-[02], Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
  .9 AAMA 2604-[02], Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
  .10 AAMA 2605-[02], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
.3 American Society for Testing and Materials International, (ASTM).
  .1 ASTM A 36/A 36M-[103a], Specification for Carbon Structural Steel.
  .2 ASTM A 123/A 123M-[02], Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  .3 ASTM A 167-[99], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  .4 ASTM A 653/A 653M-[03], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  .5 ASTM B 209-[02a], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  .6 ASTM B 221-[02], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  .7 ASTM C 794-[01], Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
  .8 ASTM C 1401-[02], Guide for Structural Sealant Glazing.
  .9 ASTM E 283-[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.
  .10 ASTM E 330-[02], Standard Test Method for Structural Performance of Exterior

Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.

.11 ASTM E 331-[00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

.12 ASTM E 413-[87(1999)], Classification for Rating Sound Insulation.

.13 ASTM E 1105-[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 Canada Green Building Council (CaGBC)

.1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

.6 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.

.7 Environmental Choice Program (ECP).

.1 CCD-45-[95], Sealants and Caulking Compounds.

.2 CCD-47-[1998], Surface Coatings.

.8 Society for Protective Coatings (SSPC).

.1 SSPC - Paint 20 Zinc Rich Coating.

1.3. ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.

.3 Provide framing member structural and physical characteristics, calculations, dimensional limitations, and special installation requirements.

1.4. SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit drawings stamped and signed by professional engineer registered or licensed in Manitoba, Canada.

.3 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.

1.5. SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit sample 12” x 12” in size illustrating prefinished aluminum surface, finish, colour, texture, specified glass units, insulated infill panels and glazing material.

1.6. PRE-INSTALLATION MEETINGS

.1 Convene 2 weeks prior to commencing work of this section.

1.7. MOCK-UP

.1 Provide mockup of curtain wall system including wall assembly and attachment to air/vapour membrane, firestopping at floor level and tolerances to finish material.

.2 Notify Contract Administrator and provide 48 hours to approve work. Do not proceed with work until approved by Contract Administrator. Mock-up may remain as part of the final work.

1.8. 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 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings, which bond when exposed to sunlight or weather.

1.9. ENVIRONMENTAL REQUIREMENTS

.1 Do not install sealants when ambient and surface temperature is less than 5 degrees C.

.2 Maintain this minimum temperature during and after installation of sealants.

1.10. SEQUENCING

.1 Co-ordinate the work of this section with installation of firestopping, air barrier placement, vapour retarder placement, flashing placement, installing duct work to rear of louvres, and components or materials.

2. PRODUCTS

2.1. SYSTEM DESCRIPTION

.1 Alumicor Thermawall 2600 series

- .1 Three-sided SSG
- .2 2 1/2" mullion profile
- .3 4” backbar depth, steel reinforced mullions as req’d
- .4 2" cap depth
- .5 Phantom Door, 100A door, narrow stile, 1” sealed glazing unit
  - .1 cont. gear hinge
- .6 Phantom Vent 4000 operable windows
  - .1 top hung project-out
  - .2 eclipse single-arm operator system c/w assist handle and claw handle locking. Colours of exposed components shall be selected from standard range.
  - .3 Removable insect screens. Sash colour to be selected from standard range.

2.2. 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 structural sealant glazing system as calculated in accordance with Manitoba Building Code.

.2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with Manitoba Building Code.

.3 Limit mullion/glazing deflection to flexure limit of glass; with full recovery of glazing materials.

.4 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.

.5 Limit working stress of sealants to 138 kPa.

.6 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.

.7 Limit air infiltration through assembly to 0.02 cfm/min/sw ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with AAMA 501.

.8 Vapour seal with interior atmospheric pressure of 25 mm sp, 22 degrees C, 40% RH: no failure.

.9 Water leakage: none, when measured to AAMA 501.

.10 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network.

.11 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

.12 Expansion/Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 77 degrees C over a 12-hour period without causing detrimental affect to system components.

.13 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

.14 Assembled system to permit re-glazing of individual glass units from exterior without requiring removal of structural mullion sections.

.15 Curtain wall supplier responsible for all steel brackets.

