Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 73 00 – Execution.

.3 Section 01 74 11 – Cleaning.

.4 Section 07 92 00 – Joint Sealant

.5 Section 08 44 13 – Glazed Aluminum Curtain Wall

.6 Section 08 42 29 – Automatic Entrances

.7 Section 08 80 50 - Glazing

1.2 REFERENCES

.1 American Architectural Manufacturers Association (AAMA)

.1 AAMA 609/610-[09], Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

.2 ASTM International

.1 ASTM E330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.3 Canadian General Standards Board (CGSB)

.1 CGSB 1.40-[97], Anticorrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.

.3 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.

.4 CSA International

.1 CSA G40.20/G40.21-[04(R2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.

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 doors and frames 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 Province Territory of Manitoba.

.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 reinforcing for hardware and joints.

.9 Arrangement of hardware and required clearances.

.4 Manufacturers Reports:

.1 Manufacturer's Field Reports: submit manufacturer's written reports within [3] days of review, verifying compliance of Work, as described in Part 3 - FIELD QUALITY CONTROL.

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 cleaning and maintenance of aluminum finishes for incorporation into manual.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE AND HANDLING

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

.1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Use coatings that are easy to remove and residue free.

.2 Leave protective covering in place until final cleaning of building.

.2 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 aluminum doors and frames from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.7 PERFORMANCE

.1 Frames:

.1 Air infiltration shall not exceed 0.0003 $m^3/s/m^2$ (0.06 cmf/ft^2) when tested in accordance with ASTM E 283-84 at a pressure differential of 75 Pa. (1.56 psf).

.2 There shall be no water infiltration when tested in accordance with ASTM E331 with a pressure differential of 300 Pa. (6.24 psf).

.2 Doors:

.1 Resistance to corner racking shall be tested by the Dual Moment Load test as follows:

.1 Test section shall consist of a standard top door corner assembly. Side rail section shall be 610mm (24") and top rail section shall be 300mm (12") long.

.2 Anchor "top rail" positively to test bench so that corner protrudes 75mm (3") beyond bench edge.

.3 Anchor a lever arm positively to "side rail" at a point 480mm (19") from inside edge of "top rail". Attach weight support pad at a point 480mm (19") from inner edge of "side rail".

.4 Test section shall withstand a load of 190 pounds on the lever arm before reaching the point of failure, which shall be considered a rotation of the lever arm in excess of 45˚.

.2 Air infiltration: (Applies **only** to single acting offset pivot or butt hung entrances.)

.1 Air infiltration shall be tested in accordance with ASTM E 283-84, at a pressure differential of 75 Pa. (1.567 psf).

.1 A **single** 914 x 2133mm (3'-0"x 7'-0") entrance shall not exceed 2.78m^3/h/meter (0.50 CFM per linear foot) of perimeter crack.

.3 Design Criteria :

.1 Frames and screens on exterior walls to accommodate expansion and contraction with temperature range of -35˚C to 35˚C.

.4 Provide test data by an independent testing facility.

Part 2 Products

2.1 STANDARD OF ACCEPTANCE

.1 Drawings and specification for work of this section are based upon:

.1 Doors:

.1 Kawneer Insuclad 360

.2 Interior wall:

.1 Kawneer TRIFAB VG450 framing system 1 ¾” x 4 ½” Centre Pane

.1 Provide Horizontal frame to match for structural support of wall. Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Manitoba. Provide Stamped Engineered Shop Drawings.

.3 Whenever alternative products are offered, submit supporting technical literature, samples, drawings, and performance data for comparison

.2 Size glass thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20.

2.2 MATERIALS

.1 Aluminum extrusions: to Aluminum Association alloy AA6063-T5 anodizing quality.

.2 Steel reinforcement: to CSA G40.20/G40.21, grade 300 W.

.3 Fasteners shall be 300 Series Stainless Steel or 400 Series Stainless Steel cadmium plated and of sufficient size and quantity to perform their intended function.

.4 Weathering and glazing gaskets shall be extruded, black, closed cell, or dense elastomer of durometer appropriate to the function

.5 Glass and Glazing Materials: In accordance with Section 08 80 50 – Glazing.

.6 Sealants: In accordance with Section 07 92 00. Colour selected by Contract Administrator.

2.3 ALUMINUM DOORS

.1 Refer to Section 08 71 00 – Door Hardware

2.4 ALUMINUM FINISHES

.1 Clear Anodized Finish: to designation AA- M12-C22-A31: Clear #17

2.5 FABRICATION

.1 Doors and framing to be by same manufacturer.

.2 Fabricate doors and frames to profiles and maximum face sizes as indicated. Provide minimum 22 mm bite for insulating glazed units.

.3 Framing shall be designed for thermally broken screw spline corner construction. Glass stops shall be lock-in screwless type.

.4 Make allowances for defection of structure to ensure that structure loads are not transmitted to aluminum work.

.5 Fit intersecting members to flush hairline weathertight joints and mechanically fasten together, except where indicated otherwise

.6 Provide structural steel reinforcement as required.

.7 Fit joints tightly and secure mechanically.

.8 Form cut-outs, recesses, mortising or milling for finishing hardware to templates supplied. Reinforce with aluminum or galvanized steel plates

.9 Field apply isolation coating to aluminum in contact with dissimilar metals and cementitious materials

.10 Conceal fastenings.

.11 Provide replaceable weatherstripping at all exterior door openings. Weatherstrip on bottom of doors to be applied to door rail

.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 EXAMINATION

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

.1 Visually inspect substrate.

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

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

3.2 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 Set frames plumb, square, level at correct elevation in alignment with adjacent work.

