**Part 1 General**

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 06 10 00 – Rough Carpentry

.3 Section 07 92 00 – Joint Sealing

.4 Section 08 71 00 – Door Hardware

.5 Section 08 80 00 – Glazing

.6 Section 09 90 00 – Painting

.7 Electrical Specifications

1.2 REFERENCES

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

.1 ASTM A 653M-95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process or latest.

.2 ASTM B 29-[92], Specification for Pig Lead or latest.

.3 ASTM B 749-85(1991), Specification for Lead and Lead Alloy Strip, Sheet and Plate Products or latest.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.181-92, Ready-Mixed Organic Zinc-Rich Coating or latest.

.2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors or latest.

.3 CAN/CGSB-51.20-M87, Thermal Insulation, Polystyrene, Boards and Pipe Covering or latest.

.4 CGSB 51-GP-21M-78, Thermal Insulation, Urethane and Isocyanurate, Unfaced or latest.

.3 Canadian Standards Association (CSA).

.1 CSA A101-M1983, Thermal Insulation, Mineral Fibre, for Buildings or latest.

.2 CAN/CSA-G40.21-M92, Structural Quality Steels or latest.

.3 CSA W59-M1989, Welded Steel Construction (Metal Arc Welding) or latest.

.4 Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA).

.1 CSDFMA, Specifications for Commercial Steel Doors and Frames, 1990 or latest.

.2 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990 or latest.

.5 National Fire Protection Association (NFPA).

.1 NFPA 80-1992, Fire Doors and Windows or latest.

.2 NFPA 252-1990, Door Assemblies, Fire Tests of or latest.

.6 Underwriters' Laboratories of Canada (ULC).

.1 CAN4-S104M- M80(R1985), Fire Tests of Door Assemblies or latest.

.2 CAN4-S105M-M85, Fire Door Frames or latest.

1.3 DESIGN REQUIREMENTS

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35ºC to 35ºC.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 SHOP DRAWINGS

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

.2 Indicate each type of door, Material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, louvers, arrangement of hardware and fire rating and finishes.

.3 Indicate each type frame Material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating, finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on Drawings and door and interior glazing schedule.

.5 Submit test and engineering data, and installation instructions.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M or latest for ratings specified or indicated.

.2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104 or latest, ASTM E 152 or latest or NFPA 252 or latest and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

1.6 SCHEDULE

.1 Doors and frames listed on door schedule are furnished as an assistance to the fabricator, and should not be considered as entirely inclusive. Examine Drawings and specifications, and determine extent and quantity required. Should any door or frame be omitted in the schedule, the fabricator shall supply door or frame as required for similar or same purpose.

## Part 2 Products

2.1 MATERIALS - STEEL

.1 Hot dipped galvanized steel sheet: to ASTM A 653M or latest, minimum base steel thickness in accordance with CSDFMA Table 1 - Thickness for Component Parts or latest.

.2 Reinforcement channel: to CAN/CSA-G40.21 or latest, Type 44W, coating designation to ASTM A 653M or latest.

.3 Cast or rolled pure sheet lead: to ASTM B 29 or latest, weight: 14.6 kg/m2, thickness 1.2 mm.

.4 Composites: balance of core Materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 DOOR CORE MATERIALS

.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m3 minimum sanded to required thickness.

.2 Stiffened: face sheets welded, insulated core.

.1 Fibreglass: to CSA A101 or latest, semi-rigid RSI 2.3.

.2 Polyurethane: to CGSB 51-GP-21M or latest rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m3.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250ºC at 60minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104 or latest, ASTM E 152 or latest or NFPA 252 or latest, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

.4 Thermal insulation Material must:

.1 not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act;

.2 be manufactured using a process that uses chemical compounds with the minimum ozone depletion potential (ODP) available.

2.3 ADHESIVES

.1 Select Adhesives which:

.1 do not contain volatile organic compounds in excess of 5 % by weight as measured by EPA Method 24-24A, 40 C.F.R., Part 60, Appendix A (1991), as demonstrated through calculation from records of the amounts of constituents used to make the product;

.2 are accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance;

.3 are accompanied by information describing proper disposal methods for containers.

.2 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.3 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

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

2.4 PRIMERS

.1 Touch-up prime CAN/CGSB-1.181 or latest.

2.5 PAINT

.1 Steel doors and frames shall be field painted in accordance with Sections 09 90 00 – Painting. Weatherstrips shall be protected from paint. Finish shall be free of scratches or other blemishes.

.2 Paint: water based, manufactured without compounds which contribute to ozone depletion in the upper atmosphere, does not contain toxic metal pigments.

2.6 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top and bottom caps: steel.

.3 Interior top and bottom caps: steel.

.4 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.5 Metallic paste filler: to manufacturer's standard.

.6 Fire labels: metal riveted.

.7 Glazing: as per Section 08 80 00 – Glazing.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for dry glazing of snap-on type.

.2 Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDFMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 16 gauge minimum thermally broken type construction.

.4 Interior frames: 16 gauge minimum welded type construction.

.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cut-outs with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

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

.11 Insulate exterior frame components with polyurethane insulation.

2.8 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

.5 Frames for installation in stud partitions shall be provided with steel anchors of suitable design. For installation inside each jamb as follows:

.1 Frames up to 2300mm (7'-8") height – four (4) anchors

.2 Frames 2300mm (7'-8") to 2450mm (8'-2") – five (5) anchors

2.9 LABELED FIRE DOORS AND FRAMES

.1 Provide labeled fire doors and frames for openings requiring fire protection ratings as scheduled, and generally in the following locations: firewalls and fire separations, corridors, stairwells, and to storage and mechanical rooms. Attach ULC labels to doors and frames.

.2 Doors with bottom vertical rods must be sized to provide proper bottom clearance.

2.10 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59 or latest.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

.7 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.11 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: honeycomb construction. Interior doors: honeycomb construction.

.3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E 330 or latest.

.5 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on Site, at time of hardware installation.

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

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

.9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104 or latest, ASTM E 152 or latest or NFPA 252 or latest and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

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

2.12 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form each face sheet for exterior doors from 16 gauge sheet steel with polyurethane core laminated under pressure to face sheets.

.2 Form each face sheet for interior doors from 16 gauge sheet steel with temperature rise rated core laminated under pressure to face sheets.

2.13 HOLLOW STEEL CONSTRUCTION

.1 Form each face sheet for exterior doors from 16 gauge minimum sheet steel.

.2 Form each face sheet for interior doors from 16 gauge minimum sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with polyurethane core.

.5 Fill voids between stiffeners of interior doors with temperature rise rated core.

2.14 THERMALLY BROKEN DOORS AND FRAMES

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

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

.3 Apply insulation.

**Part 3 Execution**

3.1 INSTALLATION GENERAL

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

.2 Install doors and frames to CSDFMA Installation Guide.

3.2 FRAME INSTALLATION

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

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

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

.5 Caulk perimeter of frames between frame and adjacent Material.

.6 Maintain continuity of air/vapour barrier membrane.

3.3 DOOR INSTALLATION

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

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

.1 Hinge side: 1.0 mm.

.2 Latchside and head: 1.5 mm.

.3 Finished floor, top of carpet, noncombustible sill, and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvers as indicated.

3.4 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 GLAZING

.1 Install glazing for doors in accordance with Section 08 80 00 - Glazing.

**END OF SECTION**

## Part 1 General

1.1 WORK INCLUDED

.1 The Work included under this section shall conform to the industry standard and be accepted by the local construction and trade associations.

.2 Flush wood doors, non-rated.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 60 00 – Basic Product Requirements

.3 Section 06 20 00 – Finish Carpentry

.4 Section 08 11 00 – Steel Doors and Frames

.5 Section 08 71 00 – Door Hardware

.6 Section 08 80 00 – Glazing

.7 Section 09 90 00 – Painting

1.3 REFERENCES

.1 AWMAC (Architectural Woodwork Manufacturers' Association of Canada) - Millwork Standards current edition.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM D5456 – Standard Specification for Evaluation of Structural CompoSite Lumber Products

.3 Architectural Woodwork Institute (AWI) / Architectural Woodwork Manufacturer's Association of Canada (AWMAC)

.1 AWI/AWMAC – Quality Standards

.4 Canadian Standards Association (CSA) International

.1 CAN/CSA O132.2 Series – Wood Flush Doors

.5 National Fire Protection Association (NFPA)

.1 NFPA 80 – Standard for Fire Doors, Fire Windows

.2 NFPA 252 – Standard Method of Fire Tests of Door Assemblies

.6 Underwriters' Laboratories (UL)

.1 UL 10B – Standard for Fire Test of Door Assemblies

.7 Warnock Hersey Intertek Testing Services (ITS-WH)

.1 ITS Certification Listings for Fire Doors

.8 Window and Door Manufacturer's Association (WDMA)

.1 WDMA 1.S.1A

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00 – Submission Procedures.

.2 Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

.3 Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, identify cutouts for glazing and louvers.

.4 Cut Sheet, materials safety data sheets, signed attestations or other official literature clearly identifying product emmision rates.