2.3. MATERIALS

.1 Extruded aluminum: to ASTM B 221.
.2 Sheet aluminum: to ASTM B 209.
.3 Sheet Steel: ASTM A653; galvanized.
.4 Anchors: 3-way adjustable hot-dip galvanized cast iron.
.5 Fasteners: stainless steel, finish to match curtain wall.
.6 Bituminous paint: CAN/CGSB 1.108, Type [1] [2] , without thinner.
.7 Glass units: see Section 08 80 50 – Glazing.
.8 Fire Safety Materials: see Section 07 84 00 – Fire Stopping.
.9 Sealant: as per manufacturer's instructions.
.10 Fire-stopping material - see section 07 84 00 - Firestopping.
.11 Steel brackets as required.

2.4. COMPONENTS

.1 Mullion Profile: 2 1/2" profile, 4" backbar depth, thermally broken with interior section insulated from exterior attachments, glazing stops of sufficient size and strength to provide adequate bite on glass and infill panels prior to and during glazing; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.

.2 Cap Profile: 2" depth (3 - 4" depth built up caps on D101 as indicated in drawings)

.3 Reinforced Mullion: 2 1/2" profile, 4" backbar depth of aluminum cladding with internal reinforcement of shaped steel structural section.

.4 Flashings: 0.05" thick aluminum, finish to match curtain wall mullion sections where exposed, secured with concealed fastening method.

.5 Vapour retarder: specified in Section 07 26 00 - Vapour Retarders, tie into adjacent construction.

.6 Air/vapour barrier: specified in Section 07 46 13 – Thermofused Membrane Air/Vapour Barrier, tie into adjacent construction.

.7 Sealant and Backing Material: as specified in manufacturer's written instructions.

2.5. FABRICATION

.1 Fabricate frame 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 and hairline and weatherproof.

.3 Prepare components to receive anchor devices. Install anchors to allow for installation tolerances.

.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.

2.6. FINISHES

.1 Finish Coatings: Conform to AAMA 2603.

.2 Exterior Exposed Aluminum Surfaces: Dark bronze anodized, to 0.0007” thickness.

.3 Interior Aluminum Surfaces: Clear anodized, to 0.0007” thickness.

.4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

.5 Shop and Touch-Up Primer for Steel Components: SPCC Paint 25 red oxide.

.6 Touch-Up Primer for Galvanized Steel Surfaces: SPCC Paint 20 zinc rich.

.7 Extent of Finish:

.1 Apply factory coating to all surfaces exposed at completed assemblies.

.2 Apply finish to surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

.3 Apply touch-up materials recommended by coating manufacturer for field applications to cut ends and minor damage to factory applied finish.

.4 Seal all joints w/ clear caulk on interior.

3. EXECUTION

3.1. EXAMINATION

.1 Verify dimensions, tolerances, and method of attachment with other work, and compatibility of materials in the structural sealant glazing system.

.2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

.3

3.2. INSTALLATION

.1 Install structural sealant glazing 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, aligning with adjacent work.

.5 Install sill flashings.

.6 Co-ordinate attachment and seal of perimeter air and vapour barrier materials.

.7 Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.8 Install glass and infill panels in accordance with Section 08 80 50 - Glazing, to utilize the glazing system manufacturer's recommended glazing methods.

.9 Joint Sealing

.1 Install perimeter sealant as per manufacturer's written instructions.
.2 Install fire-safe in areas indicated.

3.3. SITE TOLERANCES

.1 Maximum variation from plumb: 0.06" every 3'-0" non-cumulative or 1/16" per 10'-0", whichever is less
.2 Maximum misalignment of two adjoining members abutting in plane: 1/32"
.3 Maximum sealant space between curtain wall and adjacent construction: 3/8"

3.4. CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Leave Work area clean at end of each day.
  .2 Remove protective material from prefinished aluminum surfaces.
  .3 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.
  .4 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.
  .5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

3.5. PROTECTION

.1 Protect installed products and components from damage during construction.
.2 Repair damage to adjacent materials caused by glazed aluminum curtain wall installation.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 06 10 00 – Rough Carpentry
.2 Section 07 92 00 – Joint Sealants
.3 Section 09 91 00 – Painting