.3 Anchor securely.

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

.5 Adjust door components to ensure smooth operation.

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

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

.8 Seal joints to provide weathertight seal at outside and air, vapour seal at inside.

.9 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within the aluminum work except where exposed use is permitted by Contract Administrator.

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 Perform cleaning of aluminum components in accordance with AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.

.3 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.4 Clean aluminum with damp rag and approved non-abrasive cleaner.

.5 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.

.6 Clean glass and glazing materials with approved non-abrasive cleaner.

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

3.4 PROTECTION

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

.2 Repair damage to adjacent materials caused by aluminum door and frame installation.

END OF SECTION

Part 1 General

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 73 00 – Execution.

.3 Section 01 74 11 – Cleaning.

.4 Section 07 92 00 – Joint Sealant

.5 Section 08 11 16 – Aluminum Door and Frames

.6 Section 08 44 13 – Glazed Aluminum Curtain Walls

.7 Section 08 80 50 - Glazing

1.2 REFERENCES

.1 Aluminum Association (AA)

.1 AA DAF 45-[03(R2009)], Designation System for Aluminum Finishes.

.2 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)

.1 ANSI/BHMA A156.1-[2006], American National Standard for Butts and Hinges.

.2 ANSI/BHMA A156.3-[2001], Exit Devices.

.3 ANSI/BHMA A156.4-[2008], Door Controls - Closers.

.4 ANSI/BHMA A156.5-[2001], Auxiliary Locks and Associated Products.

.5 ANSI/BHMA A156.10-[2005], Power Operated Pedestrian Doors.

.6 ANSI/BHMA A156.19-[2007], Power Assist and Low Energy Power Operated Doors.

.3 ASTM International

.1 ASTM A167-[99(R2009)], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

.2 ASTM B209M-[07], Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

.3 ASTM B221M-[07], Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

.4 ASTM D2000-[08], Classification System for Rubber Products in Automotive Applications.

.5 ASTM D2287-[96(R2010)], Standard Specification for Non Rigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.

.6 ASTM E283-[04], Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.7 ASTM E330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.8 ASTM E331-[00(2009)], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

.9 ASTM E547-[00(2009)], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

.4 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.

.5 CSA International

.1 CAN/CSA-A440-[00], Windows /Special Publication A440.1-[00(R2005)], User Selection Guide to CSA Standard CAN/CSA-A440-[00], Windows.

.2 CAN/CSA G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 National Research Council of Canada (NRC)

.1 MNECB-[97], Model National Energy Code of Canada for Buildings.

.7 Underwriters' Laboratories of Canada (ULC)

.1 ULC/ORD C305-[72], Panic Hardware.

.2 CAN/ULC-S524-[06], Standard for the Installation of Fire Alarm Systems.

.3 CAN/ULC-S533-[08], Egress Door Securing and Releasing Devices.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Arrange for site visit with Contract Administrator prior to start of Work to examine existing site conditions adjacent to demolition Work.

.2 Supply and install Glazing in accordance with Section 08 80 50

.3 Co-ordinate with Electrical SubContractor, the interconnection of automating equipment with the fire alarm system.

1.4 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 doors, hardware, and 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 Province of Manitoba, Canada.

.2 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.

.3 Identify installation tolerances required, assembly conditions, routing of service lines, locations of operating components, controls and boxes.

.4 Indicate door signs.

.4 Manufacturers Reports:

.1 Manufacturer's Field Reports: submit manufacturer's written reports within [3] days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.5 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 system for incorporation into manual.

.3 Parts List:

.1 Submit manufacturer's parts lists ; include servicing frequencies, instructions for adjustment and operation applicable to each type of component or hardware, and name, address and telephone number of nearest authorized service representative.

.4 Maintenance Contract:

.1 Supply complete service and maintenance of operating equipment for [1] year from date of substantial performance of the work.

1.6 MAINTENANCE MATERIAL SUBMITTALS

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

.2 Supply wrenches and tools required for maintenance of equipment.

1.7 QUALITY ASSURANCE

.1 Manufacturer’s Qualifications

.1 Products specified to be supplied by a factory authorized and trained Distributor. Distributor will maintain a parts inventory and trained service personnel capable of providing service and provide to the Owner the name of a local authorized repair representative trained and knowledgeable of the product and its operation

.2 Air infiltration is not to exceed 11 CFM per linear foot of door crack as defined by ANSI-ASHRAE-IES STANDARD #90A-1980

.3 Automatic sliding door systems shall be CERTIFIED by the manufacturer to meet performance design criteria of the Place of Work, according to the following test standards

.1 ANSI A156.10 (212) 642-4900

.2 NFPA 101(800) 344-3555

.3 Underwriter's Laboratories 325 (UL) listed(847) 272-8800
.4 C-UL Certified (equivalent to CSA certified)(416) 747-4000
.5 ICBO (UBC Standard 10-1)(562) 699-0543
.6 Boca (Boca Code Section 1017.4.3)(708) 799-0310

.2 Regulatory Requirements:

.1 Conform to applicable code for automatic release of control drive unit to permit manual operation of emergency exit doors.

.2 Conform to National Building Code for release of automatic locks to permit manual operation of emergency exit doors and to CAN/ULC-S524 where required to be integrated with building's fire alarm system.

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

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance 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, indoors and in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect automatic entrance doors and frames from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Cover exposed metal surfaces with pressure sensitive heavy protection paper or strippable plastic coating.

.1 Use materials of type which will not leave residue or become bonded when exposed to sun.

.2 Use padded blankets or approved protective wrapping for decorative metal work and similarly finished exposed elements.