.5 Include elevations indicating veneer requirements including veneer grade, cut, species, piece match, face match, appearance of pairs, sets and transoms and aesthetic grade.

1.5 SAMPLES

.1 For factory finished doors, submit two (2) sets of 200mm x 250mm (8" x 10") selected veneer samples with the standard finish colours representing manufacturer's full range of available colours and finishes. Samples shall represent the colour selected on veneer typical of grain patterns and colouration for the specified species and cut selected.

.2 Corner sample: submit 216mm x 279mm (8-1/2" x 11") corner sample cut away to show stile, rail, crossbanding, core and face veneer with description and date.

.3 Selection samples: for each finish product selected, submit two (2) complete sets of colour chips representing manufacturer's full range of available colours and patterns.

.4 Verification samples: for each finish product specified, two (2) samples, minimum size 150mm (6") square, representing actual product, colour and patterns.

1.6 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire rated doors and panels. All rated doors are to carry the applicable ULC/WH label.

1.7 QUALITY ASSURANCE

.1 Perform Work in accordance with AWI/AWMAC QSI, custom grade.

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

.3 Non-fire-rated doors: provide doors that comply with AWI Section 1300 and WDMA 1.S.1A.

.4 Fire-rated doors: provide doors that comply with NFPA 80, NFPA 252, and UL10B, as applicable and as acceptable to authorities having jurisdiction, and that are listed and labeled by ITS-WH or a qualified testing agency. Notify Contract Administrator prior to fabrication if fire doors required cannot qualify for labeling due to design, size, hardware or other requirement.

.5 Single source responsibility: where possible, provide doors from a single source to ensure uniformity in quality of appearance, face veneer, finish and construction.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Deliver products to Site, and store and protect products, to requirements of Section 01 60 00 – Basic Product Requirements.

.2 Accept products of this section on Site in new condition and verify no damage.

.3 Protect doors with resilient packaging and sealed with heat shrink plastic.

.4 Break seal on Site to permit ventilation.

.5 Protect doors from dampness. Arrange for delivery after Work causing abnormal humidity has been completed.

.6 Store doors in well ventilated room, off the floor, in accordance with manufacturer's recommendations.

.7 Protect doors with resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach the veneer. Seal top and bottom edges if stored more than one week.

1.9 ENVIRONMENTAL CONDITIONS

.1 Maintain environmental conditions including temperature, humidity and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Inspect for damage prior to installation.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from Site and dispose of all packaging materials at appropriate recycling facilities

.2 Dispose of all corrugated cardboard polystyrene plastic packaging material in appropriate on-Site bin for recycling in accordance with Site waste management program.

1.11 WARRANTY

.1 Provide a five year warranty under provisions of General Conditions for Construction.

.2 Warranty: Include coverage of warpage beyond installation tolerances indicated in this Section, delamination or degradation of veneer.

## Part 2 Products

2.1 FLUSH WOOD INTERIOR DOORS, NON-RATED

.1 Standard of acceptance: Model 8500-ME-AF + NAUF/FSC, as manufactured by Baillargeon Doors Inc., with the following characteristics:

.1 Construction: 5-ply

.2 Stiles: 3mm (1/8") thick veneer, longitudinally laminated by hot pressing with Type 1 structural glue, per ASTM D5456, including a 22mm (7/8") piece of hardwood, matched with faces, for a total width of 107mm (4-3/16")

.3 Top and bottom rails: 3mm (1/8") thick veneer, longitudinally laminated by hot pressing with Type 1 structural glue, per ASTM D5456, for a total width of 85mm (3-5/16")

.4 Core: Agrifibre (NAUF), Neutral FSC

.5 Faces: wood veneer, FSC

.6 Lock block: integrated

.7 Glue: Type 1 PVA cross-link (NAUF)

.8 Door characteristics:

.1 Thickness: 44mm (1-3/4"), unless noted otherwise on door schedule

.2 Face veneer: to be selected from manufacturer's full range

.3 Finish: factory finish, colour to be selected by Contract Administrator

.2 Refer to Door Schedule for locations and quantities.

2.2 FLUSH WOOD INTERIOR DOORS, RATED

.1 Standard of acceptance: Model AF-45-MO/VE +NAUF/FSC, 45 minute fire-resistant door, as manufactured by Baillargeon Doors Inc., with the following characteristics:

.1 Construction: 5-ply

.2 Stiles: 22mm (7/8") maximum untreated hardwood

.3 Top rail: 22mm (7/8") maximum untreated hardwood

.4 Bottom rail: 44mm (1-3/4") maximum untreated hardwood

.5 Core: low combustible Agrifibre. Density of 34-38 lbs/ft3. Neutral FSC (NAUF)

.6 Faces: wood veneer, FSC

.7 Glue: Type 1 PVA cross-link (NAUF)

.8 Note: maximum 19mm (3/4") cut allowed at bottom of door upon installation (per NFPA 80).

.9 Door characteristics:

.1 Thickness: 44mm (1-3/4"), unless noted otherwise on door schedule

.2 Face veneer: to be selected from manufacturer's full range

.3 Finish: factory finish, colour to be selected by Contract Administrator

.2 Refer to Door Schedule for locations and quantities.

2.3 ACCESSORIES

.1 Glazing Stops: solid maple with mitered corners; installed with small head countersunk screws.

2.4 FABRICATION

.1 Fabricate non-rated doors in accordance with AWMAC Quality Standards.

.2 Fabricate fire rated doors in accordance with AWMAC Quality Standards and to ULC requirements. Attach fire rating label to door edge.

.3 Provide flush doors with 13 mm thick edge strips of wood species to match face veneer.

.4 Pre-machine doors for finish hardware.

**Part 3 Execution**

3.1 INSTALLATION

.1 Installation of doors specified in Section 06 10 00 – Rough Carpentry.

**END OF SECTION**

## Part 1 General

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

.1 This section includes the following types of automatic entrance doors:

.1 Exterior and interior, single and bi-parting, sliding automatic entrance doors with sidelites.

.2 Related Sections:

.1 Division 7 – Thermal and Moisture Protection

.2 Division 8 – Openings

.3 Division 26 – Electrical

.4 Division 28 – Fire Alarm System

1.3 REFERENCES

.1 References: Refer to the version year adopted by the Authority Having Jurisdiction.

.1 ANSI A117.1 - Accessible and Usable Buildings and Facilities.

.2 ICC/IBC - International Building Code.

.3 CUL – Approved for use in Canada.

.4 NFPA 70 - National Electrical Code.

.5 NFPA 101 - Life Safety Code.

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

.1 ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

.2 ANSI Z97.1 Standards for Safety Glazing Material Used in Buildings.

.3 Underwriters Laboratories (UL).

.1 UL 325 Standard for Safety for Door, Drapery, Gate, Louver and window Operators and Systems.

.4 Canadian Standards Association (CSA).

.1 CAN/CSA-C22.2 No. 247 – Operators and Systems of Doors, Gates, Draperies, and Louvers.

.5 American Association of Automatic Door Manufacturers (AAADM).

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

.1 ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

.2 ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.

.7 American Architectural Manufacturers Association (AAMA).

.1 AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

.8 National Association of Architectural Metal Manufacturers (NAAMM).

.1 Metal Finishes Manual for Architectural Metal Products.

.9 International Code Council (ICC).

.1 IBC: International Building Code Building Code.

.2 CBC: California Building Code.

1.4 DEFINITIONS

.1 Activation Device: Device that, when actuated, sends an electrical signal to the door operator to activate the operation of the door.

.1 Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

.2 Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

.3 AAADM: American Association of Automatic Door Manufacturers.

1.5 PERFORMANCE REQUIREMENTS

.1 General: Provide doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

.2 Compliance:

.1 ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

.2 UL 325 listed.

.3 Automatic door equipment accommodates medium to heavy pedestrian traffic.

.4 Automatic Door equipment accommodates up to the following weights for active leaf doors:

.1 Bi-part doors: 300 lbs (136 kg) per active breakout leaf.

.2 Single doors: 300 lbs (136 kg) per active breakout leaf.

.5 Operating Temperature Range: -31° F to 122° F (-35° C to 50° C).

.6 Entrapment Force Requirements:

.1 Power Operated Sliding Doors: Not more than 30 lbf (133 N) required to prevent stopped door from closing.

.2 Sliding doors provided with a breakaway device shall require no more than 50 lbf (222N) applied 1 inch (25 mm) from the leading edge of the lock stile for the breakout panel to open.

1.6 SUBMITTALS

.1 Comply with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Manufacturer's product data sheets including installation details, Material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.

.3 Shop Drawings: Submit manufacturer's Shop Drawings, including elevations, sections and details, indicating dimensions, Materials, and fabrication of doors, frames, sidelites, operator, motion /presence sensor control device, anchors, hardware, finish, options and accessories.

.4 Samples: Submit manufacturer's samples of aluminum finish.

.5 Manufacturers Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A156.10 after completion of installation.

.6 Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door opening installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.

.7 Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.7 QUALITY ASSURANCE

.1 Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance.

.1 A manufacturer with company certificate issued by AAADM.