1.2. REFERENCES

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
  .1 ANSI/BHMA A156.9-[2003], Cabinet Hardware.
  .2 ANSI/BHMA A156.11-[2004], Cabinet Locks.
  .3 ANSI/BHMA A156.16-[2008], Auxiliary Hardware.
  .4 ANSI/BHMA A156.18-[2006], Materials and Finishes.
.2 Canada Green Building Council (CaGBC)
  .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

1.3. ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for cabinet hardware and include product characteristics, performance criteria, physical size, finish and limitations.
.3 Hardware List:
  .1 Submit contract hardware list.
  .2 Indicate specified hardware, including make, model, material, function, finish and other pertinent information.
.4 Manufacturer's Instructions: submit manufacturer's installation instructions.
.5 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

1.4. CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
.2 Operation and Maintenance Data: submit operation and maintenance data for cabinet hardware for incorporation into manual.

1.5. QUALITY ASSURANCE

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

1.6. DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
.4 Storage and Handling Requirements:
  .1 Store materials off ground, indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  .2 Store and protect cabinet hardware from nicks, scratches, and blemishes.
  .3 Protect prefinished surfaces with wrapping.

.4 Replace defective or damaged materials with new.

2. PRODUCTS

2.1. HARDWARE ITEMS

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

2.2. CABINET HARDWARE

.1 Cabinet hardware: to ANSI/BHMA A156.9.
  .1 Hinges: Standard 110 degree, 6-way adjustable clip on hinge, steel, complete with soft-close damper.
  .2 Pulls: Round bar pull, brushed nickel, installed vertically
  .3 Shelf rests: shelf rest installed in holes drilled, adjustable shelf standards, with closed shelf rests.
  .4 Drawer slides: Standard white epoxy steel, nylon rollers with self-closing feature, and soft-close damper.
  .5 Drawer Pulls: Round bar pull, brushed nickel, installed horizontally

2.3. MISCELLANEOUS HARDWARE

.1 Closet shelf supports: heavy duty support with brace for shelf and closet rod, wrought steel, chrome plated finish, 1 ½" size.
.2 Closet hanger bar and supports:
  .1 Metal pole sockets for metal poles, 1 ½" size, finished
  .2 Extension closet rod with integral end supports and center support if over 48", chrome plated finish

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.

3. EXECUTION

3.1. INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
.2 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.

3.2. ADJUSTING

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

3.3. CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  .2 Remove protective material from hardware items where present.
  .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 –

Waste Management and Disposal.

3.4. PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by cabinet and miscellaneous hardware installation.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 08 11 00 – Metal Doors and Frames
.2 Section 08 42 29 – Automatic Entrances
.3 Section 08 44 23 – Structural Sealant Glazed Curtain Walls

1.2. REFERENCES

.1 ANSI/BHMA A156.1-[2000], American National Standard for Butts and Hinges.
.2 ANSI/BHMA A156.2-[2003], Bored and Preassembled Locks and Latches.
.3 ANSI/BHMA A156.3-[2001], Exit Devices.
.4 ANSI/BHMA A156.4-[2000], Door Controls - Closers.
.5 ANSI/BHMA A156.5-[2001], Auxiliary Locks and Associated Products.
.6 ANSI/BHMA A156.6-[2005], Architectural Door Trim.
.7 ANSI/BHMA A156.8-[2005], Door Controls - Overhead Stops and Holders.
.8 ANSI/BHMA A156.10-[1999], Power Operated Pedestrian Doors.
.9 ANSI/BHMA A156.13-[2002], Mortise Locks and Latches Series 1000.
.10 ANSI/BHMA A156.14-[2002], Sliding and Folding Door Hardware.
.11 ANSI/BHMA A156.16-[2002], Auxiliary Hardware.
.12 ANSI/BHMA A156.17-[2004], Self-closing Hinges and Pivots.
.13 ANSI/BHMA A156.18-[2006], Materials and Finishes.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
.1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.3. ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.
.3 Samples:
.1 Submit for review and acceptance of each unit.
.2 Samples will be returned for inclusion into work.
.3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
.4 After approval samples will be returned for incorporation in Work.
.4 Hardware List:
.1 Submit contract hardware list.
.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.6 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.4. CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
.2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.5. MAINTENANCE MATERIALS SUBMITTALS

.1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout

Submittals.

.2 Tools:

.1 Supply 2 sets of wrenches for door closers, locksets and fire exit hardware.