1.9 WARRANTY

.1 Automatic door equipment installer to warranty power operators, controls, and labour against defects in material and workmanship, with replacement at no cost to the City, for a period of (1) year from date of Substantial Performance. Provide signed warranty to City after completion of installation.

.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.

Part 2 Products

2.1 DESIGN CRITRIA

.1 The following specification is a design performance criteria only. The Contractor is to design, supply, install and certify an automatic sliding door system to provide the design intent for the project.

.2 Sliding door shall slide on exterior of building as indicated on the drawings. Sliding door shall be driven by an electro-mechanical operator in conjunction with an electrical control system. The door will be pulled from closed to open and open to closed position stopping the door in both directions by electronically reducing the voltage, stalling the door against a mechanical stop. Opening and closing speeds and hold open time shall be adjustable. Door operation shall not require any fluids or gasses under pressure in opening and closing of the door.

.3 The doors are to be interconnected to the fire alarm system for operation during the fire mode situations, and be equipped with a break open swing panel in accordance with the Building Code of the Place of Work and NFPA 101. Each sliding door panel shall be equipped with the break open function.

.4 Design automatic entrance doors as emergency exits, as required means of egress from the building, and to comply with applicable code.

.5 Design automatic entrances to comply with applicable requirements of ANSI/BHMA A156.10.

.6 The sensor shall begin scanning the opening as the door begins to open and will continue scanning during the closing cycle. Items that must be detected, without exception, are as follows

.1 A walker

.2 A grocery cart, moving or stationary

.3 A motionless person with their back to the door frame of the door opening

.4 A 6mm (1/4") rod placed horizontally in the doorway, must be detected to within 100mm (4") from the floor

.7 The system shall operate from a temperature range of -40°C to 35°C

.8 Automatic Locks and Panic Hardware to Non-Fire Rated Exit Doors: ULC listed and labelled.

.9 Operating Hardware to Fire Rated Doors: ULC listed and labelled.

.10 Prevent condensation in pneumatic lines.

.11 Design for positive drainage of condensation occurring within thermally broken framing system and water entering at joints, to exterior face of framing in accordance with NRC "Rain Screen Principles".

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

.13 Design equipment to operate at ambient temperatures between [-40] degrees C and [170] degrees C.

2.2 AUTOMATIC SLIDING DOOR SYSTEM WITH AUTOMATIC LOCKING

.1 Automatic Sliding Door System: Shall be Stanley DURA-GLIDE Series 2000. The system shall consist of sliding aluminum door(s), sidelight(s) (unglazed), header, operator, and actuating controls. The system shall be completely engineered, manufactured and assembled by Stanley Access Technologies. All components shall be factory assembled in the header, adjusted and tested. No field wiring or operator

adjustment shall be required other than the connection to job-site power and fine-tuning of door speeds to compensate for various door sizes and weights.

.2 Automatic Locking System: Limited access security equipment shall consist of electric solenoid lock, Jackson 1085P concealed vertical rod tamper proof paddle hardware. Provide a 115 VAC fail-secure electric solenoid locking device with a self-contained solid state electronic control factory mounted inside the Dura-Glide header. The electric lock shall receive an operate signal from an actuating device. At that time, the solenoid lock shall retract, unlocking the door(s) and provide an operate signal to the control box allowing the door(s) to slide open. Upon loss of operate signal, the solenoid lock shall return to its secure position. The sliding door(s) shall self-latch in the closed position, returning the system to its locked status. During a power interruption, the lock shall be locked, securing the door(s) in the closed position. Means of egress shall be accomplished by an exit release device.

.3 Sliding Aluminum Doors: Provide door units to dimension heights and widths with corresponding glazing as shown on construction documents with standard narrow stile. Door holders shall be provided for all panels to control the door(s) as they swing in the direction of egress. All door panels shall have security glass stops. Glass stops of 1" shall be available for all door panels and transom. All doors shall have intermediate rails.

.4 Door Operation: Shall be single slide operation. In compliance with NFPA 101, the sliding door panel(s) shall allow "breakout" to the full open position to provide instant egress at any point in the door's movement. To allow safe egress, automatic operation shall be discontinued when the SX panel is in the "breakout" mode. Door(s) and sidelight(s) shall be sized to prevent pinch points at meeting stiles

.5 Aluminum Frame and Extrusions: Shall be a minimum .125" wall thickness in integral structural sections. The frame shall be standard 4-1/2" deep section

.6 Sidelights: fixed 'O' panel. Provide sidelights to dimension heights and widths as shown on construction documents with corresponding glazing. All panels shall have intermediate rails.

.7 Header Case: Shall be 6" wide by 8" high (152 mm wide by 203 mm high) extruded aluminum and capable of supporting bi-parting doors of 220 pounds per leaf over a span of 14'-0" with minimal deflection. It shall contain door operator and door mounting components. The header cover shall have a continuous selflocking hinge to open flush with the top of the header.

.8 Door Hanger Wheels: Shall be 2-1/2" (64 mm) diameter urethane wheels with precision steel lifetime lubricated ball bearing centers. The sliding door(s) shall be held on the track by 2" (51 mm) diameter anti-riser wheels and supported by a factory adjusted cantilever support and pivot assembly. This assembly shall allow the sliding doors to swing outward for emergency egress without the need for a lower door pivot support. The door height shall have an adjustment of 1/8" +/- as required by field conditions.

.9 Door Operator and Controller: Shall be the Stanley Dura-Glide System driven by an electro-mechanical operator and a regulated electronic controller. The operator components shall consist of a DC permanent magnet 1/8 horsepower motor, gear reduction drive, Stanley Pozi-Trac position encoder, and a microprocessor control box. Provide 120 VAC, 5 amps minimum to electrical door operator.