.2 Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing and maintenance of units similar in Material, design, and extent to that indicated for this Project and whose Work has resulted in construction with a record of successful in-service performance.

.3 Certified Inspector Qualifications: Certified by AAADM.

.4 Source Limitations for Automatic Entrances: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.

.5 Power-Operated Pedestrian Door Standard: ANSI/BHMA A156.10 (current version).

.6 Emergency Exit door requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.8 PROJECT CONDITIONS

.1 Field Measurements: Verify actual dimensions of openings to receive automatic entrances by field measurements before fabrication and indicate on Shop Drawings.

1.9 COORDINATION

.1 Coordinate sizes and locations of recesses in concrete floors for recessed tracks and thresholds if applicable. Concrete, reinforcement and formWork are specified in Division 03.

.2 Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies and access control system as applicable.

1.10 WARRANTY

.1 General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

.2 Automatic Entrance Doors shall be free of defects in Material and Workmanship for a period of One (1) year from the date of substantial completion.

.3 During the warranty period a factory-trained technician shall perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to The City.

.4 During the warranty period all warranty Work, including but not limited to emergency service, shall be performed during normal business hours.

.5 Manufacturer shall have in place a dispatch procedure that shall be available 24 hours a Day, 7 Days a week for emergency call back service.

**Part 2 Products**

2.1 MANUFACTURER

.1 Manufacturer: ASSA ABLOY Entrance Systems, 1900 Airport Road, Monroe, NC 28110. Toll Free (877) SPEC-123. Phone (704) 290-5520 Fax (704 ) 290- 5555 Website www.assaabloyentrance.com contact: specdesk.na.aaes@assaabloy.com

.2 Substitutions: Requests for substitution and product approval in compliance with the specifications must be submitted in accordance with the procedures outlined in accordance with B7 Substitutions.

2.2 SLIDING AUTOMATIC ENTRANCES

.1 Besam SL500 Single slide, full breakout, door system.

.1 Configuration: Single slide, two equal panel door unit with one operable leaf and one sidelite unit.

.2 Traffic Pattern: Two-way.

.3 Emergency Breakaway Capability: Interior sliding leaf and sidelite unit.

.4 Mounting: Overhead header installed between jambs.

.2 Dimensions: Confirm door package dimensions as indicated on Architectural Drawings.

2.3 ALUMINUM DOORS AND FRAMES

.1 Doors and Frames: Extruded Aluminum, Alloy 6063-T5.

.1 Door panels shall have a minimum 3.2 mm structural wall thickness including adjoining horizontal members and perimeter frames where applicable.

.2 Door Construction shall be by means of an integrated corner block with 3/8 inch all-thread through bolt from each stile.

.3 Glass stops shall be 15.8 mm wall thickness and shall provide security function as a standard by means of a fixed non-removable exterior section with glazing to be performed from the interior only. Glazing stops that allow for glass removal from the exterior shall not be deemed as equivalent.

.4 The sliding door system shall include two interlocks securing the leading stile of the sidelite and the butt stile of the sliding door panel together.

.5 Vertical Stiles shall be: 102 mm

.6 Bottom Rails shall be: 102 mm

.7 Weather-stripping shall be slide-in type, replaceable pile mohair seals retained by the aluminum extrusions. The following types of weather-stripping are required: complementing weather-stripping on the joining vertical stiles of the sidelite and sliding door panels, complementing weather-stripping on the lead edge of the lock stiles of bi-parting doors, single pile weather-stripping between the carrier and the header, single pile weather-stripping on the lead edge stile of single slide door panels, dual pile weather-stripping on the pivot stile of breakout sidelite panels, and dual pile weather-stripping on the butt stile of fixed sidelite panels. Bottom rails shall be provided with an adjustable nylon sweep.

.8 Besam EcoDoor Package:

.1 EcoDoor Seals: High pile mohair weather stripping on the lock stile of the sliding doors, integrated mohair weather stripping with vinyl fin on the joining vertical stiles of the sidelite and sliding door panels, and expandable foam inserts in leading stile of sidelite panels at pockets for interlocks. Bottom rails shall be provided with a concealed adjustable nylon sweep.

.2 Glazing Active Door and Sidelite Panels: Insulating glass, thickness as indicated.

.3 Hydraulic closer(s) to return breakout door and sidelite panels to the closed position, and magnetic catch(s) to retain breakout door and sidelite panels in the closed position.

.2 Glass: Glazing shall comply with ANSI Z97.1, thickness as indicated.

.1 Glazing Active Door Panels: 1" (25 mm)

.2 Glazing Sidelite Panels**:** 1" (25 mm)

.3 Glazing Installation: See Section 08 80 00 – Glazing for requirements.

.3 Door Carriers: Manufacturer's standard carrier assembly that allows vertical adjustment.

.1 Carriage Assembly: Carriage bar with two wheel assemblies. Each assembly shall have tandem roller wheels.

.2 Roller Wheels: Two heavy duty Delrin roller wheels per wheel assembly, for a total of four (4) roller wheels, 1-7/16 inch (36.51 mm) diameter, per active door leaf for operation over a replaceable aluminum track. Single journal with sealed oil impregnated bearings.

.3 Two (2) heavy duty self-aligning anti-risers per leaf.

.4 Framing Members: Provide automatic entrances as complete assemblies. Manufacturer's standard extruded aluminum framing reinforced as required to support loads.

.1 Vertical jambs shall be 1-3/4 inches (44.5 mm) by 6 inches (152.4 mm).

.5 Header: Manufacturer's standard one-piece extruded aluminum header with a replaceable aluminum track extending full width of entrance unit. Header to conceal door operators, carrier assemblies, and roller track; complete with hinged access panel for service of door operator, and controls.

.1 Span: Maximum 16'-0" (4.9 m) without intermediate supports when using 1/4-inch glass.

.1 Capacity: Capable of supporting active breakout leafs up to maximum of 300 lb (136 kg) per leaf when header is supported per manufacturer's recommendations.

.2 Size: 6 inches (152.4 mm) wide by 7 inches (177.8 mm) high.

.1 Header height including the sensor plate cap which spans the clear door opening width is 8-1/2 inches (215.9 mm) high.

.3 Hinge Point: Continuous hinge at top of header allows for complete access to operator and internal electronic and mechanical assemblies.

.4 Design: Manufacturer's standard closed header.

.6 Hardware: Provide manufacturer's standard hardware as required for operation indicated.

.1 Breakaway arms and bottom pivot assemblies shall be supplied by the manufacturer and shall be adjustable to comply with applicable codes.

.1 Magnetic catch to retain breakout door and sidelite panels in the closed position.

.2 Hydraulic closer to return breakout door and sidelite panels to the closed position, and magnetic catch to retain breakout door and sidelite panels in the closed position.

.2 Locking hardware shall be provided as indicated.

.1 Electrified slide lock shall automatically lock the sliding function of all sliding door panels within the entrance when the door panels are in the closed position.

.1 Fail secure operation: Slide lock shall lock the sliding function of the door panels upon loss of power.

.2 Fail safe operation: Slide lock shall unlock the sliding function of the door panels upon loss of power.

.2 Mortise type hookbolt latch. (Single slide sliding door system).

.1 Interior Side: Keyed cylinder. Lock indicators shall be provided if required by code.

.3 Keyed cylinders shall be provided as indicated.

.1 Keyed cylinder specified in Section 08 71 00

.7 Guide Track/Threshold: Manufacturer's threshold as indicated.

.1 1/2 inch (12.7 mm) high by 4-1/2 inch (114.3 mm) width continuous aluminum threshold with integral track shall span the entire width of the sliding door header and fit between the vertical framing members. Threshold design shall allow for optional extruded ramps to securely interlock to flat section to meet ADA requirements.

.1 Surface mounted threshold with interlocking ADA accessible ramps.

.2 Aluminum guide track integrated in the bottom of the sidelite portion of the sliding automatic door assembly.

.3 Aluminum fixed sidelite guide track mounted along the face of the wall.

.4 Aluminum guide track, surface mounted adjacent to the wall construction, shall not extend past the jamb into the door opening.

2.4 SLIDING DOOR OPERATOR

.1 Door Operator and Controller:

.1 Electro-mechanical controlled unit utilizing a high-efficiency, energy efficient, DC motor requiring a maximum of 3 amp current draw, allowing 5 operators on one 20 amp circuit. The supplied system shall have the capability to operate at full performance well beyond a brown out and high line voltage conditions (85V – 265V) sensing changes and adjusting automatically. The operator shall allow an adjustable hold open time delay of 0 to 60 seconds and have internal software to incorporate a self-diagnostic system.

.2 Microprocessor Control Box:

.1 Modular control unit to allow for changing technology. Factory-adjusted configuration with opening and closing speeds set to comply with ANSI/BHMA A156.10 requirements and electronic dampening to reduce wear on drive train. Should the drive train operations deviate from design criteria ranges, Watchdog Control Circuit Monitoring will assume command of the system and shut down the automatic function allowing a secondary supervisory circuit to perform as a backup. Control unit shall allow the following functions:

.1 Diagnostics with the ability to produce application data.