1.6. QUALITY ASSURANCE

.1 Regulatory Requirements:

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

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

1.7. DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.4 Storage and Handling Requirements:

.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect door hardware from nicks, scratches, and blemishes.

.3 Protect prefinished surfaces with wrapping.

.4 Replace defective or damaged materials with new.

2. **PRODUCTS**

2.1. DOOR HARDWARE

.1 Locks and Latches

.1 Bored and preassembled locks and latches: to ANSI/BHMA A156.2, series 4000 bored lock, designed for function as stated in Hardware Schedule.

.2 Interconnected locks and latches: to ANSI/BHMA A156.12, series 5000 interconnected lock, designed for as stated in Hardware Schedule.

.3 Mortise locks and latches: to ANSI/BHMA A156.13, series 1000 mortise lock, designed for function as stated in Hardware Schedule.

.4 Lever handles: as specified design.

.5 Normal strikes: box type, lip projection not beyond jamb.

.6 Cylinders: key into keying system as directed.

.2 Butts and Hinges

.1 Butts and hinges: to ANSI/BHMA A156.1, listed in Hardware Schedule.

.2 Self-closing hinges and pivots: to ANSI/BHMA A156.17, listed in Hardware Schedule.

.3 Strap and tee hinges and hasps: to ANSI/BHMA A156.20, listed in Hardware Schedule

.3 Door Closers and Accessories

.1 Door controls/closers: to ANSI/BHMA A156.4, listed in Hardware Schedule.

.2 Door controls - overhead holders: to ANSI/BHMA A156.8, listed in Hardware Schedule.

.3 Closer/holder release devices: to ANSI/BHMA A156.15, listed in hardware schedule.

.4 Door Operators

.1 Power-operated pedestrian doors: to ANSI/BHMA A156.10.

.2 Power assist and low energy power operated doors: to ANSI/BHMA A156.19.

.5 Architectural Door Trim

.1 Architectural door trim: to ANSI/BHMA A156.6, listed in Hardware Schedule

.2 Door protection plates: kick plate, 1.27 mm thick stainless steel, listed in Hardware Schedule

2.2. 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.

2.3. KEYING

.1 Door locks to be keyed alike in groups by address
.2 Supply keys in duplicate for every lock in this Contract.
.3 Supply construction keying.
.4 Supply master keys for all public entrances/areas.

3. EXECUTION

3.1. INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
.2 Supply manufacturers' instructions for proper installation of each hardware component.
.3 Pre-fit hardware prior to application of final finishes, remove and reinstall hardware once finish is complete ensuring proper fit and function.
.4 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
.5 Install surface mounted hardware with fasteners as supplied by the manufacturer where proper reinforcing is sufficient to securely attach. Self-threading fasteners are permitted only as indicated in manufacturers printed instructions and included in standard packaging for items. Pre-drill wood doors to accept fasteners and provide secure installation. Failure to comply may void manufacturer's warranties and applicable licensed labels.
.6 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
.7 Location of locks latches and operating trim: established in accordance with DHI (Door and Hardware Institute) "Recommended Locations for Architectural Hardware for Standard Steel Doors" and "Recommended Locations for Architectural Hardware for Flush Wood Doors"
.8 Locate surface mounted door closers on the room side of door opposite corridors where possible. Method of installation to provide positive latching and ease of operation without conflicting with other hardware installed at opening.
.9 Where door stop contacts door pulls, mount stop to strike bottom of pull.
.10 Install floor stops only where application does not permit installation of wall stops.
.11 Install key control cabinet as directed by Contract Administrator.
.12 Use only manufacturer's supplied fasteners.
.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
.13 Remove construction cores and locks when directed by Contract Administrator.
.1 Install permanent cores and ensure locks operate correctly.

3.2. ADJUSTING

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

3.3. CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Leave Work area clean at end of each day.
  .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  .3 Remove protective material from hardware items where present.
  .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4. 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.

3.5. PROTECTION

.1 Protect installed products and components from damage during construction.
.2 Repair damage to adjacent materials caused by door hardware installation.

3.6. HARDWARE SCHEDULE

.1 Protect installed products and components from damage during construction.