.10 Microprocessor Control Box: Torque shall be factory set as prescribed by ANSI A156.10. The control box and Stanley Pozi-Trac position encoder shall automatically set the opening and closing check positions, and the full open and full closed position of the door system.

.11 Threshold Sensor: Shall be the factory installed Stanley Stanguard™ Threshold Sensor. It shall be a self contained fully adjustable sensor system that works in conjunction with Stanley SU-050 motion sensors. Simultaneously with the door opening signal, the sensor shall be energized. It shall emit a 30" deep by 72" maximum wide elliptical shaped infrared presence zone centered on the doorway threshold line. The door shall close after the SU-050 sensor and Stanguard™ threshold sensor detect a clear surveillance field.

.12 Motion Sensor: Shall be the Stanley SU-050 Motion Sensor. The unit shall be switchable between bidirectional and uni-directional k-band frequency to detect all motion, fast or slow, in both directions with a relay hold time of 2–30 seconds. The Stanley SU-050 shall be mounted to the header 10'-0" maximum above the finish floor. Using the adjustable antenna the detection pattern shall be semi-circular, approximately 7'-0" wide by 5'-0" deep for a wide zone and approximately 6'-0" wide by 8'-0" deep for a narrow zone. The location of the detection zone shall be adjustable from the face of the door (20 degrees to 35 degrees in increments of 3 degrees). The unit shall operate between 30 degrees through 122 degrees F in all environmental conditions. The supply voltage shall be 12-24 V AC/DC +/– 10% and the power consumption shall be 6 W maximum.

.13 Safety Search Circuitry: Shall be provided which will recycle the doors when an object is encountered during the closing cycle. The circuitry shall search for that object on the next closing cycle by reducing the door speed at the position the object was previously encountered, and will continue to close in check speed until the doors are fully closed, at which time the doors will reset to normal speed. If the obstruction is encountered again, the doors shall come to a full stop. The door shall remain stopped until the obstruction is removed and an operate signal is given, resetting the door to its normal speed.

2.3 STANDARD OF ACCEPTANCE

.1 Stanley Dura Glide Series

2.4 GLASS AND GLAZING MATERIALS

.1 Glass Thicknesses: conform to applicable code, as specified in Section 08 80 50 - Glazing.

2.5 DOOR HARDWARE

.1 Supply door manufacturer's standard heavy duty hardware items as required to meet design intent.

2.6 ACCESSORIES

.1 Threshold: Provide Duraglide threshold tapered extrusion.

2.7 FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with AA DAF-45 - Aluminum Association Designation System for Aluminum Finishes.

.1 Clear Anodized Finish: to designation AA- M12-C22-A31: Clear #17.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate in presence of Contract Administrator.

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

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

3.2 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 doors, frames in accordance with shop drawings and manufacturer's instructions.

.3 Co-ordinate installation of components with related and adjacent work.

.4 Set work plumb, square, level, free from warp, twist and superimposed loads.

.5 Securely anchor work in required position.

.6 Brace frames rigidly for building-in. Supply temporary horizontal spreaders at third points of door openings to maintain frame width. Vertically support at centre, heads of openings over 1.2 m wide. Remove temporary bracing after framing is set.

.7 Apply isolation coating to separate aluminum and primed or galvanized steel surfaces at points of contact with cementitious materials.

.8 Pack fibrous insulation in shim spaces at perimeter of assembly and void spaces between members to maintain continuity of thermal barrier.

.9 Maintain clearances between head members and structure to ensure that structural loads are not transmitted to frames.

.10 Install door operator system in accordance with manufacturer's instructions, including piping controls, control wiring.

.11 Set tracks, header assemblies, operating brackets, rails and guides level and true to location, with adequate anchorage for permanent support.

.12 Install glass in accordance with Section 08 80 50 – Glazing.

3.3 SEALANT APPLICATION

.1 Install perimeter type sealant and back-up materials, to ensure weather tight seal at outside and air, vapour seal at inside.

.2 Comply with requirements of Section 07 92 00 - Joint Sealants for sealants, fillers and gaskets to be installed during installation of doors and frames.

.3 Conceal sealant within aluminum work except where exposed use is permitted by Contract Administrator.

.4 Set sill members in bed of sealant.

3.4 ELECTRICAL INSTALLATION

.1 Electrical subcontractor shall furnish and install all conduit and electrical wiring for activating devices, card access system and door operators as specified. A minimum of 5 amperes, 115 volt, A/C, 1-phase circuit shall be furnished for each door operator, terminate and connect to operator control panel, in operator housing

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 productsand submit written reports in acceptable format to verify compliance of Work with Contract within 3 days of review.

.2 Manufacturer's Field Services: submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Ensure manufacturer's representative is present before and during critical periods of installation and testing.

3.6 ADJUSTING

.1 After repeated operation of completed installation equivalent to three days of use by normal traffic (100 to 300 cycles), readjust door operators and controls for optimum, smooth operating condition and safety and for weather tight closure. Lubricate hardware, operating equipment and other moving parts.

.2 Adjust revolving doors to ensure tight fit at contact points with enclosure.

3.7 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 traces of primer, caulking; clean doors and frames.
- .3 Clean aluminum surfaces promptly after installation. Exercise care to avoid damage to coatings.
- .4 Clean glass and glazing materials with approved non-abrasive cleaner.
- .5 Remove protective material from prefinished aluminum surfaces.