.2 Mode Selector Control:

.1 Rotary knob: mode selector switch to be interior jamb mounted and shall allow selection of the indicated functions to be engaged when switch is turned to the appropriate setting.

.2 Mode selector control to allow the following functions:

.1 "Off"

.2 "Exit Only" one way traffic with automatic operation from the interior.

.3 "Two Way Traffic" allowing automatic operation from exterior and interior.

.4 "Partial Opening" energy saving door position allows door to automatically adjust opening width based on amount of usage, that is, full open during high use and partial open during low use. The control for this setting is programmable allowing adjustment to both the usage setting and the opening width.

.5 "Hold Open" doors activated and held in the full open position.

2.5 ACTIVATION AND SAFETY CONTROL DEVICES

.1 General: Provide the types of activation and safety devices specified in accordance with ANSI/BHMA standards, for the condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

.2 Combination Activation Motion Sensor/Safety Presence Sensor:

1. Shall be a sliding door sensor utilizing K-band microwave technology to detect motion and focused active infrared technology to detect presence, combined in a single housing surface mounted on each side of the header.

.1 Presence sensor shall remain active at all times.

.2 The sensor shall communicate with the automatic door operator through a self-monitoring connection that allows the door to go into a fail safe mode preventing the door from closing in the event of a sensor failure.

2. Motion/presence detecting sensors to be field installed and adjusted.

2.6 ELECTRICAL

.1 High-Efficiency DC Motor: Maximum of 3 amp current draw, allowing 5 operators to run on one 20 Amp circuit.

.2 Power: Self-detecting line voltage capable control. 120 VAC through 240 VAC, 50/60 Hz, 3 amp minimum incoming power with solid earth ground connection for each door system.

.3 Key Impulse Input: Input for card readers or remote activation with independent adjustable hold open delay.

.4 Wiring: Separate internal channel raceway free from moving parts.

.5 Brown out / high voltage capability: System has capability to operate at full performance well beyond brown out and high voltage line conditions (85 V – 265 V) sensing changes and adjusting automatically.

2.7 ALUMINUM FINISHES

.1 Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

.2 Anodized Finish: Contract Administrator to choose from full range of anodized options

**Part 3 Execution**

3.1 EXAMINATION

.1 Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.

.2 Examine roughing-in for electrical source power to verify actual locations of wiring connections.

.3 Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

.1 Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

.2 Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

.1 Install surface mounted hardware using concealed fasteners to greatest extent possible.

.2 Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.

.3 Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

.4 Glazing: Glaze sliding automatic entrance door panels in accordance with the Glass Association of North America (GANA) Glazing Manual, published recommendations of glass product manufacturer, and published instructions of automatic entrance system manufacturer.

.5 Sealants: Comply with requirements specified in division 7 Section "Joint Sealants" to provide weather tight installation.

.1 Set thresholds, bottom guide and track systems and framing members in full bed of sealants.

.2 Seal perimeter of framing members with sealant.

.6 Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.10 and manufacturers installation instructions.

3.3 FIELD QUALITY CONTROL

.1 Manufacturers Field Services:

.1 Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

.2 Before placing doors into operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA A156.10. Certified technician shall be approved by manufacturer.

3.4 ADJUSTING

.1 Adjust door operators, controls and hardware for smooth and safe operation and for weather tight closure. Adjust doors in compliance with ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

.1 Clean adjacent surfaces soiled by door installation.

.2 Clean glass and metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.

.1 Comply with requirements in Section 08 80 00 – Glazing for cleaning and maintaining glass.

3.6 DEMONSTRATION

.1 Engage a factory-authorized representative to train the City's maintenance personnel to adjust, operate, and maintain safe operation of the door.

**END OF SECTION**

**Part 1 General**

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

.1 This section includes the following types of automatic entrance doors:

.1 Exterior and interior, single and bi-parting, sliding automatic all glass entrance doors with sidelites.

.2 Related Sections:

.1 Division 7 – Thermal and Moisture Protection

.2 Division 26 – Electrical

.3 Division 28 – Fire Alarm System

1.3 REFERENCES

.1 References: Refer to the version year adopted by the Authority Having Jurisdiction.

.1 ANSI A117.1 - Accessible and Usable Buildings and Facilities.

.2 ICC/IBC - International Building Code.

.3 CUL – Approved for use in Canada.

.4 NFPA 70 - National Electrical Code.

.5 NFPA 101 - Life Safety Code.

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

.1 ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

.2 ANSI Z97.1 Standards for Safety Glazing Material Used in Buildings. Underwriters Laboratories (UL).

.3 UL 325 Standard for Safety for Door, Drapery, Gate, Louver and window Operators and Systems.

.3 Canadian Standards Association (CSA).

.1 CAN/CSA-C22.2 No. 247 – Operators and Systems of Doors, Gates, Draperies, and Louvers.

.4 American Association of Automatic Door Manufacturers (AAADM).

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

.1 ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

.2 ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.

.6 American Architectural Manufacturers Association (AAMA).

.1 AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

.7 National Association of Architectural Metal Manufacturers (NAAMM).

.1 Metal Finishes Manual for Architectural Metal Products.

.8 International Code Council (ICC).

.1 IBC: International Building Code Building Code.

.2 CBC: California Building Code.

1.4 DEFINITIONS

.1 Activation Device: Device that, when actuated, sends an electrical signal to the door to activate the operation of the door.

.1 Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

.2 Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

.3 AAADM: American Association of Automatic Door Manufacturers.

1.5 PERFORMANCE REQUIREMENTS

.1 General: Provide doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

.2 Compliance:

.1 ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

.2 UL 325 listed.

.3 Automatic door equipment accommodates medium to heavy pedestrian traffic.

.4 Automatic Door equipment accommodates up to the following weights for active leaf doors:

.1 Bi-part doors: 220 lbs (100 kg) per active breakout leaf.

.2 Single doors: 220 lbs (100 kg) per active breakout leaf.

.5 Operating Temperature Range: -31° F to 122° F (-35° C to 50° C).

.6 Entrapment Force Requirements:

.1 Power Operated Sliding Doors: Not more than 30 lbf (133 N) required to prevent stopped door from closing.

.2 Sliding doors provided with a breakaway device shall require no more than 50 lbf (222N) applied 1 inch (25 mm) from the leading edge of the lock stile for the breakout panel to open.

1.6 SUBMITTALS

.1 Comply with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Manufacturer's product data sheets including installation details, Material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.

.3 Shop Drawings: Submit manufacturer's Shop Drawings, including elevations, sections and details, indicating dimensions, Materials, and fabrication of doors, frames, sidelites, operator, motion /presence sensor control device, anchors, hardware, finish, options and accessories.

.4 Samples: Submit manufacturer's samples of aluminum finish.

.5 Manufacturers Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A156.10 after completion of installation.

.6 Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door opening installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.

.7 Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.7 QUALITY ASSURANCE

.1 Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance.

.1 A manufacturer with company certificate issued by AAADM.

.2 Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing and maintenance of units similar in Material, design, and extent to that indicated for this Project and whose Work has resulted in construction with a record of successful in-service performance.

.3 Certified Inspector Qualifications: Certified by AAADM.

.4 Source Limitations for Automatic Entrances: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.

.5 Power-Operated Pedestrian Door Standard: ANSI/BHMA A156.10 (current version).

.6 Emergency Exit door requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.8 PROJECT CONDITIONS

.1 Field Measurements: Verify actual dimensions of openings to receive automatic entrances by field measurements before fabrication and indicate on Shop Drawings.

1.9 COORDINATION

.1 Coordinate sizes and locations of recesses in concrete floors for recessed tracks and thresholds if applicable. Concrete, reinforcement and formWork are specified in Division 03.

.2 Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies and access control system as applicable.

1.10 WARRANTY

.1 General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

.2 Automatic Entrance Doors shall be free of defects in Material and Workmanship for a period of One (1) year from the date of substantial completion.

.3 During the warranty period a factory-trained technician shall perform service and affect repairs. An inspection shall be performed after each adjustment or repair.

.4 During the warranty period all warranty Work, including but not limited to emergency service, shall be performed during normal business hours.

.5 Manufacturer shall have in place a dispatch procedure that shall be available 24 hours a Day, 7 Days a week for emergency call back service.

## Part 2 Products

2.1 MANUFACTURER

.1 Manufacturer: ASSA ABLOY Entrance Systems, 1900 Airport Road, Monroe, NC 28110. Toll Free (877) SPEC-123. Phone (704) 290-5520 Fax (704) 290-5555 Website www.assaabloyentrance.com

.2 Substitutions: Requests for substitution and product approval in compliance with the specifications must be submitted in accordance with the procedures in accordance with B7 Substitutions.

2.2 SLIDING AUTOMATIC ENTRANCES

.1 Model: Besam SL500 CGL sliding automatic doors.

.1 All glass doors and aluminum frames with sidelites and active door leaves.

.2 Overhead concealed, electro-mechanical, microprocessor controlled, sliding door operator.

.3 Operator housing, guide system and door carriers.

.2 Sliding Automatic Entrance Doors Configuration:

.1 Bi-parting, fixed sidelite, all glass sliding door system.

.1 Configuration: Bi-parting, four equal panel door unit with two operable leaves and two fixed sidelite units.

.2 Traffic Pattern: Two-way

.3 Emergency Breakaway Capability: Exterior sliding leaves only.

.4 Mounting: Overhead header installed between jambs.

.2 Dimensions: Confirm door package dimensions as indicated on Architectural Drawings.

2.3 ALUMINUM DOORS AND FRAMES

.1 Doors and Frames: Extruded Aluminum, Alloy 6063-T5.

.1 Horizontal door 3 track.

2.4 SLIDING DOOR OPERATOR

.1 Door Operator and Controller:

.1 Electro-mechanical controlled unit utilizing a high-efficiency, energy efficient, DC motor requiring a maximum of 3 amp current draw, allowing 5 operators on one 20 amp circuit. The supplied system shall have the capability to operate at full performance well beyond a brown out and high line voltage conditions (85V – 265V) sensing changes and adjusting automatically. The operator shall allow an adjustable hold open time delay of 0 to 60 seconds and have internal software to incorporate a self-diagnostic system.

.2 Microprocessor Control Box:

.1 Modular control unit to allow for changing technology. Factory-adjusted configuration with opening and closing speeds set to comply with ANSI/BHMA A156.10 requirements and electronic dampening to reduce wear on drive train. Should the drive train operations deviate from design criteria ranges, Watchdog Control Circuit Monitoring will assume command of the system and shut down the automatic function allowing a secondary supervisory circuit to perform as a backup. Control unit shall allow the following functions:

.1 Diagnostics with the ability to produce application data.

.2 Mode Selector Control:

.1 Multi-position rotary knob mode selector switch to be interior jamb mounted and shall allow selection of the indicated functions to be engaged when switch is turned to the appropriate setting.

.2 Mode selector control to allow the following functions:

.1 "Off"

.2 "Exit Only" one way traffic with automatic operation from the interior.

.3 "Two Way Traffic" allowing automatic operation from exterior and interior.

.4 "Partial Opening" energy saving door position allows door to automatically adjust opening width based on amount of usage, that is, full open during high use and partial open during low use. The control for this setting is programmable allowing adjustment to both the usage setting and the opening width.

.5 "Hold Open" doors activated and held in the full open position.

2.5 ACTIVATION AND SAFETY CONTROL DEVICES

.1 General: Provide the types of activation and safety devices specified in accordance with ANSI/BHMA standards, for the condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

.2 Combination Activation Motion Sensor/Safety Presence Sensor:

1. Shall be a sliding door sensor utilizing K-band microwave technology to detect motion and focused active infrared technology to detect presence, combined in a single housing surface mounted on each side of the header.

   .1 Presence sensor shall remain active at all times.

   .2 The sensor shall communicate with the automatic door operator through a self-monitoring connection that allows the door to go into a fail safe mode preventing the door from closing in the event of a sensor failure.

2. Motion/presence detecting sensors to be field installed and adjusted.

2.6 ELECTRICAL

.1 High-Efficiency DC Motor: Maximum of 3 amp current draw, allowing 5 operators to run on one 20 Amp circuit.

.2 Power: Self-detecting line voltage capable control. 120 VAC through 240 VAC, 50/60 Hz, 3 amp minimum incoming power with solid earth ground connection for each door system.

.3 Key Impulse Input: Input for card readers or remote activation with independent adjustable hold open delay.

.4 Wiring: Separate internal channel raceway free from moving parts.

.5 Brown out / high voltage capability: System has capability to operate at full performance well beyond brown out and high voltage line conditions (85 V – 265 V) sensing changes and adjusting automatically.

.6 Metal Products for recommendations for applying and designating finishes.

2.7 ALUMINUM FINISHES

.1 Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

.2 Anodized Finish: Contract Administrator to choose from full range of anodized options

**Part 3 Execution**

3.1 EXAMINATION

.1 Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.

.2 Examine roughing-in for electrical source power to verify actual locations of wiring connections.

.3 Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

.1 Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

.2 Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

.1 Install surface mounted hardware using concealed fasteners to greatest extent possible.

.2 Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.

.3 Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 – Electrical Specification.

.4 Glazing: Glaze sliding automatic entrance door panels in accordance with the Glass Association of North America (GANA) Glazing Manual, published recommendations of glass product manufacturer, and published instructions of automatic entrance system manufacturer.

.5 Sealants: Comply with requirements specified in Section 07 92 00 – Joint Sealing to provide weather tight installation.

.1 Set thresholds, bottom guide and track systems and framing members in full bed of sealants.

.2 Seal perimeter of framing members with sealant.

.6 Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.10 and manufacturers installation instructions.

3.3 FIELD QUALITY CONTROL

.1 Manufacturers Field Services:

.1 Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

.2 Before placing doors into operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA A156.10. Certified technician shall be approved by manufacturer.

3.4 ADJUSTING

.1 Adjust door operators, controls and hardware for smooth and safe operation and for weather tight closure. Adjust doors in compliance with ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

.1 Clean adjacent surfaces soiled by door installation.

.2 Clean glass and metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.

.1 Comply with requirements in Section 08 80 00 – Glazing for cleaning and maintaining glass.

3.6 DEMONSTRATION

.1 Engage a factory-authorized representative to train the City's maintenance personnel to adjust, operate, and maintain safe operation of the door.

**END OF SECTION**

## Part 1 General

1.1 SUMMARY OF WORK

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

1.2 RELATED REQUIREMENTS

.1 Section 07 25 00 – Vapour/Air Barrier Membrane

.2 Section 07 62 00 – Sheet Metal Flashing and Trim

.3 Section 07 84 00 – Firestopping

.4 Section 07 92 00 – Joint Sealing

.5 Section 08 80 00 – Glazing

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 Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure 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.

.6 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.

.7 Environmental Choice Program (ECP)

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

.8 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.

.4 Samples:

.1 Submit duplicate 300 x 300 mm (12 x 12 inches) sample sections showing prefinished aluminum surface, finish, colour and texture, and including section of infill panel.

.2 Submit duplicate 300 x 300 mm (12 x 12 inches) sample sections of insulating glass unit showing glazing Materials and edge and corner details.

.5 Thermal Performance: Submit verification that Insulating Glass Units used in curtain wall system meet RSI (R) 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.

.2 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.

.1 List Materials used in curtain wall Work.

.2 Warranty: Submit warranty documents specified.

1.7 QUALITY ASSURANCE

.1 Mock-up: Construct full size 3 x 3 m (10 x 10 ft) mock-up of vertical glazed aluminum curtain wall using proposed procedures, Materials and quality of Work where directed by Contract Administrator [and in accordance with Section 01 45 00 - Quality Control.

.1 Include intermediate mullion, [corner mullion] [sill] [column cover] vision glass light, and insulated infill panel.

.2 Assemble to illustrate component assembly including glazing Materials, weep drainage system, attachments, anchors, and perimeter sealant.

.3 Purpose: To judge quality of Work and Material installation.

.4 Allow Contract Administrator [24] hours minimum prior to inspection of mock-up.

.5 Do not proceed with Work prior to receipt of written acceptance of mock-up by Contract Administrator.

.6 When accepted, mock-up will demonstrate minimum standard of quality required for Work of this Section.

.7 Approved mock-up will [not] remain part of finished Work.

1.8 DELIVERY STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Deliver Material in accordance with Section 01 60 00 - Basic 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.

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 years commencing on Date of Substantial Performance of Work.

.1 Insulating glass units: 10 years, on Date of Substantial Performance of Work.

## Part 2 Products

2.1 MANUFACTURER

.1 Manufacturer: Alumicor Limited, 290 Humberline Drive, Toronto, Ontario, Canada M9W 5S2.

2.2 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, insulated metal panel spandrel infill, column covers; 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.

2.3 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 S157.

.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).

.1 Design curtain wall system for expansion and contraction caused by cycling temperature range of 95 °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 °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.

.7 Mid-span slab edge deflection: refer to Structural

.5 Thermal resistance:

.1 Vision glass areas: Insulating Glass Unit RSI TBD

.6 Limit mullion deflection to flexure limit of glass 19 mm (0.75 inches) maximum with full recovery of glazing Materials.

.7 Deadload prevention: Design curtain wall system with separate, integrated support for insulating glass units.

.8 Sound attenuation through wall system (exterior to interior): STC 33 to AAMA T1R - A1, ASTM E413.

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

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

.11 Air infiltration: 0.3 L/s/$m^2$ (0.63 cfm) maximum of wall area at differential pressure across assembly of 300 Pa (0.044 psi).

.12 Water infiltration: None 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.

.17 Reinforce vertical members as required to achieve span.

2.4 MATERIALS

.1 Curtain Wall System and Components:

.1 Extruded aluminum: To ASTM B221, 6063 alloy with T5 temper.

.1 Finish coatings: To AA DAF 45 Architectural Class I, black 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 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) black anodized aluminum sheet.

.4 Fasteners, screws and bolts: Tamperproof, cadmium plated stainless steel series suitable to meet curtain wall requirements and as recommended by manufacturer.

.5 Anchors: Ensure anchors have three-way adjustment.

.8 Aluminum panels: 3 mm (0.125 inches) thick factory formed panels.

.1 Finish after forming to match curtain wall system.

.9 Thermal Break: Glass fibre reinforced polyamide porthole extrusion.

.2 Acceptable Material: Alumicor Ltd., ThermaWall 2600 Series.

2.5 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 size: 168 mm (6 5/8")

.4 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.

.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.

.12 Visible manufacturer's labels are not permitted.

2.6 FINISHES

.1 Exterior exposed aluminum surfaces: To AA DAF-45-M12C22A44. Colour selected from full range of anodized finishes by Contract Administrator.

.2 Interior exposed aluminum surfaces: To AA DAF-45-M12C22. Colour selected from full range of anodized finishes by Contract Administrator.

2.7 ACCESSORIES

.1 Insulation: In accordance with Section 07 21 00 – Thermal Insulation.

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

.4 Setting Blocks: To CCD-45 and ASTM D2240, silicone, 80 - 90 Shore A Durometer hardness.

.5 Spacers: To CCD-45 and ASTM D2240, silicone, 50 - 60 Shore A Durometer hardness.

.6 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.

.1 Acceptable Material: Dow Corning 795.

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

.8 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.

.9 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.

.10 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.

**Part 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 installation of fire stop insulation, in accordance with Section 07 84 00 - Firestopping, at each floor slab edge [and intersection with vertical construction where indicated].

.7 Install smoke sealing where indicated.

.8 Co-ordinate attachment and seal of perimeter air barrier in accordance with Section 07 25 00 –Vapour and Air Barriers.

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

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

.11 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 (0.5 inches per 100 feet) maximum.

.2 Misalignment of two adjacent panels or members: 0.8 mm (0.03 inches) maximum.

.3 Sealant space between curtain wall and adjacent construction: 13 mm (0.5 inches) maximum.

.3 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 Schedule manufacturer's review of Work procedures at stages listed:

1. Product Application.

2. Fabrication and Handling.

3. Installation.

.4 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 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 SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 45 00 – Quality Control

.3 Section 01 60 00 – Basic Product Requirements

.4 Section 01 78 00 – Closeout Submittals

.5 Section 06 10 00 – Rough Carpentry

.6 Section 06 20 00 – Finish Carpentry

.7 Section 08 11 00 – Steel Doors and Frames

.8 Section 08 14 00 – Wood Doors

.9 Section 08 42 29.1 – Sliding Automatic Entrance – Exterior

.10 Section 08 42 29.2 – Sliding Automatic Entrance - Interior

.11 Electrical Specifications

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.2 Canadian General Standards Board (CGSB).

.2 CAN/CGSB-69.17-M86(R1993), Bored and Preassembled Locks and Latches or latest.

.3 CAN/CGSB-69.18-M90ANSI/BHMA A156.1-1981, Butts and Hinges or latest.

.4 CAN/CGSB-69.19-93ANSI/BHMA A156.3-1984, Exit Devices or latest.

.5 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986 Door Controls (Closers) or latest.

.6 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products or latest.

.7 CAN/CGSB-69.22-M90/ANSI/BHMA A156.6-1986, Architectural Door Trim or latest.

.8 CAN/CGSB-69.24-M90/ANSI/BHMA A156.8-1982, Door Controls - Overhead Holders or latest.

.9 CAN/CGSB-69.26-96/ANSI/BHMA A156.10-1991, Power-operated Pedestrian Doors or latest.

.10 CAN/CGSB-69.28-M90/ANSI/BHMA A156.12-1986, Interconnected Locks and Latches or latest.

.11 CAN/CGSB-69.29-93/ANSI/BHMA A156.13-1987, Mortise Locks and Latches or latest.

.12 CAN/CGSB-69.30-93/ANSI/BHMA A156.14-1991, Sliding and Folding Door Hardware or latest.

.13 CAN/CGSB-69.31-M89/ANSI/BHMA A156.15-1981, Closer/Holder Release Device or latest.

.14 CAN/CGSB-69.32-M90/ANSI/BHMA A156.16-1981, Auxiliary Hardware or latest.

.15 CAN/CGSB-69.33-M90/ANSI/BHMA A156.17-1987, Self-closing Hinges and Pivots or latest.

.16 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes or latest.

.17 CAN/CGSB-69.35-M89/ANSI/BHMA A156.19-1984, Power Assist and Low Energy Power Operated Doors or latest.

.18 CAN/CGSB-69.36-M90]ANSI/BHMA A156.20-1984, Strap and Tee Hinges and Hasps or latest.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Hardware List:

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

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

.3 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.4 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

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

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

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

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

.5 Warranties: Provide a 1 year warranty under the General Conditions for Construction for all hardware and associated component supplied under this Section, except for the Automatic door operators and their related components shall have a 2 year warranty (including the motor and the operating unit).

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.2 Deliver, store, handle and protect Materials in accordance with Section 01 60 00 - Basic Product Requirements.

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

.4 Storage and Protection:

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

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Remove from Site and dispose of packaging Materials at appropriate recycling facilities.

.2 Dispose of corrugated cardboard, polystyrene, plastic packaging Material in appropriate on-site bin for recycling in accordance with Site waste management program.

1.7 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance Materials in accordance with Section 01 78 00 - Closeout Submittals.

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

**Part 2 Products**

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE (also refer to Hardware Schedule below)

.1 Locks and latches:

.1 Bored and preassembled locks and latches: to CAN/CGSB-69.17 or latest, with lever handles as stated in Hardware Schedule. Acceptable manufacturer is Best Access Systems.

.2 All locksets/latchsets with levers to have 70mm backset typically.

.3 All locksets/latchsets with knobs to have 127mm backset typically.

.2 Butts and hinges:

.1 Butts and hinges: to CAN/CGSB-69.18 or latest, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.2 Self-closing hinges and pivots: to CAN/CGSB-69.33 or latest, designated by letter K and numeral identifiers listed in Hardware Schedule, [with suffix letter F indicating listed for used on fire doors].

.3 Strap and tee hinges and hasps: to CAN/CGSB-69.36 or latest, designated by letter A and numeral identifiers listed in Hardware Schedule, size [listed in Hardware Schedule] [in accordance with CAN/CGSB 69.36 or latest, table I].

.4 Provide 1 ½ pair of butts for door up to 914mm (36") wide x 2200mm (84") high and 2 pairs of butts for doors larger than these dimensions.

.3 Exit devices: to CAN/CGSB 69.19 or latest, as listed in Hardware Schedule.

Acceptable manufacturer is Von Duprin, series 99

.4 Auxiliary item(s): door co-ordinator, type 21, for pairs of doors with overlapping astragals.

.5 Door Closers and Accessories:

.1 Door controls (closers): to CAN/CGSB-69.20 or latest, designated by letter C and numeral identifiers listed in Hardware Schedule, in accordance with CAN/CGSB-69.20, table A1. Acceptable manufacturer is LCN.

.2 Door controls - overhead holders: to CAN/CGSB-69.24 or latest, designated by letter C and numeral identifiers listed in Hardware Schedule.

.3 Closer/holder release devices: to CAN/CGSB-69.31 or latest, designated by letter C and numeral identifiers listed in hardware schedule.

.4 Door co-ordinator: for pairs of doors with overlapping astragal.

.6 Door Operators:

.1 Power-operated pedestrian doors: to CAN/CGSB-69.26 or latest.

.2 Power assist and low energy power operated doors: to CAN/CGSB-69.35 or latest.

.7 Architectural door trim: to CAN/CGSB-69.22 or latest, designated by letter J and numeral identifiers as listed in Hardware Schedule.

.1 Door protection plates: kick plate on push side of door unless otherwise noted, 1.27 mm thick aluminum or stainless steel, with countersunk oval head stainless steel screws. Length to be full width of door less 50mm (2").

.2 Push plates: 1.27 mm thick stainless steel.

.3 Push/Pull units: stainless steel.

.4 Acoustic sound seals and door bottom seal: heavy duty, surface mounted, seals of extruded aluminum frame (clear anod. finish) and solid closed cell neoprene seal. Door bottom to have adjustable automatic retract mechanism when door is open.

.5 Thresholds: width listed x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC and minimal lip to permit barrier free access. Acceptable manufacturer: K.N. Crowder (KNC)

.8 Weatherstripping:

.1 Head and jamb seal: by KNC

.1 Extruded aluminum frame and solid closed cell neoprene, clear anodized finish.

.2 Adhesive backed neoprene Material.

.2 Door bottom seal: by KNC

.1 Extruded aluminum frame and closed cell neoprene, clear anodized.

.2 Astragal: adjustable extruded aluminum frame with pile insert, finished to match doors.

.9 Barrier Free Electric Door Operator: (also refer to Hardware Schedule)

.1 Heavy duty electric automatic door closer, capable of multi-door operation, complete with actuators, and control boxes, clear anodized aluminum finish. Surface mounted type with provision for adjustment of operative speed. Acceptable manufacturer is LCN series 4000 or approved equal in accordance with B7.

.2 Control boxes: complete with electric strike relay.

.3 Electrical box and actuator: Hardwired low voltage actuator with stainless steel plate, engraved blue filled with handicap symbol. Confirm final locations on Site for Contract Administrator approval.

.4 Key switch control (on/off/hold open) shall be provided on each handicap operator (option to hold door open, option to keep door closed).

.5 Provide switched line voltage to control box. Locate bypass switch above housing mechanism and wire so switch will also act as an on-off switch for the door operator.

.6 Housing for door operators to extend across full door width. For manual doors, provide heavy duty LCN closers behind the housing.

.7 Provide low voltage wiring to each actuator.

.10 Glass Door Hardware – CRL Dry Glaze Door Rails – D-005, D-006, D-008

.1 End caps: Cap at each end of door and on exposed ends of adjacent glass wall.

.1 Cladding Cat. No. SP25RCBS

.2 End Cap Cat. No. SP25ECBS

.3 Rail Height: 1"

.4 Finish: Brushed Stainless

.2 Slender Profile Door Rails

.1 Cat. No. without lock: SP25BS12C

.2 Rail Height: 1"

.3 Finish: Brushed Stainless

.3 Slender Profile Door Rail Pivot Inserts

.1 Bottom Pivot Insert: Cat. No.: 1NT801

.2 Top Pivot Insert: Cat. Not.: 1NT803

.4 Door Pulls: 2/door

.1 Rockwood RM3301 – MegaTek – Straight Full – Flat Ends

.1 US32D/630

.2 Diameter: 1 ¼"

.3 Finish: Stainless Steel

.4 Overall length: 1830 mm

.5 CTC: 1525 mm

2.3 FASTENINGS

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

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

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with Material through which they pass.

2.4 HARDWARE SCHEDULE

**Hardware Schedule**

**Set: 1.0**

| | | | | |
|---|---|---|---|---|
| 4 | Hinge | TA2714 4-1/2" x 4" | US26D | MK |
| 1 | Passage Set | 7915 LNREM | 630 | SA |
| 1 | Electric Strike | 1006CLB | 630 | HS |
| 1 | Automatic Operator | 5730 | 689 | NO |
| 1 | Door Stop | 441H | US26D | RO |
| 1 | Gasketing | S88BL | | PE |
| 1 | Door Bottom | 4131CRL | | PE |
| 2 | Actuator | 639 | | NO |

Notes: Pressing actuator on either side of door will release the electric strike and power open the door. Electric strike powered by the auto operator's on board power supply.

**Set: 2.0**

| | | | | |
|---|---|---|---|---|
| 3 | Hinge | TA2714 4-1/2" x 4" | US26D | MK |
| 1 | Storeroom Lock | 7904 LNREM | 630 | SA |
| 1 | Mortise Cylinder | Keyed to Existing Masterkey System | | 00 |
| 1 | Surface Closer | 161BF TPN | 689 | NO |
| 1 | Kick Plate | K1050 10" | US32D | RO |
| 1 | Door Stop | 441H | US26D | RO |

**Set: 3.0**

Not used

**Set: 4.0**

| | | | | |
|---|---|---|---|---|
| 1 | Gasketing | S88BL | | PE |
| 1 | Door Bottom | 4131CRL | | PE |
| | Balance of Hardware is Existing | | | |

**Set: 5.0**

| | | | | |
|---|---|---|---|---|
| 4 | Hinge | TA2314 NRP 4-1/2" x 4" | US26D | MK |
| 1 | Exit Device (Exit Only) | 8810 | US32D | SA |
| 1 | Concealed Overhead Stop | 6-X36 | 630 | RF |
| 1 | Surface Closer | 210 TPN | 689 | NO |
| 1 | Kick Plate | K1050 10" | US32D | RO |
| 1 | Threshold | 172A | | PE |
| 1 | Gasketing | 2891AS | | PE |
| 1 | Sweep | 315CN | | PE |

Notes: Install weatherstrip prior to installing closer and exit device. Mount door closer shoe and exit device strike to weatherstrip. Door is exit only.

**Set: 6.0**

| | | | | |
|---|---|---|---|---|
| 4 | Hinge | TA2714 4-1/2" x 4" | US26D | MK |
| 1 | Mortise Deadlock | L460 L583-363 10-078 | 626 | SC |
| 1 | Mortise Cylinder | Keyed to Existing Masterkey System | | 00 |
| 1 | Back to Back Pull Set | RM2210-60 MP BTB | US32D | RO |
| 1 | Automatic Operator | 5710 | 689 | NO |
| 1 | Kick Plate | K1050 10" | US32D | RO |
| 2 | Actuator | 639 | | NO |
| 1 | Monitor | LML-1 | | SU |

Notes: Wire actuators through the latch monitor switch. Actuators to be disabled when deadbolt is thrown.

**Set: 7.0**

| | | | | |
|---|---|---|---|---|
| 8 | Hinge | TA2714 NRP 4-1/2" x 4" | US26D | MK |
| 2 | Flush Bolt | 557 | US26D | RO |
| 1 | Dust Proof Strike | 570 | US26D | RO |
| 1 | Keypad Lock | KP8278 LNREM | US32D | SA |
| 1 | Mortise Cylinder | Keyed to Existing Masterkey | | 00 |

| | | | | |
|---|---|---|---|---|
| | | System | | |
| 2 | Surface Overhead Stop | 10-X36 | 630 | RF |
| 1 | Astragal | 355CS | | PE |

**Set: 8.0**

| | | | | |
|---|---|---|---|---|
| 1 | Mortise Cylinder | Keyed to Existing Masterkey System | | 00 |
| | Balance of Hardware | By Door Supplier | | |

Notes: Confirm quantity and type of cylinder with door supplier prior to ordering.

**Set: 9.0**

| | | | | |
|---|---|---|---|---|
| 4 | Hinge | TA2714 4-1/2" x 4" | US26D | MK |
| 1 | Mortise Deadlock | L496 L583-363 L283-722 10-078 | 626 | SC |
| 1 | Mortise Cylinder | Keyed to Existing Masterkey System | | 00 |
| 1 | Back to Back Pull Set | RM2210-60 MP BTB | US32D | RO |
| 1 | Automatic Operator | 5730 | 689 | NO |
| 1 | Kick Plate | K1050 10" | US32D | RO |
| 2 | Actuator | 639 | | NO |
| 1 | Monitor | LML-1 | | SU |

Notes: Wire actuators through the latch monitor switch. Actuators to be disabled when deadbolt is thrown.

**Set: 10.0**

| | | | | |
|---|---|---|---|---|
| 4 | Hinge | TA2714 4-1/2" x 4" | US26D | MK |
| 1 | Entrance Lock | 7925 LNREM | 630 | SA |
| 1 | Mortise Cylinder | Keyed to Existing Masterkey System | | 00 |
| 1 | Door Stop | 441H | US26D | RO |

2.5 KEYING

.1 Keying shall be under new Grand Master Key System under an existing as supplied by the Best Lock Company.

.2 Supply three (3) keys for each independent core and each independent group. Supply (3) Grand Master Keys.

.3 Lock cylinders shall accommodate removable 7-pin cores.

.4 Hardware supplier shall furnish required number of temporary construction cores and keys to Contractor for security purposes during construction.

.5 All keys to be stamped "Do Not Duplicate"

.6 Contractors shall maintain strict control over construction core and keys.

**Part 3 Execution**

3.1 MANUFACTURER'S INSTRUCTIONS

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

.2 Furnish wood and metal door and frame manufacturers with complete instructions and templates for preparation of their Work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

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

.3 Furnish metal/wood door and frame manufacturers with complete instructions and templates for preparation of their Work to receive hardware.

.4 Furnish manufacturer's instructions for proper installation of each hardware component.

.5 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.6 Mounting heights: unless noted otherwise, use the following heights as a general guideline from the T/O of the finished floor to the C/L (centre line) of the item:

.1 Door Pull - 1070mm

.2 Door Bar - 915

.3 Push Plate – 1400mm

.4 Lockset/Latchset - 915mm

.5 Panic Hardware - 1010mm or as recommended by manufacturer-

.6 Deadlock – 1525mm

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective Material from hardware items where present.

.4 Upon completion of installation, remove surplus Materials, rubbish, tools and equipment barriers and provide written certification to the Contract Administrator that all hardware has been installed as specified.

**END OF SECTION**

**Part 1 General**

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 45 00 – Quality Control

.3 Section 01 78 00 – Closeout Submittals

.4 Section 08 11 00 – Steel Doors and Frames

.5 Section 08 14 00 – Wood Doors

.6 Section 08 42 29.1 – Sliding Automatic Entrance – Exterior

.7 Section 08 42 29.2 – Sliding Automatic Entrance - Interior

.8 Section 08 44 13 – Glazed Aluminum Curtain Walls

.9 Section 10 99 90 – Miscellaneous Specialties

1.2 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330-02, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference. or latest.

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM C542-94(1999), Specification for Lock-Strip Gaskets or latest.

.2 ASTM D790-02, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials or latest.

.3 ASTM D1003-00, Test Method for Haze and Luminous Transmittance of Plastics or latest.

.4 ASTM D1929-96(R2001)e1, Test Method for Determining Ignition Temperature of Plastics or latest.

.5 ASTM D2240-02b, Test Method for Rubber Property - Durometer Hardness or latest.

.6 ASTM E84-01, Test Method for Surface Burning Characteristics of Building Materials or latest.

.7 ASTM F1233-98, Test Method for Security Glazing Materials and Systems or latest.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass or latest.

.2 CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass or latest.

.3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass or latest.

.4 CAN/CGSB-12.4-M91, Heat Absorbing Glass or latest.

.5 CAN/CGSB-12.5-M86, Mirrors, Silvered or latest.

.6 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors or latest.

.7 CAN/CGSB-12.8-97, Insulating Glass Units or latest.

.8 CAN/CGSB-12.9-M91, Spandrel Glass or latest.

.9 CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting or latest.

.10 CAN/CGSB-12.11-M90, Wired Safety Glass or latest.

.11 CAN/CGSB-12.12-M90, Plastic Safety Glazing or latest.

.12 CAN/CGSB-12.13-M91, Patterned Glass or latest.

.4 Canadian Standards Association (CSA International).

.1 CSA A440.2-98, Energy Performance Evaluation of Windows and Sliding Glass Doors or latest.

.2 CSA Certification Program for Windows and Doors 2000 or latest.

.5 Environmental Choice Program (ECP).

.1 CCD-045-95, Sealants and Caulking or latest.

.6 Flat Glass Manufacturers Association (FGMA).

.1 FGMA Glazing Manual – 1997 or latest.

.7 Laminators Safety Glass Association (LSGA).

.1 LSGA Laminated Glass Design Guide 2000 or latest.

.8 Canadian Insulated Glass Manufacturers Association (CIGMA)

.1 IGCC/IGMA Certification Program for the Harmonized Insulating Glass Standard (ASTM E2190)

1.3 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing Materials as follow:

.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330 or latest.

.3 Limit glass deflection to flexural limit of glass with full recovery of glazing Materials.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit shop Drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Upon request, submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.4 Submit manufacturer's installation instructions.

.5 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.6 The window manufacturer must submit a copy of a computer simulation report giving the overall U-value of the standard ASTM test size for each window type used on the project (i.e. fixed, casement, awning, slider). Only reports signed and certified by and independent CWDMA approved Simulation Organizations, and Simulators prepared in accordance with CSA standards A440.2 (latest edition) will be accepted. The report to be submitted with shop Drawings.

1.5 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties. Conform to IGMAC – Quality Standard Specification and Glazing Recommendations for Sealed Insulated Glass Units for glazing installation methods.

.1 Provide testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

.2 Provide shop inspection and testing for glass.

.3 Window supplier must supply either a test report by an independent technical source tested to CSA A440.2 (1998 to current) or a current NFRC Certified Products Listing.

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

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

.6 Warranty: Provide a five year warranty to include coverage of all sealed glass units from seal failure, interpane dusting/misting, and replacement to same quality.

1.6 SITE CONDITIONS

.1 Environmental Requirements:

.1 Install glazing when ambient temperature is 10 °C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Divert metal cut-offs from landfill by disposal into on-Site Metal recycling bin.

.2 Divert unused caulking and sealant Materials from landfill through disposal at special wastes depot.

.3 Unused or damaged glazing Materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Remove form Site and dispose of packaging Materials at appropriate recycling facilities.

.5 Dispose of corrugated cardboard, polystyrene, plastic packaging Material in appropriate on-Site bin for recycling in accordance with Site waste management program.

**Part 2 Products**

2.1 MATERIALS: FLAT GLASS

.1 Type A: Float Glass for interior units: to CAN2-12.3.M; glazing quality, thickness to suit opening size thickness and shall be in accordance with applicable Building Code, clear, visible light transmission 88% minimum.

.2 Type B: Safety Glass for interior and exterior units: to CAN2-12.1M; Type 2-Tempered, Glass B-Float, thickness to suit opening size thickness and shall be in accordance with applicable Building Code. Clear. Note: **All exterior outer panes on all glass units are to be tempered.**

.3 Type C: Float Glass for exterior units: CAN2-12.3M; glazing quality, thickness to suit opening size thickness and shall be in accordance with applicable Building Code, visible light transmission 91%, approved product PPG Starphire or approved equal in accordance with B7.

.4 Type E: Silvered Mirrored Glass: to CAN/CGSB - 12.5, 6mm thick, Type 1A-float glass for normal use.

2.2 MATERIALS: HERMETICALLY SEALED INSULATING GLASS UNITS (GU)

.1 **Type 1: Insulated Glass Units** at **entrances**: CAN2-12.8M or latest; triple pane, outer pane of Type B safety glass, inner pane of Type B safety glass, thickness to suit opening size and thickness shall be in accordance with applicable Building Code., interpane space of a full 16mm, purged dry and hermetically sealed, (22 mm) insulating glass units with warm edge spacer (Super Spacer, XL bar, or Vilda V-92 bar) with R-value of 4.2 (cog) and SHGC of 0.52.

.2 Insulating glass units: To CAN/CGSB-12.8, triple glazed, hermetically sealed, argon filled insulating glass units with low conductance black stainless steel warm edge spacer.

.1 Outer lite: 6 mm (0.25") clear float glass with low-E coating on surface two.

.2 Centre lite: 3 mm (0.11") heat strengthened clear float glass.

.3 Inner lite: 6 mm (0.25") clear float glass with low-E coating on surface five.

.3 **Type 2: Insulating glass** units **facing north and east**: to CAN/CGSB-12.8, triple pane, 50mm overall thickness.

.1 Glass: to CAN/CGSB-12.3, CAN/CGSB-12.1, CAN/CGSB-12.2, CAN/CGSB-12.4 and CAN/CGSB-12.10 or latest.

.2 Glass thickness: to suit window sizes as noted in 2.2.2

.3 Inter-cavity space thickness: 13mm typical between inner and outer lights with warm edge, low conductivity spacers. Super Spacer, XL bar, or approved equal in accordance with B7.

.4 Glass coating: pyrolitic or **hard coat low-E on surface #3** (high solar gain)

.5 Inert gas fill: argon.

.6 Light transmittance: 73% minimum

.7 Transmittance:

.1 Visible: 53%

.2 Solar: 22%

.8 Shading co-efficient: 0.80 0.29 SHGC or lower (centre of glass)

.9 U-Factor: 0.30 0.12 (centre of glass)

.4 **Type 3: Insulating glass** units **facing south and west**: to CAN/CGSB-12.8 or latest., triple pane, 50mm overall thickness.

.1 Glass: to CAN/CGSB-12.3, CAN/CGSB-12.1, CAN/CGSB-12.2, CAN/CGSB-12.4 and CAN/CGSB-12.10 or latest.

.2 Glass thickness: to suit window sizes as noted in 2.2.2

.3 Inter-cavity space thickness: 13mm typical between inner and outer lights with warm edge, low conductivity spacers. Super Spacer, XL bar, or approved equal in accordance with B7.

.4 Glass coating:

.1 Sputtered or **soft coat low-E on surface #2** (moderate solar gain). Where glass is tempered, low-E coat shall be hard coat.

.2 Vinyl Window film on **surface #6**, as per Drawings

.5 Inert gas fill: argon.

.6 Light transmittance: 73% minimum

.7 Transmittance:

.1 Visible: 53%

.2 Solar: 22%

.7 Shading co-efficient: 0.44 0.29 SHGC or lower (centre of glass)

.8 U-Factor: 0.25 0.12 (centre of glass)

2.3 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240 or latest, to suit glazing method, glass lightweight and area.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240 or latest, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face. Continuous bond breaker type, and compatible with silicone sealant, "Thermabond V-2100" by Norton or acceptable "as Equal".

.3 Seals: extruded elastomeric gaskets, compatible with structural silicone sealant, as recommended by the sealant manufacturer, to the interior, and dense EPDM gaskets to the exterior. Glazing tapes are not acceptable.

.4 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240 or latest; on release paper, black colour.

.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25 %, to effect an air and vapour seal.

.5 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot.

.6 Glazing clips: manufacturer's standard type.

.7 Lock-strip gaskets: to ASTM C542 or latest.

.8 Glass wall and door accessories: See Door Hardware.

**Part 3 Execution**

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

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

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

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

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

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: EXTERIOR

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

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

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

.4 Trim protruding tape edge.

.5 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.6 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION: INTERIOR

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

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

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

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

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

.6 Knife trim protruding tape.

3.6 INSTALLATION: MIRROR

.1 Install mirrors using glazing tape strips vertically at 400mm o.c.

.2 Apply bead of silicone caulking 50mm from edge around perimeter of mirror and vertically between glazing tape strips prior to setting in mirror in place.

3.7 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing Materials from finish surfaces.

.4 Remove labels after Work is complete.

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

.6 Upon completion of installation, remove surplus Materials, rubbish, tools and equipment barriers.

3.8 PROTECTION OF FINISHED WORK

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

**END OF SECTION**