HARDWARE SET 1

For use on door(s): D100a (main entry ext)

1	EA	THRESHOLD	CT-100 & CT-106	627	KNC
2	EA	MORTISE CYLINDER	20-013 118	626	SCH
2	EA	SHEAR MAG LOCK	GF3000	626	VON
1	EA	MULTITECH READER	MT11	BLK	SCE
		ACCESS CONTROL-WORK OF DIVISION 28			
		SEE MISC ITEMS FOR EMERGENCY RELEASE SWITCH AND POWER			
		BALANCE OF HARDWARE BY MANUFACTURER			

Door unlocked by valid credential at reader.

HARDWARE SET 2

For use on door(s): D100b (main entry int)

1	EA	THRESHOLD	CT-100 & CT-106	627	KNC
		BALANCE OF HARDWARE BY MANUFACTURER			

HARDWARE SET 3

For use on door(s): D101 (west ext)

1	EA	CONT. HINGE	DSPFMHD3 83	710	PEM
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HDW	LX-CDSI-35A-EO-CON	626	VON
1	EA	MORTISE CYLINDER	20-001 114 XQ11-949-114,112,134	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURF. AUTO OPER	9542 MS	CLR	LCN
1	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		710	WIKK
1	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		628	WIKK
1	EA	THRESHOLD	CT-410	627	KNC
1	EA	DOOR CONTACT	679-05HM	BLK	SCE
1	EA	RELAY MODULE	RB6		
1	EA	WIRE HARNESS	CON-192		VON
1	EA	WIRE HARNESS	CON-6		VON
1	EA	WIRE HARNESS	CON-6W		VON
		SEALS BY DOOR SUPPLIER			

Free Egress at all times. Pressing Push Bar retracts latchbolts. No exterior trim. One internal SPDT switch monitors the latchbolt position. Dogging by key cylinder with visible security indicator locks down the pushbar or crossbar so the latchbolt remains retracted.
Door Position Switch monitors whether the door is open or closed.

HARDWARE SET 4

For use on door(s): D102a (mpr north), D105 (tutorial)

1	EA	PATCH PIVOT BOT	OPF10	630	CRL
1	EA	PATCH PIVOT TOP	OPF20	630	CRL
1	SET	LONG DOOR PULL	PR 9266F 24” P	630	IVE
1	EA	AUTO OPERATOR	ED400 IG	628	DRM
2	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		628	WIKK
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	MAGNETIC LOCK	40 HDB40 CWB40	630	SCE
1	EA	WIRELESS READER	R100-1H	BLK	SEC
1	EA	MOTION SENSOR	SCANII	BLK	SCE
		ACCESS CONTROL WORK OF DIVISION 28			
		SEE MISC ITEMS FOR EMERGENCY RELEASE SWITCH AND POWER			

Magnetic lock secured when powered (Fail Safe). Door Status Monitor monitors whether the door is open or closed. Magnetic Bond Sensor monitors door is secure at optimal holding force. Motion sensor/PIR provided on the egress side to detect an occupant approaching the doors.

HARDWARE SET 5a

For use on door(s): D102b (mpr south)

1	EA	PATCH PIVOT BOT	OPF10	630	CRL
1	EA	PATCH PIVOT TOP	OPF20	630	CRL
1	SET	LONG DOOR PULL	PR 9266F 24" P	630	IVE
1	EA	FLR CLOSER	BTS80D	630	DRM
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	MAGNETIC LOCK	40 HDB40 CWB40	630	SCE
1	EA	MOTION SENSOR	SCANII	BLK	SCE
		SEE MISC ITEMS FOR EMERGENCY RELEASE SWITCH AND POWER			

Magnetic lock secured when powered (Fail Safe). Door Status Monitor monitors whether the door is open or closed. Magnetic Bond Sensor monitors door is secure at optimal holding force. Motion sensor/PIR provided on the egress side to detect an occupant approaching the doors.