.6 Wash exposed surfaces with mild solution of detergent and warm water, using soft, clean wiping cloths. Remove dirt from corners. Wipe surfaces clean.

.7 Remove excess sealant by moderate use of solvent, of type acceptable to sealant manufacturer.

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

3.8 DEMONSTRATION

.1 Demonstrate operation, operating components, adjustment features, and lubrication requirements to Owner in accordance with Section 01 79 00 - Demonstration and Training.

3.9 PROTECTION

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

.2 Repair damage to adjacent materials caused by aluminum door and frame installation.

3.10 SCHEDULE

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 73 00 – Execution.

.3 Section 01 74 11 – Cleaning.

.4 Section 07 92 00 – Joint Sealant

.5 Section 08 11 16 – Aluminum Door and Frames

.6 Section 08 42 29 – Automatic Entrances

.7 Section 08 80 50 - Glazing

1.2 REFERENCES

.1 Aluminum Association (AA)

.1 AA DAF 45-[03(R2009)], Designation System for Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA)

.1 AAMA CW-10-[04], Care and Handling of Architectural Aluminum From Shop to Site.

.2 AAMA CW-11-[85], Design Wind Loads and Boundary Layer Wind Tunnel Testing.

.3 AAMA T1R-A1-[04], Sound Control for Fenestration Products.

.4 AAMA 501-[05], Methods of Test for Exterior Walls.

.5 AAMA 611-[98], Voluntary Specifications for Anodized Finishes Architectural Aluminum.

.6 AAMA 612-[02], Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.

.7 AAMA 2603-[02], Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

.8 AAMA 2604-[05], Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

.3 ASTM International

.1 ASTM A36/A36M-[08], Specification for Carbon Structural Steel.

.2 ASTM A123/A123M-[09], Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 ASTM A167-[99(2009)], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.4 ASTM A653/A653M-[09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 ASTM B209-[07], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.6 ASTM B221-[08], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.7 ASTM E283-[04], 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(2009)], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

.10 ASTM E413-[04], Classification for Rating Sound Insulation.

.11 ASTM E1105-[00(2008)], 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 CSA International

.1 CSA G40.20/G40.21-[04(R2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA S136-[07], North American Specification for the Design of Cold Formed Steel Structural Members.

.3 CAN/CSA-S157/S157.1-[05], Strength Design in Aluminum/Commentary on CAN/CSA-S157, Strength Design in Aluminum.

.4 CSA W59.2-[M1991(R2008)], Welded Aluminum Construction.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: co-ordinate work of this Section with installation of air /vapour barrier placement, and components or materials.

.2 Arrange for site visit with Contract Administrator prior to start of Work to examine existing site conditions adjacent to demolition Work.

1.4 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 curtain wall components, anchorage and fasteners, glass and infill, and internal drainage details 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 Province of Manitoba.

.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.

.4 Test Reports:

.1 If requested by Contract Administrator, Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and supportive data.

1.5 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for [glazed aluminum curtain wall] for incorporation into manual.

1.6 QUALITY ASSURANCE

.1 Perform Wok in accordance with AAMA – Metal Curtain Wall, Window, Store Front and Entrance – Guide Specification Manual and manufacturers instructions

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

.3 Installer Qualifications: Company specialising in performing the Work in this section with minimum 5 years documented experience and approved by manufacturer

.4 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Manitoba.

1.7 DELIVERY, STORAGE AND HANDLING

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

.2 Storage and Handling Requirements:

.1 Handle work of this Section in accordance with AAMA CW-10.

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

.3 Store and protect aluminum glazed curtain wall components from nicks, scratches, and blemishes.

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

.5 Replace defective or damaged materials with new.

1.8 DESIGN CRITERIA

.1 Air infiltration shall not exceed 0.0003m^3 s/m^2 when tested in accordance with ASTM E283-84 at a pressure differential of 0.075Kpa (1.56 psf).

.2 There shall be no water infiltration when tested in accordance with ASTM E331 with a pressure differential of 6.24 psf.

.3 Thermally the grid members shall have a resistance to heat transfer equal to or better than the area along the bottom of a 25mm (1") sealed glass unit.

.4 Execute the entire skin based on the rain screen principle and provide:

.5 Gaskets, baffles, overlaps and seals as required to provide a rain screen barrier to effectively prevent rain water entry into the cavities of the system.

.6 Necessary air seals to minimize air passage from the system cavities into the building and vice-versa, to assure adequate pressure equalization of the system cavities with the outside.

.7 Air and vapour seals required to minimize air borne vapour exfiltration from the building into the system cavities.

.8 Openings between these cavities and the outside of sufficient cross-section to provide pressure equalization. Baffle openings or otherwise guard to minimize direct water entry.

.9 Positive means to expel moisture from within framing members.

.10 Construct system to provide for expansion and contraction caused by an ambient temperature range of 110˚ Celsius without causing harmful buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.11 All components of the curtainwall system shall be designed to withstand wind loads of 195kg/m^2 in accordance with the requirements of NAAMM "Specifications for Wall Testing" NAAMM Standard TM-1-68T, Test for Structural Performance. The maximum deflection shall be 1/175 of clear span or that limited by the glass manufacturer, whichever is less.

.12 The design of all components in this Section shall take into consideration all elements of the environment in this geographical area, and unless otherwise noted, shall meet the loading requirements for the area as dictated by the National Building Code of Canada.

.13 Requirements of Regulatory Agencies

.14 At exterior glazed walls greater than 600mm above adjacent exterior grade all window framing and glazing within 1070mm of floor or stair surface to be designed in accordance with article 4.1.10.3.(1) of the National Building Code.

