Part 1 General

1.1 SECTION INCLUDES

.1 Hollow metal steel frames.

.2 Pressed steel doors.

1.2 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants.

.2 Section 08 71 00 - Door Hardware – Common Requirements

.3 Section 08 71 01 – Door Hardware – Groups

.4 Section 08 71 02 – Door Schedule

.5 Section 09 91 99 – Painting for Minor Works.

1.3 REFERENCES

.1 ASTM A653/A653M-09 - Steel Sheet, Zinc-Coated (Galvanized).

.2 ASTM C553-08 - Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

.3 ASTM C578-09e1 - Rigid, Cellular Polystyrene Thermal Insulation.

.4 ASTM C591-09 - Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.

.5 ASTM C665-06 - Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.6 ASTM C1289-08e1 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

.7 ASTM E90-09 - Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.8 ASTM E413-04 - Classification for Rating Sound Insulation

.9 CAN/ULC S104-10 - Standard Method for Fire Tests of Door Assemblies.

.10 CAN/ULC S105-09 - Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.

.11 CAN/ULC-S704-03 - Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

.12 CAN/CSA-G40.20-04/G40.21-04 (R2009) - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.13 CSA-W59-03 (R2008) - Welded Steel Construction (Metal Arc Welding).

.14 CSDMA (Canadian Steel Door Manufacturers Association)

.1 Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.

.2 Selection and Usage Guide for Commercial Steel Doors and Frames, 2009.

.15 DHI (Door Hardware Institute) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

.16 NFPA 80 - Fire Doors and Fire Windows (2010 Edition).

.17 NFPA 252-2008 - Methods of Fire Tests of Door Assemblies.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Coordinate with other work having a direct bearing on work of this section.

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

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

1.5 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submittal Procedures.

.2 Product Data: Indicate door and frame configurations and finishes, location of cut-outs for hardware reinforcement.

.3 Shop Drawings:

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

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

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 00: Closeout Submittals.

1.7 QUALITY ASSURANCE

.1 Products of This Section: Manufactured to ISO 9000 certification requirements.

.2 Conform to requirements of CSDMA. Maintain one (1) copy of document on Site.

.3 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

1.8 REGULATORY REQUIREMENTS

.1 Fire Rated Door and Frame Construction: Labelled and listed to CAN4-S104 and NFPA 252.

.2 Installed Door and Frame Assembly: Conform to NFPA 80 for fire rated class as scheduled.

1.9 DELIVERY, STORAGE, AND PROTECTION

.1 Refer to Section 01 61 00.

.2 Remove doors and frames from wrappings or coverings upon receipt on Site and inspect for damage.

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

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

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

Part 2 Products

2.1 MANUFACTURERS

.1 Allmar.

.2 Other acceptable manufacturers offering functionally and aesthetically equivalent products.

.1 Shanahan's.

.3 Substitutions: Refer to City of Winnipeg Bid Opportunity. Approved equals to be in accordance with B7.

2.2 MATERIALS

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

.1 Exterior Doors and Frames: Coating designation Z275 (G90).

.2 Interior Doors and Frames: Coating designation ZF120 (A40).

.2 Reinforcement Channel: To CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/A653M, coating designation to match door.

2.3 DOOR CORE MATERIALS

.1 Honeycomb Core: Structural small cell 25.4 mm (1 inch) maximum kraft paper honeycomb; weight 36.3 kg (80 lb) per ream minimum, density 16.5 kg/cu m (1.03 pcf) minimum, sanded to required thickness.

.1 Fire Rated Doors: Refer to Drawings and Schedules.

.2 Polystyrene Core: ASTM C578, Type 1, rigid extruded fire retardant, closed cell board, density 16 to 32 kg/cu m (1 to 2 pcf), thermal values RSI-1.0 (R-6.0) minimum.

2.4 ADHESIVES

.1 Cores and Steel Components: Heat resistant, structural reinforced epoxy, resin based adhesive.

.2 Lock Seam: Reinforced epoxy resin, high viscosity, thicksotroptic sealant.

2.5 PRIMERS

.1 Rust inhibitive touch-up only.

2.6 ACCESSORIES

.1 Door Silencers: Single stud rubber/neoprene.

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

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

.4 Weatherstripping: Specified in Section 08 71 00.

2.7 FABRICATION - DOORS

.1 Exterior Doors: Laminated core construction.

.2 Interior Doors: Laminated core construction.

.3 Longitudinal Edges: Tack welded, filled and sanded with no visible edge seams.

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

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

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

.7 Exterior Door: Flush PVC top caps.

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

.9 Sound Rated Door after Fabrication: STC of minimum 48, measured to ASTM E413.

2.8 LAMINATED CORE CONSTRUCTION

.1 Exterior Doors: Both face sheets 1.2 mm (18 gauge) steel, with polystyrene core, laminated under pressure to face sheets.

.2 Interior Doors: Both face sheets 1.2 mm (18 gauge) steel with honeycomb core (refer to Schedule), laminated under pressure to face sheets.

2.9 FABRICATION - FRAMES

.1 Exterior Frames: 1.6 mm (14 gauge) thick base metal thickness.

.1 Frames: Welded type construction thermally broken.

.2 Interior Frames: 1.6 mm (14 gauge) thick base metal thickness.

.1 Door Frames and Window Assemblies: Welded type construction.

.2 Fire rated Frames: Refer to Drawings and Schedules.

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

.4 Prepare frames for silencers. Provide three (3) single silencers for single doors and mullions of double doors on strike side. Provide two (2) single silencers on frame head at double doors without mullions.

.5 Configure exterior frames with special profile to receive recessed weatherstripping.

.6 Attach fire rated label to each fire rated door unit.

Part 3 Execution

3.1 EXAMINATION

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

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

.3 Remove temporary shipping spreaders.

3.2 INSTALLATION

.1 Install doors and frames to CSDMA.

.2 Install fire-rated doors and frames in accordance with NFPA 80, and local authority having jurisdiction.

.3 Coordinate with masonry, gypsum board and concrete wall construction for anchor placement and throat depths.

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

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

.6 Secure anchorages and connections to adjacent construction.

.7 Brace frames rigidly in position while building-in. Install wood spreaders at third points of frame rebate height to maintain frame width. Provide vertical support at centre of head for openings exceeding 1 200 mm (48 inches) in width.

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

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

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

.11 Adjust operable parts for correct clearances and function.

.12 Install door silencers.

.13 Finish paint as specified in Section 09 91 99.

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

3.3 ERECTION TOLERANCES

.1 Section 01 73 00: Execution Requirements.

.2 Maximum Diagonal Distortion: 1.5 mm (1/16 inch) measured with straight edges, crossed corner to corner.

3.4 SCHEDULE

.1 Refer to Door Schedule Section 08 71 00.

END OF SECTION

1 GENERAL

1.1 SUMMARY OF WORK

.1 This Section specifies aluminum swing doors, thermally broken aluminum swing doors and accessories.
  .1 Section does not include framing of door opening.