HARDWARE SET 5b

For use on door(s): D104 (office)

1	EA	PATCH PIVOT BOT	OPF10	630	CRL
1	EA	PATCH PIVOT TOP	OPF20	630	CRL
1	SET	LONG DOOR PULL	PR 9266F 24" P	630	IVE
1	EA	FLR CLOSER	BTS80D	630	DRM
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	MAGNETIC LOCK	40 HDB40 CWB40	630	SCE
1	EA	MOTION SENSOR	SCANII	BLK	SCE
1	EA	WIRELESS READER	R100-1H	BLK	SEC
		ACCESS CONTROL WORK OF DIVISION 28			
		SEE MISC ITEMS FOR EMERGENCY RELEASE SWITCH AND POWER			

Magnetic lock secured when powered (Fail Safe). Door Status Monitor monitors whether the door is open or closed. Magnetic Bond Sensor monitors door is secure at optimal holding force. Motion sensor/PIR provided on the egress side to detect an occupant approaching the doors.

HARDWARE SET 6

For use on door(s): D103 (mpr storage)

2	EA	PIVOT SET	7255 SET	626	IVE
1	EA	POWER TRANSFER	EPT2	689	VON
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	L9080P 06A	626	IVE
1	EA	ELECTRIC STRIKE	6223 FSE	630	VON
2	EA	OH STOP	410S	630	GLY
1	EA	MULTITECH READER	MT11	BLK	SCE
2	EA	DOOR CONTACT	679-05HM	BLK	SCE
		ACCESS CONTROL WORK OF DIVISION 28			

Latch bolt by inside push trim. Less Outside knob/lever. Auxiliary latch deadlocks latch bolt when door is locked. Inside lever is always free for immediate egress. Door unlocked by valid credential at reader.

HARDWARE SET 7a

For use on door(s): D106 (universal w/c)

3	EA	HINGE	3CB1 4.5x4	652	IVE
1	EA	CYL X TURN D LOCK	L9460F 06A L283-722 XL11-886	626	SCH
1	EA	MONITORED STRIKE	LML-2		SEC
1	EA	AUTO OPERATOR	9131 WMS	628	LCN
2	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		628	WIKK
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	DOOR BOTTOM	CT-51F 39”	627	KNC

Inside knob or lever retracts deadbolt. Outside knob or lever is fixed. Lock Indicator will read OCCUPIED/VACANT. Locking Deadbolt shunts signal to actuators. Automatically Opens & Closes Door.

HARDWARE SET 7b

For use on door(s): D112 (staff w/c)

3	EA	HINGE	3CB1 4.5x4	652	IVE
1	EA	STOREROOM LOCK	L9080P 06A	626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON	630	VON
1	EA	AUTO OPERATOR	9131 WMS	628	LCN
2	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		628	WIKK
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	DOOR BOTTOM	CT-51F 39”	627	KNC
1	EA	MULTITECH READER	MT11	BLK	SCE
1	EA	PUSH BUTTON	PUSH TO LOCK	630	CAM
1	EA	DOOR CONTACT	679-05HM	BLK	SCE
1	EA	LOCK RELAY	CX-EMF-2		CAM
1	EA	WIRE HARNESS	CON-192		VON
		ACCESS CONTROL WORK OF DIVISION 28			
		SEE MISC ITEMS FOR POWER SUPPLY			

Inside knob or lever retracts latchbolt. Outside knob or lever is fixed. Push to lock button prevents entry while occupied. Egress provided by depressing auto operator actuator, or by turning inside lever. Exiting resets electronic system to unoccupied. Presentation of valid credential provides entry by pulling door or depressing actuator for auto operator.

HARDWARE SET 8

For use on door(s): D111 (janitor), D114 (storage)

3	EA	HINGE	3CB1 4.5x4 NRP	652	IVE
1	EA	STOREROOM LOCK	L9080P 06A	626	SCH
1	EA	ELECTRIC STRIKE	6210 FSE	630	VON
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE (INT)	8400 10” x 1 ½” LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	MULTITECH READER	MT11	BLK	SCE
1	EA	DOOR CONTACT	679-05HM	BLK	SCE
		ACCESS CONTROL WORK OF DIVISION 28			

Latch bolt retracted by key outside or by knob/lever inside. Outside knob/lever always inoperative. Auxiliary latch deadlocks latch bolt when door is locked. Inside lever is always free for immediate egress. Electric strike is released when power is applied (Fail Secure). Self-Closing.
Door unlocked by valid credential at reader. Door position switch monitors whether door is open/closed.