1.9 WARRANTY

.1 Provide a written guarantee for the complete installation provided under this section against defective material and workmanship which appears within a period of three years from the date of Substantial Performance for framing and five years for hermetically sealed glazing unit failure resulting in condensation between glass surfaces.

Part 2 Products

2.1 STANDARD OF ACCEPTANCE

.1 Drawings and specifications for work of this section are based upon:

.1 Main Vestibule: Kawneer 1600 Series

.2 Staff Entry: TriFab 451UT Thermally Broken System c/w 360 Insuclad Door

.2 Framing system components: (refer also to drawings)

.1 133.4mm (5.25") depth dual glazed window mullion back section with silicon butt joint at vertical joints.- typical

.2 capless vertical intermediate mullions

.3 90° corners

.3 Whenever alternative products are offered, submit supporting technical literature, samples, drawings, and performance data for comparison as per Instructions to Bidders

2.2 MATERIALS

.1 **Extrusions**: shall be 6063 aluminum alloy with a guaranteed minimum yield stress of 148.3 MPa (21,500 psi). Formed aluminum components shall be sheet of alloy and temper suitable for their purpose and finish.

.2 **Fasteners**: shall be 300 Series Stainless Steel or 400 Series Stainless Steel cadmium plated and of sufficient size and quantity to perform their intended function.

.3 **Weathering and glazing gaskets**: shall be extruded, black, closed cell or dense elastomer of durometer appropriate to the function.

.4 **Glazing tapes**: shall be macro-polyisobutyiene, highly adhesive and elastic with continuous built in shim.

.5 **Spandrels**: to be 6mm laminated diffused white safety glass.

.6 **Insulation for spandrels**: rigid glass fibre with density of 48.1 kg/m3 and factory applied reinforced foil flame resistant kraft facing. Thermal resistance of minimum 0.73 RSI/25.4mm(1") thickness. Standard of Acceptance: Fibreglass Canada AF500 series.

.7 **Air barrier**: to be W.R. Grace Permabarrier.

.8 **Isolation coating**: to be alkali resistant bituminous paint.

.9 **Retainer cap**: design decorative retainer clip in collaboration with the Consultant to secure horizontal framing member to the curtain wall horizontal member, if required.

.10 **Flashing**: 0.8mm (0.031") aluminum break-formed to suit application and provide water shedding to the exterior. Heavier gauges where indicated on drawings.

.11 **Formed Components**: shall be sheet of alloy and temper suitable for their purpose and finish.

.12 **WeatherStripping**: Manufacturers standard

.13 **Threshold**: Aluminum Threshold to suit door system

.2 Description:

.1 Vertical glazed aluminum curtain wall system includes thermally broken tubular aluminum sections with self supporting framing, shop fabricated, factory prefinished, vision glass,; related flashings, anchorage and attachment devices.

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

2.3 FINISH

.1 Anodized:

.1 Exposed aluminum section on the interior and exterior side of glazing shall be given an anodic oxide treatment in accordance with Aluminum Association specification AA-M12C22A31 for #17 clear.

2.4 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 specified.

.6 Reinforce framing members for external imposed loads.

.7 Visible manufacturer's identification labels not permitted.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate.

.2 Verify dimensions, tolerances, and method of attachment with other work.

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

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

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

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 Use 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 Use thermal isolation where components penetrate or disrupt building insulation.

.6 Install sill flashings.

.7 Anchor Curtainwall to existing framing. Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Manitoba.

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

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

.10 Install operating sash in accordance with Section [08 80 50 - Glazing], to [glazing method required to achieve performance criteria] [exterior [wet/dry] method of glazing].

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 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.

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

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

.3 Section 01 74 11 – Cleaning.

.4 Section 06 08 99 – Rough Carpentry for Minor Works

.5 Section 08 11 16 – Aluminum Door and Frames

.6 Section 08 42 29 – Automatic Entrances

1.2 REFERENCES

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)

.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 A156.14-[2002], Sliding and Folding Door Hardware.

.6 ANSI/BHMA A156.15-[2006], Release Devices - Closer Holder, Electromagnetic and Electromechanical.

.7 ANSI/BHMA A156.18-[2006], Materials and Finishes.

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 Hardware List:

.1 Submit contract hardware list.

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

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

.5 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 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.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance 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 and 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.

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 Refer to Door Hardware Schedule in this specification Section for the specified hardware groups. Supply the hardware as listed for the scheduled door.

.2 Door Hardware for Automatic Sliding Entrances by Door Manufacturer.

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 Supply keys in duplicate for every lock in this Contract. Prior to keying, check with City as to the type of Keyway section to supply.

.2 Supply 3 master keys for each master key.

.3 Stamp keying code numbers on keys and cylinders.

.4 Supply construction cores.

.5 Hand over permanent cores and keys to City.

Part 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 Use only manufacturer's supplied fasteners.

.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.4 Remove construction cores 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 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 SCHEDULE

.1 Door D001:

DOOR D001

3	HINGES	3CB1HW NRP 4 1/2" X 4"		630	IE
1	EXIT DEVICE	35ANL-OP X 388-NL		626	VO
1	RIM CYLINDER	20-021		626	SC
1	PULL	3012-2 1" X 12" NO.5 SINGLE MS	3	2D	SM
1	CLOSER	4021 REG		689	LC
1	MOUNTING PLATE	4020-18G		689	LC
1	CONC OVERHEAD STOP	100S		630	GL
1	ELECTRIC STRIKE	6111 FSE		630	VO
1	SWEEP	W 24S		CA	KN
1	THRESHOLD	CT 11		AL	KN

WEATHERSTRIP BY DOOR SUPPLIER.
CARD READER BY OTHERS.

.2 Door D002 and D003: Hardware by Door Manufacturer.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 73 00 – Execution.

.3 Section 01 74 11 – Cleaning.

.4 Section 07 92 00 – Joint Sealant

.5 Section 08 11 16 – Aluminum Door and Frames

.6 Section 08 42 29 – Automatic Entrances

1.2 REFERENCES

.1 ASTM International

.1 ASTM C542-[05], Standard Specification for Lock-Strip Gaskets.

.2 ASTM D790-[07e1], Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D1003-[07e1], Standard Test Method for Haze and Luminous Transmittance of Plastics.

.4 ASTM D1929-[96(R2001)e1], Standard Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D2240-[05], Standard Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E84-[10], Standard Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM E330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.8 ASTM F1233-[08], Standard Test Method for Security Glazing Materials and Systems.

.2 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-12.6-[M91], Transparent (One-Way) Mirrors.

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

.7 CAN/CGSB-12.8-[97] (Amendment), 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 Sheets.

.12 CAN/CGSB-12.13-[M91], Patterned Glass.

.3 Glass Association of North American (GANA)

.1 GANA Glazing Manual - [2008].

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

1.3 SCOPE OF WORK

.1 The Contractor shall supply all glass, and glazing shown, noted, or indicated on the drawings and/or specified herein, including all items and material for the propoer setting of the glass.

.2 Related Work included elsewhere to be performed in compliance with this section.

1.4 REQUIREMENTS OF REGULARORY AGENCIES

.1 Curtainwall

.1 At exterior glazed walls greater than 600mm above adjacent exterior grade all window framing and glazing within 1070mm of floor or stair surface to be designed in accordance with article 4.1.10.3.(1) of the National Building Code.

1.5 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 Province of Manitoba.

.4 Samples:

.1 Submit one 12” x 12” in size for review and acceptance of Glazed unit Type A complete with ceramic frit .

.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.

1.6 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.

1.7 QUALITY ASSURANCE

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

.2 Installer Qualifications: Company specializing in performing the Work of this section with minimum 5 years documented experience.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance 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, indoors 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.

1.9 WARRANTY

.1 Submit to the City a written warranty of the installation of insulating glass, covering a period of two years

.2 Submit to the City a written warranty for seal failure in hermetically sealed units in accordance with GC24, but for five years. Condensation on inner faces of glass detrimental to vision will be considered sufficient evidence of seal failure.

.3 Warranty period to begin as of the date of Substantial Performace.

Part 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 [acting normal to plane of glass to design pressure of to ASTM E330.

.3 Limit glass deflection to 1/200 [flexural limit of glass] with full recovery of glazing materials.

2.2 GLAZING SCHEDULE

.1 Flat Glass:

.1 Float glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.

.2 Tempered Safety Glass: To CAN2-12.1-M90 Type 2, Class B

.3 Exterior Curtainwall Windows:

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

.1 **Transparent:** 25 mm sealed dual glazed with 6 mm (1/4") clear inner and outer panes, 12.5 mm (1/2") air space between panes. Thermal separator for curtainwall to be aluminum metal spacer bar, with P.I.B. primary seal, silicone dual seal, colour black. Argon fill and Comfort T1-AC 40 coating on #2 surface. Edge delete low E

.1 Tempered where required by NBC

.2 **Transparent with Ceramic Frit:** 25 mm sealed dual glazed with 6 mm (1/4") clear inner and outer panes, 12.5 mm (1/2") air space between panes. Thermal separator for curtainwall to be aluminum metal spacer bar, with P.I.B. primary seal, silicone dual seal, colour black. Argon fill and Comfort T1-AC 40 coating on #3 surface. Ceramic Frit on coating #2. Edge delete low E. Ceramic Frit color to be chosen by Contract Administrator.

.1 Tempered where required by NBC

.4 Exterior Doors, Sidelites and Transoms

.1 Door D001: Dual clear 6mm (1/4") insulating tempered glass units with 12.5 mm (1/2") air space between panes, argon fill and Comfort E2 on #2 surface.

.2 Sidelite at D001: 25mm sealed dual glazed with 6 mm (1/4") clear inner and outer panes, 12.5 mm (1/2") air space between panes. Frosted Film coating on #2 surface. Argon fill and Comfort T1-AC 40 coating on #3 surface.

.1 Standard of Acceptance for Frosted Film: AGC Matelux

.5 Interior Window

.1 Tempered safety glass, butt jointed, thickness as required to meet all applicable codes and standards.. Ceramic Frit as per drawing. Ceramic Frit color to be chosen by Contract Administrator.

2.3 GLAZING AND SEALING COMPOUND MATERIALS

.1 Sealant for heel bead (air seal) or toe bead shall be one part urethane sealant. Colour to be selected by Consultant.

.1 **Standard of Acceptance**:

.1 Tremco Dymonic.

.2 Permapol RC-1.

.2 Sealant for cap or needle bead. One part low modulus silicone sealant conforming to NSC/CGSB CAN2-19-13-M82.

.1 **Standard of Acceptance**:

.1 Tremco Spectrem 2.

.2 GE GESIL N2600.

.3 Primers, if required, according to sealant manufacturer's recommendations.

.4 **Glazing tape**: Lites of glass over 1905 united mm (6'-3"), tape shall be macro polyisobutylene butyl with integral continuous EPDM shim.

.1 **Standard of Acceptance**:

.1 Tremco Ployshim II Tape.

.5 **Setting blocks**: To be neoprene or EPDM with a Shore "A" hardness of 80 plus or minus 5 durometer. Length to be 2.5mm (.1") per 90 sq. mm (1.4 sq.in.) of glass, but not less than 100mm (4"). Width for setting block to be 1.5mm (0.059") more than glass thickness and high enough to provide the bite recommended by glass manufacturer. When thickness offsetting block exceeds 18mm (3/4") thickness, the glass manufacturer must be consulted for size and configuration. In a vented system, setting block shall be designed so as not to restrict the flow of water within the glazing rabbet to the weep holes.

.6 **Glazing gaskets**: To be continuous extruded EPDM, designed specifically for use in the window section with a shore "A" hardness balanced to that of shim in the tape.

.1 **Standard of Acceptance**:

.1 Tremco Plyshim II Glazing Splines.

.7 Edge blocks shall be of a material and hardness to provide proper edge clearance according to glass manufacturer's recommendations.

.8 Cleaning material for surfaces to receive glazing of tape or sealants to be xylol, methethylketone, toluol, or as recommended by manufacturer of sealant. The only acceptable cleaner for use with silicone 0 based sealants shall be methylethylketone (MEK).

.9 Ensure that glazing sealants used are compatible with insulating glass sealant.

Part 3 Execution

3.1 EXAMINATION

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

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

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

3.2 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:

.1 Install materials in accordance with manufacturer's specifications, ensuring that each material in the glazing system is compatible with the others.

.2 All surfaces receiving glazing material shall be thoroughly wiped with a clean cloth, dampened with the appropriate cleaner, as approved by the sealant/glazing tape manufacturer. Special precautions must be taken in cold weather to ensure the surfaces are free from frost.

.3 All framing members of windows shall be checked prior to glazing to make certain that the frame is square, plumb, and secure in order that uniform face and edge clearances are maintained. Inspect all butt and mitre joints. If these joints are open, they shall be sealed with sealant prior to glazing. All ventilators shall be properly adjusted. Maintain 3mm

(1/8") minimum face clearance between glass and metal, on both sides, or as outlined by the glass manufacturer.

.4 Erect windows and entrances in openings complete with all necessary reinforcing and incidental components.

.5 All operating sashes shall be glazed in the closed position and not opened by any trade until the glazing materials have properly cured.

.6 Seal all joints between frames and adjacent surfaces to provide a completely weathertight enclosure.

.7 Install flashings to locations as indicated.

.8 A full size dimensioned detail of the glazing and metal system must be submitted for approval prior to the start of the job. Metal die drawings are required when applicable. Placement of materials must be shown on the detail. If the framing members from the fabricator differs from the submitted detail, the principal parties must resolve differences before proceeding.

.9 Glazing to be undertaken at temperatures recommended by the manufacturer of the glazing material.

3.4 GLAZING

.1 Size glass units to accurately fit openings with clearances according to the glass manufacturer's recommendations.

.2 Glazing tape shall be cut to proper length prior to application.

.3 Flush glazing: If the butt joint in the metal framing is in the vertical direction, the glazier shall run the tape initially on the head and sill members going directly over this joint. Should the butt joint in the metal framing run horizontally, tapes must first be applied to the jambs so that it crosses over the joint.

.4 Each tape section shall butt the adjoining tape and be united with a tool to eliminate any opening. Do not overlap the adjoining length of tape, or rubber shim, as this will prevent full contact around the perimeter of glass.

.5 Offset glazing: Where the glazing legs are offset, the difference in the rabbet width should be compensated by employing different glazing tapes with different diameter shims. The difference in shim should be equal to the size of the offset. The thinner tape should be positioned first on the glazing leg closest to the interior. The thicker tape shall be cut to the exact length of the dimension between the applied tapes, and installed on the outermost glazing leg.

.6 Immediately prior to setting glass, paper backing shall be removed. Apply a toe bead of sealant 150mm (6") in each direction from each corner.

.7 Locate setting clocks in the sill member at quarter points, or if necessary to within 150mm (6") in each direction, from each corner.

.8 The glass shall be pressed firmly against the tape to achieve full contact.

.9 In a vented system, apply a heel bead (air seal) of the sealant around the perimeter of glass, between the sole of the I.G. unit and the base of the rabbet of the metal framing developing a positive bond to the unit and to the metal framing. The bead of sealant shall be deep enough so that it will partially fill the channel to a depth of 6mm (1/4") between the glass and the base of the metal framing rabbet.

3.5 GLAZING GASKET

.1 The gasket shall be cut approximately 3mm per 250mm (1/8" per 10") longer than the respective channel.

.2 In setting the gasket into the channel between the glass and removable stops, the horizontal strips (head and sill) shall be set first, then the vertical (jamb) strips.

3.6 SEALING

.1 Seal all joints between frames and adjacent surfaces where indicated, providing a weathertight exterior. Perform work according to the requirements of Sealant Specification 07 92 00.

.2 Application of the sealant shall be in strict accordance with manufacturer's printed direction. The sealant shall be applied to a clean, dry, grease, and oil-free surface. Sealant shall be smooth, free from ridges, wrinkles, and embedded foreign materials.

.3 Remove excess sealant droppings which would set up or become difficult to remove from the surfaces. Chemicals, scrapers, or other tools which would effect finished surfaces, shall not be used for such removal.

3.7 STRUCTURAL BUTT GLAZING

.1 Use black silicone sealant for all exterior butt joints and corners. Allow space between panes, in size recommended by silicone sealant manufacture and to suit thermal expansion of the glazing. Install backer rod where required to fill void.

.2 Use clear silicone sealant for all interior butt joints and corners.

3.8 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 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.

3.9 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