1.2 RELATED REQUIREMENTS

.1 Section 07 92 00 – Joint Sealants

.2 Section: 08 44 13 - Glazed Aluminum Curtain Wall

.3 Section: 08 80 50 – Glazing: Insulating glass units

1.3 REFERENCE STANDARDS

.1 Aluminum Association (AA)
  .1 DAF 45 [2003], Designation System For Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).
  .1 AAMA-2603-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
  .2 AAMA-2604-[2013], Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
  .3 AAMA-2605-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
  .4 AAMA CW-10-[2012], Care and Handling of Architectural Aluminum From Shop to Site.

.3 ASTM International (ASTM).
  .1 ASTM B209-[2010], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  .2 ASTM B221-[2013], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  .3 ASTM C612 – [2014], Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
  .4 ASTM E283-[2012], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  .5 ASTM E331 - [2009], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

.6 ASTM E1105 – [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.

.7 ASTM D2240 – [2010], Standard Test Method for Rubber Property—Durometer Hardness.

.4 Canadian General Standards Board (CGSB).

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

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

.3 CAN/CGSB-19.13-[M87], Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.5 CSA International (CSA)

.1 CAN/CSA-S157-[2005], Strength Design in Aluminum.

.2 CAN/CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.

.6 Environmental Choice Program (ECP)

.1 CCD-45-[1995], Sealants and Caulking Compounds.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.2 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer**=**s written installation instructions.

.1 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:

.1 The City;

.2 Contract Administrator;

.3 Glazing subcontractor;

.4 Manufacturer’s Technical Representative.

.3 Ensure meeting agenda includes review of methods and procedures related to aluminum door installation including co-ordination with related work.

.4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit product data including manufacturer’s literature for aluminum, panels, styles, rails , components and accessories, indicating compliance with specified requirements and material characteristics.

.1 Submit list on aluminum door manufacturer’s letterhead of materials, components and accessories to be incorporated into Work.

.2 Include product names, types and series numbers.

.3 Include contact information for manufacturer and their representative for this Project.

.3 Shop Drawings: Submit drawings stamped and signed by Professional Engineer registered or licensed in Province of Manitoba, Canada. Include on shop drawings:
.1 Indicate materials and profiles and provide full-size, scaled details of components for each type of door. Indicate:
.1 Core thicknesses of components.
.2 Type and location of exposed finishes.
.3 Size of door opening and tolerances.
.4 Arrangement of hardware and required clearances.
.2 Include catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

.4 Test Reports:
.1 Submit test reports showing compliance with specified performance characteristics and physical properties including air infiltration, water infiltration and structural performance.

.5 Installer Qualifications:
.1 Submit letter verifying installer's experience with work similar to work of this Section.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply maintenance data for curtain wall for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
.2 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
.1 List materials used in door work.
.2 Warranty: Submit warranty documents specified.

1.7 DELIVERY STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:
.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver aluminum door materials and components in manufacturer's original packaging with identification labels intact and in sizes to suit project.

.2 Material Handling: To AAMA CW-10.

.3 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
.1 Material storage: To AAMA CW-10.

.4 Packaging Waste Management:
.1 Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

1.9 WARRANTY

.1 Project Warranty: Refer to Contract Conditions for project warranty provisions.

.2 Manufacturer's warranty: Submit, for The City's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights The City may have under Contract Conditions.

.3 Warranty period: 1 year commencing on Date of Substantial Performance of Work.
.1 Insulating glass units: 10 years, on Date of Substantial Performance of Work.

2 PRODUCTS

2.1 DESCRIPTION

.1 Aluminum-framed swing door with glass insert suitable for inclusion in curtain wall or storefront system.

2.2 DESIGN CRITERIA

.1 Design aluminum components to CAN/CSA S157.
.2 Air infiltration: 0.3 L/s/m^2 (0.63 cfm) maximum of wall area to AAMA 501 & ASTM E283 at differential pressure across assembly of 300 Pa (0.044 psi).

2.3 MATERIALS

.1 Aluminum Door Components:
.1 Extruded aluminum: To ASTM B221, 6063 alloy with T6 temper.
.2 Sheet aluminum: To ASTM B209, utility grade for unexposed surfaces, anodizing quality for exposed surfaces.
.3 Fasteners, screws and bolts: Cadmium plated stainless steel 300 or 400 series to meet curtain wall requirements and as recommended by manufacturer.
.4 Vision glass for interior single glazed door: 6 mm clear tempered glass. Refer to Section 08 80 50.
.5 Insulating glass units for exterior glazed door: In accordance with Section 08 80 50 – Glazing.
.6 Insulating glass units for exterior glazed door: To CAN/CGSB-12.8, double glazed, hermetically sealed, argon filled insulating glass units with low conductance black stainless steel warm edge spacer.
.1 Outer lite: 6 mm clear tempered glass with low-E coating on surface two.
.3 Inner lite: 6 mm clear tempered glass
.7 Aluminum panels: 25.4 mm (1 inch) thick insulated, shop fabricated panels.
.1 Finish to match doors.

2.4 DOOR FABRICATION

.1 Do aluminum welding to CAN/CSA W59.2.

.2 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.
.1 Ensure stiles and rails are tubular extrusions designed for mechanical shear block fastening in combination with SIGMA deep penetration plug welds and fillet welds at all stile/rail connections.

.3 Door Thickness: 51 mm

.4 Construct doors square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.

.5 Fabricate infill panels of aluminum sheet laminated to marine grade plywood.
- .1 Aluminum sheet minimum thickness 3mm.
- .2 Marine grade plywood thickness: 19mm.

.6 Accurately fit and secure joints and corners.
- .1 Ensure joints are flush and hairline

.7 Use only concealed or semi-concealed fasteners
- .1 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used.

.8 Install door hardware.

.9 Locate manufacturer's labels on exterior side of door bottom rail.

.10 Acceptable Products:
- .1 Top & Stile width: 89mm / 101.6 mm
- .2 Bottom rail: 304.8 mm

Standard of Acceptance:
- .1 Alumicor Limited: Canadiana Insuldoor, #500A Door Type
- .2 Kawneer : Type 360 Insulclad

2.5 FINISHES

.1 Exposed aluminum surfaces: To AA DAF-45-M12C22A41, A44, Architectural Class I, anodized 18 µm (0.0007 inches) minimum thickness coloured clear.
- .1 Acceptable material: Class I Anodic Finish.

2.6 HARDWARE

.1 See Section 08 71 02.

2.8 ACCESSORIES

.1 Gasketing: To CCD-45 EPDM gaskets.

.2 Setting Blocks: To CCD-45 and ASTM D2240, neoprene/ EPDM/ silicone, 80 - 90 Shore A Durometer hardness.

.3 Spacers: To CCD-45 and ASTM D2240, neoprene/EPDM/silicone, 50 - 60 Shore A Durometer hardness.

.4 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.
- .1 Acceptable material: Dow Corning 795.

.5 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.

3 EXECUTION

3.1 INSTALLERS

.1 Use only installers with 2 years minimum experience similar to work of this Section.

3.2 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for door 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.

3.3 INSTALLATION

.1 Install aluminum swing doors in accordance with manufacturer's written instructions.

3.4 ADJUSTING

.1 Adjust operable parts for correct function.

.2 Ensure doors do not bind while opening and closing.

3.5 FIELD QUALITY CONTROL

.1 Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 - Quality Control.

.2 Manufacturer's Services:

.1 Coordinate manufacturer's services with Section 01 45 00 - Quality Control.

.2 Submit to Contract Administrator a written agreement from the manufacturer to perform the manufacturer's services.

.3 Submit manufacturer's written reports to Contract Administrator describing:
- .1 The scope of work requested.
- .2 Date, time and location.
- .3 Procedures performed.
- .4 Observed or detected non-compliances or inconsistencies with manufacturers' recommended instructions.
- .5 Limitations or disclaimers regarding the procedures performed.
- .6 Obtain reports within seven days of review and submit immediately to Contract Administrator.

3.5 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 74 11 - Cleaning.

.1 Leave work area clean end of each day.

.2 Final leaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.

3.6 PROTECTION

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

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

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Electric overhead sectional door.

.2 Operating hardware, supports, and controls.

1.2 RELATED SECTIONS

.1 Section 04 22 00 – Concrete Unit Masonry

.2 Section 05 50 00 - Metal Fabrications

.3 Section 06 10 13 - Wood Blocking And Curbing

.4 Section 07 92 00 - Joint Sealants

1.3 REFERENCES

.1 ASTM A653/A653M-07 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

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

.3 CAN/CSA-C22.2 No. 100-04 - Motors and Generators.

.4 CSA C22.2-06 - Canadian Electrical Code, Part 2.

.5 CSA G164-M92(R2003) - Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 NEMA MG1 - Motors and Generators.

.7 UL - Fire Resistance Directory.

.8 ULC - Fire Resistance Directory.

1.4 SYSTEM DESCRIPTION

.1 Panels: Flush steel, insulated. Stile and rail steel with glazed panels.

.2 Lift Type: High lift operating style with track and hardware as described herein.

.3 Operation: Electric.

.4 Loads: Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall as measured in accordance with ASTM E330.

1.5 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

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

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

1.6 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Installation Data: Manufacturer's special installation requirements, special procedures, perimeter conditions requiring special attention.

1.7 CLOSEOUT SUBMITTALS

.1 Section 01 78 00: Submission procedures.

.2 Operation and Maintenance Data:

.1 Include electrical control adjustments.

.2 Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

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

1.8 QUALITY ASSURANCE

.1 Products of This Section: Manufactured to ISO 9000 certification requirements.

.2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years experience.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years experience. approved by the manufacturer.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for motor and motor control requirements.

1.10 WARRANTY

.1 Correct defective Work within a five (5) year period after Date of Substantial Completion.

.2 Warranty: Include coverage for electric motor.

.3 Provide five (5) year manufacturer warranty for electric operating equipment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 GARAGA INDUSTRIES Model G5000 or approved equal in accorance with B7.

2.2 MATERIALS

.1 Sheet Steel: ASTM A653/A653M galvanized to Z180, pre-coated with silicone polyester finish, plain surface.

.2 Insulation: polyurethane, RSI value of 2.8, same thickness as core framing members, bonded to facing.

.3 Metal Primer Paint: Zinc chromate type.

2.3 PANEL CONSTRUCTION

.1 Panels: Flush steel construction; outer steel sheet of 3.658 mm thick, flat profile; inner steel sheet of 1.5 mm thick, flat profile; core reinforcement of 3.658 mm thick sheet steel roll formed to channel Z- shape, rabbeted weather joints at meeting rails; insulated.

.2 Door Nominal Thickness: 45 mm thick.

.3 Glazing: 25mm (1") double thermopane, tempered glass window, supplied by this Section.

.4 Glazed Lights: full vision glazing in one panel section, across full width of door, set in place with resilient glazing channel.

2.4 DOOR COMPONENTS

.1 Track: Rolled galvanized steel, 2.6 mm thick; 75 mm wide, continuous one piece per side; galvanized steel mounting brackets 6 mm thick.

.2 Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

.3 Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.

.4 Sill Weatherstripping: Resilient semi-circular TPE tubing strip, one piece; fitted to bottom of door panel, full length contact.

.5 Jamb Weatherstripping: Roll formed aluminum section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

.6 Head Weatherstripping: EPDM rubber seal, one piece full length.

.7 Panel Joint Weatherstripping: PVC, one piece full length.

.8 Lock: Inside side mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle; keyed according to building's master key system.

2.5 ELECTRICAL HOIST OPERATOR

.1 Lift Master Model MH, ½ HP/115 V Single Phase.

.2 UL 325-2010 compliant, medium duty logic programmable integrated circuit board.

.3 Disconnect Switch: Factory mount disconnect switch on equipment.

.4 Electric Operator: Side mounted on cross head shaft, adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter; mounting brackets and hardware.

.5 Control Station: Standard three button (open-close-stop) momentary type, control for each electric operator; 24 volt circuit, surface mounted. Include key operated switch located at inside door jamb.

.6 Radio Control Antenna Detector.

.7 Photo Eye: At bottom of door panel, full width; sensitized type, wired to reverse door upon striking object; hollow neoprene rubber covered to provide weatherstrip seal.

2.6 FINISHES

.1 Exterior Surfaces: Prime & finish paint for finish specified in Section 09 91 99.

.2 Interior Surfaces: Prime & finish paint for finish specified in Section 09 91 99.

PART 3 EXECUTION

3.1 EXAMINATION

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

.3 Verify that electric power is available and of the correct characteristics.

3.2 PREPARATION

.1 Prepare opening to permit correct installation of door unit to perimeter air and vapour barrier seal.

3.3 INSTALLATION

.1 Install door unit assembly to manufacturer instructions.

.2 Anchor assembly to wall construction and building framing without distortion or stress.

.3 Securely brace door tracks suspended from structure. Secure tracks to structural members only.

.4 Fit and align door assembly including hardware.

.5 Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

.6 Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.

.7 Install perimeter trim and closures.

3.4 ERECTION TOLERANCES

.1 Maximum Variation from Plumb: 1.5 mm.

.2 Maximum Variation from Level: 1.5 mm.

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

.4 Maintain dimensional tolerances and alignment with adjacent work.

3.5 MANUFACTURER'S FIELD SERVICES

.1 Ensure the operation and adjustments to door assembly for specified operation.

3.6 ADJUSTING

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

3.7 CLEANING

.1 Section 01 74 00: Cleaning installed work.

.2 Clean doors, frames and glass.

.3 Remove temporary labels and visible markings.

3.8 PROTECTION OF FINISHED WORK

.1 Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

1 GENERAL

1.1 SUMMARY OF WORK

.1 This Section specifies thermally broken, stick-built, glazed aluminum curtain wall and windows, complete with related accessories.

1.2 RELATED REQUIREMENTS

.2 Section 07 26 00 – Vapour Retarders.

.3 Section 07 62 00 - Metal Flashing and Trim: Flashings.

.4 Section 07 92 00 - Joint Sealing.

.5 Section 08 11 16 – Aluminum Doors & Frames

.6 Section 08 80 50 – Glazing: Insulating glass units.

1.3 REFERENCE STANDARDS

.1 Aluminum Association (AA)
- .1 DAF 45 [2003], Designation System For Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).
- .1 AAMA-501-[2005], Methods of Test for Exterior Walls.
- .2 AAMA-2603-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- .3 AAMA-2604-[2013], Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- .4 AAMA-2605-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .5 AAMA CW DG-1-[96], Aluminum Curtain Wall Design Guide Manual.
- .6 AAMA CW-10-[2012], Care and Handling of Architectural Aluminum From Shop to Site.
- .7 AAMA CW-11-[1985], Design Windloads for Buildings and Boundary Layer Wind Tunnel Testing.
- .8 AAMA-TIR A1-[2004], Sound Control for Fenestration Products.

.3 ASTM International (ASTM).
- .1 ASTM A653 / A653M – [09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B209-[2010], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .3 ASTM B221-[2013], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.4 ASTM C612 – [2014], Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
.5 ASTM E283-[2012], Test Method for Determining the Rate of Air Leakage Differences Across the Specimen.
.6 ASTM E331-[2009], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
.7 ASTM E413 – [04], Classification for Rating Sound Insulation.
.8 ASTM E1105 – [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.
.9 ASTM D2240 – [2010], Standard Test Method for Rubber Property—Durometer Hardness.

.4 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-12.8-[97], Insulating Glass Units.
.2 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.
.3 CAN/CGSB-19.13-[M87], Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.5 CSA International (CSA)
.1 CAN/CSA-S157-[2005], Strength Design in Aluminum.
.2 CAN/CSA-S136–[2007], North American Specification for the Design of Cold-Formed Steel Structural Members.
.3 CAN/CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.

.6 Environmental Choice Program (ECP)
.1 CCD-45-[1995], Sealants and Caulking Compounds.

.7 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC-S710.1 [2005], Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.2 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer=s written installation instructions.
.1 Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
.2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
.1 The City;
.2 Contract Administrator;
.3 Glazing subcontractor;
.4 Manufacturer's Technical Representative.

.3 Ensure meeting agenda includes review of methods and procedures related to glazed aluminum curtain wall installation including co-ordination with related work.

.4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit product data including manufacturer's literature for glazed aluminum curtain wall extruded members, panels, components and accessories, indicating compliance with specified requirements and material characteristics.

.1 Submit list on curtain wall manufacturer's letterhead of materials, components and accessories to be incorporated into Work.

.2 Include product names, types and series numbers.

.3 Include contact information for manufacturer and their representative for this Project.

.3 Shop Drawings: Submit drawings stamped and signed by Professional Engineer registered or licensed in Province of Manitoba, Canada. Include on shop drawings:

.1 Curtain wall panel and component 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. Indicate location of manufacturer's nameplates.

.2 Show size and location of seismic restraints. Include seismic design calculations.

.3 Include details of fasteners between interior and exterior extrusions ensuring no penetratrion of thermal break or thermal bridging.

.5 Thermal Performance: Submit verification that Insulating Glass Units used in curtain wall system meet RSI values specified.

.6 Test Reports:

.1 Submit test reports showing compliance with specified performance characteristics and physical properties including air infiltration, water infiltration and structural performance.

.7 Field Reports: Submit manufacturer's field reports within 3 days of manufacturer representatives site visit and inspection.

.8 Installer Qualifications:

.1 Submit letter verifying installer's experience with work similar to work of this Section.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply maintenance data for curtain wall for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.7 DELIVERY STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:
.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver glazed aluminum curtain wall materials and components in manufacturer's original packaging with identification labels intact and in sizes to suit project.

.2 Material Handling: To AAMA CW-10.

.3 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
.1 Material storage: To AAMA CW-10.

1.8 WARRANTY

.1 Project Warranty: Refer to Contract Conditions for project warranty provisions.

.2 Manufacturer's warranty: Submit, for The City's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights The City may have under Contract Conditions.

.3 Warranty period: 2 years commencing on Date of Substantial Performance of Work.
.1 Insulating glass units: 10 years, on Date of Substantial Performance of Work.

2 PRODUCTS

2.1 DESCRIPTION

.1 Thermally broken, vertical stick-built glazed aluminum curtain wall system of tubular aluminum sections with self supported framing, shop fabricated, factory prefinished, vision glass, spandrel infill and louvres; related flashings, anchorage and attachment devices.

.2 Ensure assembled system design permits re-glazing of individual glass and infill panels from exterior without requiring removal of structural mullions.

2.2 DESIGN CRITERIA

.1 Design curtain wall to AAMA CW-DG-1.
.1 Design glazed aluminum curtain wall following rainscreen principles.
.2 Ensure horizontal members are sealed to vertical members to form individual compartments in accordance with rainscreen principles.
.3 Ventilate and pressure equalize air space outside exterior surface of insulation to exterior.

.2 Design aluminum components to CAN/CSA S15.

.3 Design and size curtain wall components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure of 0.95 kPa (20 psf) to AAMA CW 11 & ASTM E330.

.1 Design curtain wall system for expansion and contraction caused by cycling temperature range of 95 degrees C over 12 hour period without causing detrimental effect to system components.

.2 Thermal expansion: Ensure curtain wall system can withstand temperature differential of 85 degrees C and is able to accommodate interior and exterior system expansion and contraction without damage to components or deterioration of seals.

.3 Design vertical expansion joints with baffled overlaps and compressed resilient air seal laid between mullion ends.

.4 Ensure system is designed to accommodate:

.1 Movement within curtain wall assembly.

.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.

.5 Thermal resistance:

.1 Spandrel areas: RSI 3.0 (R 16.8) min.

.6 Glass dimensions: Size glass units to CAN/CGSB-12.20.

.7 Flatness criteria: 6 mm (0.25 inches) maximum in 6 m (20 feet) for each panel.

.8 Air infiltration: 0.3 L/s/m^2 (0.63 cfm) maximum of wall area to AAMA 501 & ASTM E283 at differential pressure across assembly of 300 Pa 0.044 psi.

.12 Water infiltration: None to AAMA 501, ASTM E331 or ASTM E1105 at differential pressure across assembly of 720 Pa (0.104 psi).

.13 Ensure interior surfaces have no condensation before exposed edges of sealed units reach dew point temperatures during testing to AAMA 501.

.14 Maintain continuous air barrier and vapour retarder throughout building envelope and curtain wall assembly.

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

.16 Reinforce curtain wall system to accommodate window washing guide rails where indicated.

2.3 MATERIALS

.1 Curtain Wall System and Components:

.1 Extruded aluminum: To ASTM B221, 6063 alloy with T6 temper.

.1 Finish coatings: To Architectural Class I clear anodized 18 µm (0.0007 inches) thick minimum.

.2 Sheet aluminum: To ASTM B209, utility grade for unexposed surfaces.

.3 Air barrier liner: Reinforce panels to maintain flat surface.

.1 Concealed locations: 0.952 mm (20 gauge) steel sheet to CSA-S136M ASTM A653/A653M with 458 g/m^2 (1.25 oz/sq.ft) galvanized coating and corners sealed at concealed locations.

.2 Interior exposed locations: 1.588 mm (16 gauge) clear anodized aluminum sheet.

.4 Fasteners, screws and bolts: Tamperproof, cadmium plated stainless steel 300 or 400 series to meet curtain wall requirements and as recommended by manufacturer.
.5 Anchors: Ensure anchors have three-way adjustment.
.6 Insulating glass units: In accordance with Section 08 80 00 – Glazing.
.7 Aluminum panels: 3 mm (0.125 inches) thick factory formed panels.
.1 Finish after forming to match curtain wall system.
.8 Thermal Break: Glass fibre reinforced polyamide porthole extrusion.
.9 Curtain wall back pan insulation: match depth of mullion, unless noted otherwise on Drawings.
.10 Mullion Back-Section Depth: 134mm (min. for curtain walls), 95mm (min. for windows)
.11 Mullion Cap Section Depth: 19mm

.2 Standard of Acceptance:
.1 Alumicor Ltd., ThermaWall 2600 Series
.2 Kawneer Ltd., 1600 UT Series 2

2.4 CURTAIN WALL SYSTEM FABRICATION

.1 Do aluminum welding to CAN/CSA W59.2.

.2 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.
.1 Ensure vertical and horizontal members are tubular extrusions designed for shear block corner construction.
.2 Mullion depth sizes as indicated.
.3 Cap depth sizes: 19 mm. Custom size is also required for horizontal base cap. Refer to Drawings for dimensions.
.4 Vertical structural silicone joints where indicated on Drawings.
.5 Ensure caps for mullion assemblies are constructed without gap.

.3 Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.
.1 Ensure curtain wall is fabricated with separate, integrated support for insulating glass unit.
.2 Do glazing in accordance with Section 08 80 00 – Glazing.
.3 Site glazing is permitted.

.4 Fabricate curtain wall with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.

.5 Fabricate infill panels with metal covered edge seals around perimeter of panel assembly, enabling installation and minor movement of perimeter seal.
.1 Reinforce interior surface of exterior infill panel sheet from deflection caused by wind and suction loads.
.2 Place insulation within infill panel adhered to exterior face of interior panel sheet over entire area of sheet using impale fasteners with integral discs.
.3 Reinforce infill panels to receive [convector cabinet] [finned tube radiation cabinet] [electrical component] brackets and attachments as indicated.

.6 Accurately fit and secure joints and corners.
.1 Ensure joints are flush, hairline, and weatherproof.

.7 Prepare curtain wall to receive anchor devices.

.8 Use only concealed fasteners
- .1 Ensure fasteners do not penetrate thermal break.
- .2 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used upon receipt of written approval from Contract Administrator.

.9 Prepare components to receive doors and openings as indicated.

.10 Reinforce head rail of interior components to receive track brackets and attachments as indicated.

.11 Reinforce framing members for exterior imposed loads where required.

2.5 FINISHES

.1 Exterior and interior exposed aluminum surfaces: To AA DAF-45-M12C22A44, Architectural Class I, clear anodized 18 µm (0.0007 inches) minimum thickness.
- .1 Acceptable material: Architectural Class I Anodic Finish.

2.6 ACCESSORIES

.1 Fibre board: to ASTM C612.
- .1 Type: 1VB.
- .2 Density: 64 kg/m^3 (4 lbs per cu.ft.) minimum.
- .3 Thickness: 100 mm (4 inches) minimum.
- .4 Acceptable material: Roxul Inc., CurtainRock.

.2 Gasketing: To CCD-45 Silicone compatible rubber or extruded silicone gaskets.

.3 Setting Blocks: To CCD-45 and ASTM D2240, neoprene, EPDM or silicone, 80 - 90 Shore A Durometer hardness.

.4 Spacers: To CCD-45 and ASTM D2240, neoprene, EPDM or silicone, 50 - 60 Shore A Durometer hardness.

.5 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.
- .1 Acceptable material: Dow Corning 795 or approved equal in accordance with B7.

.6 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.

.7 Flashings: 3 mm (0.125 inches) thick aluminum flashing to profiles indicated and in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.

.8 Liquid Foam Insulation: Single component, moisture cure, low expansion rate spray-in-place polyurethane liquid foam insulation to ULC-S710.1 and in accordance with manufacturer's written recommendations.

.9 Miscellaneous Components: Covers, copings, special flashings, filler pieces, termination pieces, cap closures, expansion joint covers, and metal bellows to match curtain wall system as indicated.

3 EXECUTION

3.1 INSTALLERS

.1 Use only installers with 2 years minimum experience in work similar to work of this Section.

3.2 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for curtain wall 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.

3.3 INSTALLATION

.1 Install curtain wall in accordance with manufacturer's written instructions.

.2 Do aluminum welding to CAN/CSA W59.2.

.3 Attach curtain wall assemblies to structure plumb and level, free from warp, and allow for sufficient adjustment to accommodate construction tolerances and other irregularities.
- .1 Maintain dimensional tolerances and align with adjacent work.
- .2 Use alignment attachments and shims to permanently fasten elements to building structure.
- .3 Clean welded surfaces and apply protective primer to field welds and adjacent surfaces.

.4 Install thermal isolation where components penetrate or disrupt building insulation.

.5 Install sill flashings.

.6 Co-ordinate attachment and seal of perimeter air / vapour retarder in accordance with Section 07 26 00 – Vapour Retarders.

.7 Install liquid foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.8 Install insulating glass units and infill panels in accordance with Section 08 80 00 - Glazing and to manufacturer's written instructions.

.9 Install perimeter sealant to method required to achieve performance criteria, backing materials, and installation criteria in accordance with Section 07 92 00 - Joint Sealing.

3.4 FIELD QUALITY CONTROL

.1 Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 - Quality Control.

.2 Site Installation Tolerances:
- .1 Variation from plumb: 12 mm per 30 m maximum.
- .2 Misalignment of two adjacent panels or members: 0.8 mm maximum.
- .3 Sealant space between curtain wall and adjacent construction: 13 mm maximum.

3.5 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 74 11 – Cleaning.
- .1 Leave work area clean end of each day.

.2 Final leaning: Upon completion, remove surplus materials, rubbish, tools, and equipment

3.6 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 SECTION INCLUDES

.1 Hardware for hollow metal doors.

1.2 RELATED SECTIONS

.1 Section 08 11 00 –Metal Doors and Frames.

.2 Section 08 71 00 – Door Hardware - Groups

1.3 REFERENCES

.1 CAN4-S104-M80(R1985) - Method for Fire Tests of Door Assemblies.

.2 CAN/ULC-S132-2007 - Emergency Exit and Emergency Fire Exit Hardware.

.3 CSDMA (Canadian Steel Door Manufacturers Association).

.4 DHI (Door and Hardware Institute Canada) - AHC and EHC certification programs.

.5 DHI (Door Hardware Institute) - A115 series.

.6 DHI (Door Hardware Institute) - WDHS.3 - Hardware Locations for Wood Flush Doors.

.7 BHMA (Builders Hardware Manufacturers Association) - A156 series.

.8 NFPA 80 - Fire Doors, Fire Windows.

.9 NFPA 252 - Fire Tests of Door Assemblies (2008 Edition).

.10 UL 10B - Fire Tests of Door Assemblies.

.11 UL 305 - Panic Hardware.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate with other work having a direct bearing on work of this section.

.1 Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.

.2 Coordinate City of Winnipeg's keying requirements during the course of the Work.

.2 Sequencing: Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.5 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submittal Procedures.

.2 Shop Drawings:

.1 Indicate locations and mounting heights of each type of hardware, schedules, catalogue cuts, electrical characteristics and connection requirements, including make, model, material, function, finish, and all other pertinent information for each door or pair of doors. Use standard typed hardware list. "Horizontal" list not permitted.

.3 Samples:

.1 Submit one (1) sample of each type hardware specified, when requested by Contract Administrator illustrating style, colour, and finish.

.2 Identify each sample by label indicating applicable specification paragraph number, finish, and hardware package number.

1.6 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submittal Procedures.

.2 Installation Data: Manufacturer's special installation requirements.

1.7 CLOSEOUT SUBMITTALS

.1 Section 01 78 00: Closeout Procedures.

.2 Operation and Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

.3 Provide maintenance data, parts list, and manufacturer's instructions for each type door closers, locksets, door holders, and panic hardware for incorporation into maintenance manual.

.4 Brief maintenance staff regarding proper care of hardware such as lubrication of locksets, adjustments of door closers, cleaning, and general maintenance.

.5 Warranty Documentation: Submit manufacturer warranty and ensure forms have been completed in City of Winnipeg's name and registered with manufacturer.

.6 Record Documentation:

.1 Record actual locations of installed cylinders and their master key code.

.2 Keys: Deliver with identifying tags to City of Winnipeg by security shipment direct from hardware supplier.

1.8 MAINTENANCE MATERIAL SUBMITTALS

.1 Section 01 78 40: Maintenance and extra material requirements.

.2 Tools:

.1 Provide special wrenches and tools applicable to each different or special hardware component.

.2 Provide maintenance tools and accessories supplied by hardware component manufacturer.

1.9 QUALITY ASSURANCE

.1 Products of This Section: Manufactured to ISO 9000 certification requirements.

.2 Perform Work to the following requirements:

.1 BHMA A156 series.
.2 DHI - A115 series.
.3 DHI - WDHS.3.
.4 CSDMA.
.5 NFPA 252.
.6 UL 10B.
.7 UL 305.
.8 ULC S132.
.9 CAN4-S104.

.3 Use ULC listed and labelled hardware for doors in fire separations and exit doors.

.4 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years experience.

.5 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.

1.10 REGULATORY REQUIREMENTS

.1 Conform to applicable code for Products requiring electrical connection. Listed and classified by ULC as suitable for the purpose specified and indicated.

1.11 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.12 WARRANTY

.1 See Bid Opportunity.

Part 2 Products

2.1 SUPPLIERS

.1 Acceptable Suppliers: As indicated in Hardware Schedule.

2.2 MANUFACTURERS

.1 Acceptable Manufacturers: As indicated in Hardware Schedule.

2.3 KEYING

.1 Contractors to supply, install and make use of construction cylinders in all exterior doors. City of Winnipeg will exchange all construction cylinders at building turnover.

2.4 FINISHES

.1 Finishes: Identified in Schedule at end of section.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that doors and frames are ready to receive work and dimensions are as indicated on Shop Drawings.

.2 Verify that electric power is available to power operated devices and is of the correct characteristics.

3.2 INSTALLATION

.1 Install hardware to manufacturer's written instructions.

.2 Use templates provided by hardware item manufacturer.

.3 Mounting heights for hardware from finished floor to centre line of hardware item.

3.3 ADJUSTING

.1 Adjust hardware for smooth operation.

3.4 PROTECTION OF FINISHED WORK

.1 Do not permit adjacent work to damage hardware or finish.

3.5 SCHEDULES

.1 Refer to Door Hardware Schedule.

END OF SECTION

		DOOR					FRAME				FIRE	HARD.	KEYNOTE
NO.	NOM.SIZE	TYPE	MAT.	CORE	FIN.	GLS.	TYPE	MAT.	FIN.	GLS.	RATING	GROUP	
D101A	1067 x 2150	1	AL	-	ANOD	THSDG	1	AL	ANOD	T		1	1.2,3
D101B	1067 x 2150	1	AL	-	ANOD	T	2	AL	ANOD	T		2	1
D103	1000 x 2150 x 45mm	3	HM	-	PT	T	1	PS	PT	-		3	
D104	1000 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		4	
D105A	1000 x 2150 x 45mm	2	HM	INSUL	PT	-	1	PS	PT	-		5	1
D105B	760 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-	45 min.	11	
D107A	1067 x 2150 x 45mm	1	AL	-	ANOD	THSDG	1	AL	ANOD	-		6	2
D107B	1100 x 2150 x 45mm	3	HM	-	PT	T	1	PS	PT	-	60 min.	7	
D108	900 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-	45 min.	4	
D109A	1000 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		8	
D110A	1000 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		8	
D112	2 - 950 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		9	
D113	1100 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		4	
D114	1100 x 2150 x 45mm	2	HM	INSUL	PT	-	1	PS	PT	-		10	2
D115	1000 x 2150 x 45mm	2	HM	-	PT	-	1	PS	PT	-		12	

LEGEND

A Anodized
AL Aluminum
HM Hollow Metall
T Tempered glass
THSDG Tempered hermetically sealed dual glazing
INSUL Insulated
PT Paint
WD Wood - Solid Core
WG Wired Glass
PS Pressed Steel (welded) frame

GENERAL NOTES

1 Contractor to supply, install and make use of construction cylinders on all doors, to be replaced by The City at building turnover.

KEYNOTES

1 Power door operator required
2 Card access
3 Bollard post to mount exterior actuator and card reader

Hardware Group 1

4 Hinges	LH191BB	4 ½ x 4	NRP	32D	LAW
1 Dead Latch	4900 x 4560			130	AR
1 Electric Strike	7101 24 V-DC			628	AR
1 Smart Pac	2005M3				HES
1 Power Operator	HA-8-1-4	RHR		AL	ENT
1 Guard Rail	CE-810-H-165			AL	CUR
1 Door Stop	1 Series			32D	RIX
2 Actuators	INGRESS'R			AL	WIKK
1 Power Supply	PS -1 – 24V				LAW
1 Key Switch	MKA			26D	SEC
1 Mortise Cylinder	526 x AR Cam	Used As Const. Temp		26D	LAW
1 Mortise Cylinder	526	Used As Const. Temp		26D	LAW
1 Push/Pull Set	5000-2 x 1180-2	12" x Door width		32D	GAL
1 Threshold	271	Door Width		AL	PEM

Provide exterior bollard to mount power door actuator and card reader. Model # B4S SM-PREP36 by WIKK. Finish to be Anodized Clear (628).

Door Bottoms and Perimeter Seals by Aluminum Door supplier.

Card Access: By end user used to activate Electric Strike - consult before ordering.

Method of Operation:

- Presenting Card will momentarily activate electric strike to gain ingress.
- Key Switch when turned to the maintained position will allow outside actuator to function as well as turn electric strike to the open position.

Hardware Group 2

4 Hinges	LH179BB	4 ½ x 4	NRP	32D	LAW
1 Power Operator	HA-8-1-4	RHR		AL	ENT
2 Actuators	INGRESS'R			AL	WIKK
1 Push/Pull Set	5000-2 x 1180-2	12"		32D	GAL
1 Door Stop	209			26D	GAL

Hardware Group 3

3 Hinges	LH179BB	4 ½ x 4	26D	LAW
1 Lockset	LH5003L	Office Function	26D	LAW
1 Kick Plate	80A x .050	10 x 1 ½ LDW	32D	GAL
1 Door Stop	209		26D	GAL

Hardware Group 4

3 Hinges	LH179BB	4 ½ x 4	26D	LAW
1 Lockset	LH5003L	Office Function	26D	LAW
1 Closer	LH816-REG		AL	LAW
1 Kick Plate	80A x .050	10 x 1 ½ LDW	32D	GAL
1 Door Stop	209		26D	GA

Hardware Group 5

3 Hinges	LH191BB	4 ½ x 4	NRP	32D	LAW
1 Hinge	LH191BB x ETW8			32D	LAW
1 Lockset	LR-LH8713 x L811 x OCP x DBM			26D	LAW
1 Power Operator	HA-8-1-4			AL	ENT
2 Actuators	INGRESS'R			AL	WIKK
1 Power Supply	PS1				LAW
1 Door Stop	1 Series			32D	RIX
1 Set W/Strip	1-2891CPK x 2-290 CPK			AL	PEM
1 Threshold	272	Door Width		AL	PEM
1 Door Bottom 216CPK		Door Width		AL	PEM
1 Guardrail	1067 x 1067, Size A (CE-803 – Manitoba) Clr. Anod.			AL	CURRAN

Method of Operation:

- Pushing actuator from outside will retract latch bolt and allow power door operator to open door.
- Once inside privacy by throwing deadbolt. DB Monitor will deactivate outside actuator.
- When leaving by way of power operator deadbolt must be unlocked from inside by thumb turn or single motion release on the inside leaver. Once Deadbolt is unlocked outside actuator will be reset and ready for next occupant.
- Inside egress is always free manually
- Night Time and Off season – Deadbolt to be thrown from outside by key eliminating outside operator and indicator showing locked.
- Wiring run in Hollow Metal Door

Hardware Group 6

3 Hinges	LH191BB	4 ½ x 4	NRP	32D	LAW
1 Dead Latch	4900 x 4560			130	AR
1 Electric Strike	7101 24 V-DC			628	AR
1 Smart Pac	2005M3				HES
1 Door Stop	1 Series			32D	RIX
1 Power Supply	PS -1 – 24V				LAW
1 Key Switch	MKA			26D	SEC
1 Mortise Cylinder	526 x AR Cam	Used As Const. Temp		26D	LAW
1 Mortise Cylinder	526	Used As Const. Temp		26D	LAW
1 Push/Pull Set	5000-2 x 1180-2	12” x Door width		32D	GAL
1 Threshold	271	Door Width		AL	PEM

Door Bottoms and Perimeter Seals by Aluminum Door supplier

Card Access: By end user used to activate Electric Strike - consult before ordering

Method of Operation:

- Presenting Card will momentarily activate electric strike to gain ingress.
- Key Switch when turned to the maintained position will put electric strike in the open position.

Hardware Group 7

3 Hinges	LH179BB	4 ½ x 4	26D	LAW
1 Passage Set	LH8705 x L811	Classroom function	26D	LAW
1 Closer	LH816-REG		AL	LAW
1 Kick Plate	80A x .050	10 x 1 ½ LDW	32D	GAL
1 Door Stop	209		26D	GAL

Hardware Group 8

4 Hinges	LH179BB	4 ½ x 4		32D	LAW
1 Privacy Set	LH5022L	Washroom function		26D	LAW
1 Closer	LH816-REG			AL	LAW
1 Door Stop	209			26D	GAL

Hardware Group 9

6 Hinges	LH179BB	4 ½ x 4		26DD	LAW
1 Lock Set	LH5003L	Office Function		26D	LAW
1 Set F/Bolts	401	12”		26D	LAW
2 Door Stop	209			26D	GAL

- Z Astragal by HM Door Supplier

Hardware Group 10

4 Hinges	LH191BB	4 ½ x 4	NRP	32D	LAW
1 Lockset	LH8713 x L811			26D	LAW
1 Door Closer	LH8016 x HD42		AL	LAW	
1 Door Stop	1 Series		32D	RIX	
1 Kick Plate	80A x .050	10 x 1 ½ LDW		32D	GAL
1 Set W/Strip	1-2891CPK x 2-290 CPK			AL	PEM
1 Threshold	272	Door Width		AL	PEM
1 Door Bottom	216CPK	Door Width		AL	PEM
1 Electric Strike	1006 x 24V			32D	HES
1 Power Supply Card	PS-1-24V			LAW	

Access by The City

Hardware Group 11

3 Hinges	LH191BB	4 ½ x 4	NRP	32D	LAW
1 Deadlock	4775			32D	LAW
1 Cylinder Pull	980			26D	GAL
1 Door Closer	LH8016 x HD42			AL	LAW

Hardware Group 12

4 Hinges	LH179BB	4 ½ x 4		32D	LAW
1 Privacy Set	LH5022L			32D	LAW
1 Kick Plate	80A x .050	10 x 1 ½ LDW		32D	GAL
1 Door Stop	290			26D	GAL

GENERAL NOTES FOR ALL HARDWARE GROUPS:

- Wiring Diagrams to be submitted on all electrified hardware
- Integration meeting between card access and hardware supplier prior to ordering electrified hardware.
- All Cylindrical locks supplied with SC keyway cylinders random keyed to be used as construction Cylinders.
- All Mortise Locks supplied with SC keyway mortise cylinders random keyed to be used as construction cylinders
- Final Cylinders by City of Winnipeg

Part 1 General

1.1 SECTION INCLUDES

.1 Glass and glazing for glazed windows and doors.

1.2 RELATED SECTIONS

.1 Section 06 20 00 - Finish Carpentry.

.2 Section 07 26 00 - Vapour Retarders.

.3 Section 07 92 00 - Joint Sealants: Sealant and back-up material.

.4 Section 08 11 00 - Metal Doors and Frames.

.5 Section 08 44 13 - Glazed Aluminum Curtain Walls & Windows

1.3 REFERENCES

.1 ANSI Z97.1-04e1 - Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.

.2 ASTM C542-05 - Specification for Lock-Strip Gaskets.

.3 ASTM C864-05 - Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

.4 ASTM C920-08 - Elastomeric Joint Sealants.

.5 ASTM C1036-06 - Flat Glass.

.6 ASTM C1048-04 - Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.

.7 ASTM C1193-09 - Use of Joint Sealants.

.8 ASTM D412-06ae2 -Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.

.9 ASTM D1149-07 - Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber.

.10 ASTM D2240-05 - Test Method for Rubber Property - Durometer Hardness.

.11 ASTM E84-09c - Test Method for Surface Burning Characteristics of Building Materials.

.12 ASTM E283-04 - Test Method For Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.

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

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

.15 CAN/CGSB 12.2-M91 - Flat, Clear Sheet Glass.

.16 CAN/CGSB 12.3-M91 - Flat, Clear Float Glass.

.17 CAN/CGSB 12.4-M91 - Heat Absorbing Glass.

.18 CAN/CGSB 12.8-97 - Insulating Glass Units.

.19 CAN/CGSB 12.13-M91 - Patterned Glass.

.20 CAN/CGSB 12.20-M89 - Structural Design of Glass for Buildings.

.21 CGSB 19-GP-5M-1984 - Sealing Compound, One Component, Acrylic Base, Solvent Curing (Incorporating Amendment No. 1)

.22 GANA (Glass Association of North America)

.1 Glazing Manual (2004).
.2 FGMA Sealant Manual.
.3 Laminated Glazing Reference Manual (2006).

.23 IGMAC (Insulating Glass Manufacturers Association of Canada) - Sealed Insulating Glass: Certification Program.

.24 IGMA (Insulating Glass Manufacturers Alliance).

1.4 PERFORMANCE REQUIREMENTS

.1 Provide glass and glazing materials for continuity of building enclosure vapour retarder and air barrier:

.1 In conjunction with materials described in Section 07 26 00 - Vapour Retarders and Section 07 92 00 – Joint Sealants.
.2 To utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapour retarder seal.
.3 To maintain a continuous air barrier and vapour retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

.2 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with National Building code to a design pressure of 0.8 kPa (16.7 lb/sq ft).

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

1.5 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submittal Procedures.

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

.3 Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colours.

.4 Samples: Submit two (2) samples 300 mm (12 inch) in size, exampling glass units of each glass type.

1.6 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submittal Procedures.

.2 Certificates: Certify that Products meet or exceed specified requirements.

.3 Manufacturer's Certificate: Certify that sealed insulated environmental glass, meets or exceeds specified requirements.

1.7 CLOSEOUT SUBMITTALS

.1 Section 01 78 00: Closeout Submittals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

.1 Section 01 78 40: Maintenance and extra material requirements.

1.9 QUALITY ASSURANCE

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

.2 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 Do not install glazing when ambient temperature is less than 10 degrees C (50 degrees F).

.2 Maintain minimum ambient temperature before, during and twenty-four (24) hours after installation of glazing compounds.

1.11 WARRANTY

.1 See Bid Opportunity.

.2 Provide a five (5) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same from date of Substantial Performance.

.1 Condensation on inner faces of glass detrimental to vision will be considered sufficient evidence of seal failure.

Part 2 Products

2.1 FLAT GLASS 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

.2 Exterior Aluminum Curtain Wall 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 Edgetech Superspacer Premium Plus warm edge spacer, primary seal, silicone dual seal, colour black. Argon fill and Comfort T1-AC 40 coating on #2 surface.

.1 Tempered for each pane.

.2 Standard of Acceptance:

.1 AGC

.3 Edge Seal Material: Colour Black.

.3 Exterior Doors, Sidelites and Transoms

.1 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.

.4 Wired glass:

.1 To CAN2-12.11-M90, Type 1, wire mesh style 3, 6mm (1/4") thick.

.5 Mirrors:

.1 To CAN2-12.5-M76, silvered, Type 1A, 6mm (1/4") thick size and shape as indicated on the drawings. Grind and polish edges.

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 Contract Administrator.

.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.

2.4 GLAZING ACCESSORIES

.1 To Industry Standards.

Part 3 Execution

3.1 EXAMINATION

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

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, 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.

.4 Install sealant in accordance with manufacturer's written instructions, ensuring that each material in the glazing system is compatible with the others.

.5 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.

.6 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 unless otherwise outlined by the glass manufacturer.

3.3 INSTALLATION - EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

.1 Cut glazing tape or spline to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.

.2 Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.

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

.4 Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

.5 Trim protruding tape edge.

.6 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.

3.4 INSTALLATION - EXTERIOR BUTT GLAZED METHOD (SEALANT ONLY)

.1 Temporarily brace glass in position for duration of glazing process. Mask edges of glass at adjoining glass edges and between glass edges and framing members.

.2 Temporarily secure a small diameter non-adhering foamed rod on back side of joint.

.3 Apply sealant to open side of joint in continuous operation; thoroughly fill the joint without displacing the foam rod. Tool the sealant surface smooth to concave profile.

.4 Permit sealant to cure then remove foam backer rod. Apply sealant to oppoSite side, tool smooth to concave profile.

.5 Remove masking tape.

3.5 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

.1 Cut glazing tape to length and set against permanent stops, projecting 1.5 mm (1/16 inch) above sight line.

.2 Place setting blocks at 1/4 ~~1/3~~ points with edge block no more than 150 mm (6 inches) from corners.

.3 Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

.4 Place glazing tape on free perimeter of glazing in same manner described above.

.5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.6 Knife trim protruding tape.

3.6 CLEANING

.1 Section 01 74 11: Cleaning installed work.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels after Work is complete.

.4 Clean glass and adjacent surfaces.

.5 Clean films to manufactures recommendations.

3.7 PROTECTION OF FINISHED WORK

.1 Section 01 78 40: Protecting installed work.

.2 After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

END OF SECTION