HARDWARE SET 9

For use on door(s): D113 (tech room)

6	EA	HINGE	3CB1 4.5x4 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	CLOSET LOCK w/DB	L9465P 06A	626	SCH
2	EA	OH STOP	410S	630	GLY
2	EA	SILENCER	SR64	GRY	IVE

Latch bolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside.

HARDWARE SET 10

For use on door(s): D116 (staff room)

3	EA	HINGE	3CB1 4.5x4	652	IVE
1	EA	STOREROOM LOCK	L9080P 06A	626	SCH
1	EA	ELECTRIC STRIKE	6210 FSE	630	VON
1	EA	AUTO OPERATOR	9131 WMS	628	LCN
2	EA	36” NARROW INGRESS’R SWITCH, LOGO 3		628	WIKK
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	MULTITECH READER	MT11	BLK	SCE
1	EA	DOOR CONTACT	679-05HM	BLK	SCE
		ACCESS CONTROL WORK OF DIVISION 28			

Latch bolt retracted by key outside or by knob/lever inside. Outside knob/lever always inoperative. Auxiliary latch deadlocks latch bolt when door is locked. Inside lever is always free for immediate egress. Electric strike is released when power is applied (Fail Secure). Automatically Opens & Closes Door. Door unlocked by valid credential at reader. Door position switch monitors whether door is open/closed.

HARDWARE SET 11

For use on door(s): D117a (mech ext)

3	EA	HINGE	3CB1 4.5x4 NRP	630	IVE
1	EA	STOREROOM LOCK	L9080P 06A	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	KICK PLATE (INT)	8400 10” x 1 ½” LDW B-CS	630	IVE
1	SET	WEATHERSTRIP	W-20N 1-36” 2-84”	628	KNC
1	EA	DOOR SWEEP	W-13S 36”	628	KNC
1	EA	THRESHOLD	CT-407	627	KNC
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

Latch bolt retracted by key outside or by knob/lever inside. Outside knob/lever always inoperative. Auxiliary latch deadlocks latch bolt when door is locked. Inside lever is always free for immediate egress. Door position switch monitors whether door is open/closed.

HARDWARE SET 12

For use on door(s): D117b (crawlspace)

2	EA	SPRING HINGE	3SP1 4.5x4	652	IVE
1	EA	STOREROOM LOCK	D80PD ORB	626	SCH
1	SET	WEATHERSTRIP	W-21 4-sides	BLK	KNC

Outside knob fixed. Entrance by key only. Inside knob always unlocked.

HARDWARE SET 13

For use on door(s): D118 (ext gate)

3	EA	HINGE	Z9500-RH	630	ZER
1	EA	SGL CYL DEADLATCH	B250PD	626	SCH

Deadlocking latch bolt retracted by key from outside or by inside turn unit. Rotating turn unit and activating hold-back feature keeps latch retracted.

MISC ITEMS

2	KEY SWITCH	653-04 NS L2 CYL (mpr and main entry mag lock release)	630	SCE
1	PUSH BUTTON	701BK AA L2 (all mag lock emergency release)	630	SCE
1	POWER SUPPLY	PS914 900-8F-FA (all doors w/indicated power req's except D112)	LGR	FAL
1	POWER SUPPLY	PS902 (for D112)	LGR	SCE

Locate Emergency Release as directed for authorized personnel.
Signal from Smoke / Fire Alarm releases magnetic locks.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

.1 Section 08 11 00 – Metal Doors and Frames

.2 Section 08 44 23 – Structural Sealant Glazed Curtain Walls

1.2. REFERENCES

.1 ASTM International

.1 ASTM C 542-[05], Standard Specification for Lock-Strip Gaskets.

.2 ASTM D 790-[07e1], Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D 1003-[07e1], Standard Test Method for Haze and Luminous Transmittance of Plastics.

.4 ASTM D 1929-[96(R2001)e1], Standard Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D 2240-[05], Standard Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E 84-[10], Standard Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM E 330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.8 ASTM F 1233-[08], Standard Test Method for Security Glazing Materials and Systems.

.2 Canada Green Building Council (CaGBC)

.1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

.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-12.8-[97], Insulating Glass Units.

.6 CAN/CGSB-12.8-[97] (Amendment), Insulating Glass Units.

.7 CAN/CGSB-12.9-[M91], Spandrel Glass.

.8 CAN/CGSB-12.10-[M76], Glass, Light and Heat Reflecting.

.9 CAN/CGSB-12.11-[M90], Wired Safety Glass.

.4 Environmental Choice Program (ECP)

.1 CCD-045-[95(R2005)], Sealants and Caulking Compounds.

.5 Glass Association of North American (GANA)

.1 GANA Glazing Manual - [2008].

.2 GANA Laminated Glazing Reference Manual - [2009].

1.3. ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Manitoba, Canada.

.4 Samples:

.1 Submit 6” x 6” size samples of glazing.

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

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

.7 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

1.4. CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

1.5. QUALITY ASSURANCE

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

1.6. DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect glazing and frames from nicks, scratches, and blemishes.

.3 Protect prefinished aluminum surfaces with wrapping.

.4 Replace defective or damaged materials with new.

1.7. AMBIENT CONDITIONS

.1 Ambient 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.

2. PRODUCTS

2.1. MATERIALS

.1 Design Criteria:

.1 Ensure 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 as calculated in accordance with Manitoba Building Code.

.3 Limit glass deflection to 1/200 or flexural limit of glass with full recovery of glazing materials, whichever is less.

.2 Flat Glass:

.1 Float glass: to CAN/CGSB-12.3, transparent 4mm thick, colour as specified.

.2 Safety glass: to CAN/CGSB-12.1, tempered 4mm thick, colour as specified.

.3 Mirrored glass: Silvered mirrored glass to be tempered, clear float glass with

successive layers of chemically deposited silver, electrically or chemically deposited copper, and manufacturer's standard organic protective coating applied to second glass surface to produce a coating system complying with FS DD-M-411.

.4 Matelux Acid Etched glass: to CAN/CGSB-12.3, 6mm thick, clear.

.5 Wired glass: to CAN/CGSB-12.11, 4 mm thick.

.1 Type 1-polished both sides transparent.

.2 Wire mesh styles 1-diamond.

.6 All glass used for Insulating Glass Units shall be minimum 6mm thick.

.3 Insulating Glass Units:

.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 25 mm overall thickness.

.1 Inter-cavity space thickness: 12 mm between inner lite and outer lite with low conductivity spacers.

.2 Glass coating: Solarban 60 Low-E (or equal) on surface 2.

.3 Inert gas fill: argon

.4 Thermal value R-4.0 minimum

.5 Insulating glass units with Matelux glass shall be Matelux for interior lite and clear float for outer lite.

.4 Interior Partition Glazing:

.1 Safety glass: to CAN/CGSB-12.1, tempered 12mm thick, clear colour, micro-bevelled edges

.5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.2. ACCESSORIES

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

.2 Spacer shims: neoprene 50-60 Shore A durometer hardness to ASTM D 2240, min. 75mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; black colour.

.4 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C 542.

.7 Mirror attachment accessories:

.1 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

.8 Interior glazing head channel: CRL C7500SA, 1 1/2" x 2"

.9 Interior glazing wall bumper: CRL M6119, 3/4"ø

3. EXECUTION

3.1. EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.

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

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

.3 Inform Contract Administrator of unacceptable conditions immediately upon discovery.

.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Contract Administrator.

3.2. PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3. INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

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

.2 Cut glazing tape/spline to length; install on glazing light. Seal corners by butting tape/spline and sealing junctions with sealant.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.5 Install removable stops without displacing glazing tape/spline. Exert pressure for full continuous contact.

.6 Trim protruding tape edge.

3.4. INSTALLATION: EXTERIOR - WET METHOD (SEALANT AND SEALANT)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Place setting blocks at 1/4 points and install glazing light or unit.

.3 Install removable stops with glazing centered in space by inserting spacer shims both sides at 600 mm intervals, 6 mm below sight line.

.4 Fill gaps between glazing and stops with sealant to depth of bite on glazing, maximum 9 mm below sight line to ensure full contact with glazing and continue air and vapour seal.

.5 Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5. INSTALLATION: MIRRORS

.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

.2 Place plumb and level.

3.6. CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.1 Remove traces of primer, caulking.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

.4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

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

3.7. PROTECTION

.1 Protect installed products and components from damage during construction.

.2 After installation, mark each light with an "X" by using removable plastic tape or

paste.

.1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION.