1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 – Joint Sealants

.2 Section 08 71 00 – Door Hardware

.3 Section 08 80 00 – Glazing

.4 Section 08 87 23.16 – Security Films

.5 Section 09 21 16 – Gypsum Board Assemblies

.6 Section 09 22 16 – Non-structural Metal Framing

.7 Section 09 91 23 – Interior Painting

.8 Section 26 05 33 – Raceway and Boxes for Electrical Systems

1.2 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI A250.4-11, Test Procedures and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors

.2 ASTM International (ASTM)

.1 ASTM A653/A653M-18, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B29-14, Standard Specification for Refined Lead.

.3 ASTM B749-14, Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.

.4 ASTM E2074-00 (R2004), Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Swinging Door Assemblies.

.5 ASTM E90-04 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

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

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181-1999, Ready-Mixed Organic Zinc-Rich Coating.

.2 CAN/CGSB-12.1-2017, Safety Glazing.

.4 CSA Group (CSA)

.1 CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59-18, Welded Steel Construction (Metal Arc Welding).

.5 Canadian Steel Door Manufacturers Association (CSDMA)

.1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frame Products, 2006.

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

.6 National Association of Architectural Metal Manufacturers (NAAMM)

.1 NAAMM HMMA 810-09, Hollow Metal Doors.

.2 AINSI/NAAM HMMA-841(21 November 2013) Tolerances and Clearances for Commercial Hollow Metal Doors and Frames.

.3 NAAMMHMMA 865 - Sound Control Hollow Metal Door and Frame Assemblies

.7 National Fire Protection Association (NFPA)

.1 NFPA 80-19, Standard for Fire Doors and Other Opening Protectives.

.2 NFPA 252-17, Standard Methods of Fire Tests of Door Assemblies.

.8 South Coast Air Quality Management District (SCAQMD), California State

.1 SCAQMD Rule 1113-A2016, Architectural Coatings.

.2 SCAQMD Rule 1168-A2017, Adhesives and Sealants Applications.

.9 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S701.1-17, Standard for Thermal Insulation, Polystyrene Boards.

.2 CAN/ULC-S702.1-14, Standard for Mineral Fibre Thermal Insulation for Buildings.

.3 CAN/ULC-S704.1-17, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

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

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

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:

.1 Design door assembly to withstand minimum 1,000,000 swing cycles in accordance with ANSI A250-4, with no failure of any design features of the door.

.2 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.

.3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC-S104.

.4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN/ULC-S104, ASTM E2074, and listed by nationally recognized agency having factory inspection services.

.5 All door and frame reinforcement (ie. for hinges, locks, closers, etc.) must be done at factory.

.6 Acoustic Door and Frame Performance: Minimum Sound Transmission Class STC 52 tested to ATM E90

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Provide product data: in accordance with Section 01 33 00 – Submittal Procedures.

.3 Provide shop drawings: in accordance Section 01 33 00 – Submittal Procedures.

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

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, and louvred, arrangement of hardware fire rating and finishes.

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

.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

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

.5 Test Data:

.1 Submit test data indicating compliance with the Sound Transmission Class (STC) requirements. Include laboratory name, test report number, and date of test.

.2 Submit certification from test laboratory qualified under the National Voluntary Accreditation Program (NVLAP) of the U.S. Bureau of Standards.

.3 Submit certifications that STC rated doors are compliant with NAAMMHMMA 865 - Sound Control Hollow Metal Door and Frame Assemblies

.6 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Construction Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements. Waste Management and Disposal:

.1 Separate waste materials for recycling and reuse in accordance with Section 01 74 19 – Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 – (1.6mm) Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

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/m^3minimum sanded to required thickness.

.2 Stiffened: face sheets welded, insulated core.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN/ULC-S104, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 SECURE DOOR D111 and D111.1

.1 Commercial steel door and frame compliant with section 08-11-13 of CSDMA publication: recommended specification for commercial steel doors and frame products.

.1 Door:

.1 Face gauge: 16-gauge (1.6 mm) steel construction: laminated core with vertical steel stiffeners at 150mm oc (stiffeners welded or laminated to each face sheet with voids between stiffeners filled with fiberglass or mineral batt type material).

.2 Caps: 'flush closing channel' or 'flush channel' top and bottom.

.3 REF: NAAMM 810-09 part 2. a. figures e and f for edge details.

.4 Edges: all edges and top and bottom caps to be continuously welded and ground smooth.

.2 Frame:

.1 Gauge: 16-gauge (1.6mm) steel

.2 Frame construction: welded or fully field welded 3-piece "knock-down" (for retrofit applications).

.3 Anchors: "z" shape steel wall anchors welded to frame.

.4 Reinforcing at latch: as per lock manufacturer recommendations. lock specifications must be provided to the supplier/manufacturer to provide necessary reinforcing requirements

.3 Threshold: To provide a seal for door in closed position.

.4 Perimeter and bottom acoustic seals: to provide an acoustic seal for door in closed position.

2.4 ADHESIVES

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

.1 Adhesive: maximum VOC content 50 g/L to SCAQMD Rule 1168.

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

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

2.5 PRIMER

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

.1 Maximum VOC limit 50 g/L to GC-03.

2.6 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

.1 Maximum VOC emission level 50 g/L to GS-11.

2.7 ACCESSORIES

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

.2 Exterior, interior, top, bottom caps: steel

.3 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.

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

.5 Fire labels: metal riveted.

.6 Sealant: refer to section 07 92 00 – Joint Sealants

.1 Maximum VOC limit 250 g/L to SCAQMD Rule 1168.

.7 Glazing: to 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 use with glazing tapes and compounds and secured with countersunk stainless-steel screws.

.2 Design glazing stops in doors D100 and D101 to be tamperproof.

.9 Finish Painting: to Section 09 91 23 – Interior Painting.

2.8 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

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

.3 Exterior frames: 1.6 mm thermally broken type construction.

.4 Interior frames: 1.6 mm slip-on welded type construction.

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

.6 Include Conduits for wiring connections to electronic hardware where required

.7 Coordinate security hardware requirements with the Departmental Representative prior to fabrication.

.8 Protect mortised cutouts with steel guard boxes.

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

.10 Manufacturer’s nameplates on frames and screens are not permitted.

.11 Conceal fastenings except where exposed fastenings are indicated.

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

.13 Insulate exterior frame components with polyurethane insulation.

.14 Affix permanent metal nameplates to door and frame, indicating manufacturer's name, and STC rating.

2.9 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 on centre maximum.

2.10 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

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

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

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

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

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

.7 Fabricate frame products for openings

2.11 DOOR FABRICATION GENERAL

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

.2 Interior doors: hollow steel 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 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

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

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

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

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN/ULC-S104 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.

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

2.12 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form face sheets for interior doors from 1.6 mm sheet steel with honeycomb core laminated under pressure to face sheets.

2.13 HOLLOW STEEL CONSTRUCTION

.1 Form face sheets for interior doors from 1.6 mm sheet steel.

.2 Reinforce doors with vertical stiffeners, securely welded to face sheets at 150 mm on centre maximum.

.3 Fill voids between stiffeners of interior doors with honeycomb core.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION GENERAL

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

.2 Install doors and frames to CSDMA Installation Guide.

.3 Install STC rated doors and frames to meet or exceed the precise tolerances of AINSI/NAAM HMMA-841(21 November 2013)

3.3 FRAME INSTALLATION

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

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support

at centre of head for openings over 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.

3.4 DOOR INSTALLATION

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

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

.1 Hinge side: 1.0 mm.

.2 Latchside and head: 1.5 mm.

.3 Finished floor, top of carpet and thresholds non-combustible sill: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 SECURE DOOR D111

.1 Reinforce Frame in the lock area. Secure a 6.4 mm x 25 mm x 610 mm steel plate inside the frame using tack welds on every edge. Align the centre of the plate with the lock bolt

3.6 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

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

3.7 GLAZING

.1 Install glazing for doors and frames in accordance with Section 08 80 00 – Glazing.

.2 Install Security film for glazed metal doors and sidelights in accordance with Section 08 87 23.16 – Security Films.

.3 Install privacy film for glazed metal doors in accordance with Section 08 80 00 – Glazing.

3.8 COMMISSIONING

.1 Contractor to instruct maintenance personnel in operation and maintenance of doors and hardware.

.2 Confirm operation and function for all doors and hardware.

.3 Commissioning will be witnessed by Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 – Joint Sealants.

.2 Section 08 71 00 – Door Hardware

.3 Section 08 87 23.16 – Security Films

1.2 REFERENCE STANDARDS

.1 American Architectural Manufacturers Association (AAMA)

.1 AAMA 609/610-15, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

.2 ASTM International (ASTM)

.1 ASTM B209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.2 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1-2017, Safety Glazing

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

.4 Canadian Standards Association (CSA)

.1 CAN/CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-15, Hot Dip Galvanizing of Irregularly Shaped Articles.

.5 Green Seal Environmental Standards (GS)

.1 GS-11-2015, Paints and Coatings.

.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1113-A2016, Architectural Coatings.

.2 SCAQMD Rule 1168-A2017, Adhesives and Sealants Applications.

.7 Underwriters Laboratories (UL)

.1 UL 2761-2011 Sealants and Caulking Compounds.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's installation instructions, printed product literature and data sheets for doors and frames and sidelights and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of WHMIS SDS in accordance with 01 35 29.06 – Health and Safety Requirements.

.3 Shop Drawings:

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

.2 Indicate materials and profiles and provide full-size, scaled details of components for each type of door and frame. Indicate:

.1 Interior trim and exterior junctions with adjacent construction.

.2 Junctions between combination units.

.3 Elevations of units.

.4 Core thicknesses of components.

.5 Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.

.6 Location of caulking.

.7 Each type of door system including location.

.8 Arrangement of reinforcing for hardware and joints.

.9 Arrangement of hardware and required clearances.

.4 Samples:

.1 Submit one 300 x 300 mm corner sample of each type door and frame.

.2 Submit sample showing glazing detail, reinforcement, finish and location of manufacturer's nameplates.

.3 Frame sample to show glazing stop, door stop, jointing detail, finish.

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

.6 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Construction Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

.2 Recycled Content:

.1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-industrial, post-consumer content, and total cost of materials for project.

.3 Low-Emitting Materials:

.1 Submit listing of adhesives and sealants paints and coatings used in building, showing compliance with VOC and chemical component limits or restriction requirements.

1.4 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for door closers, locksets and door holders for incorporation into manual.

.3 Tools: supply 2 sets of wrenches for door closers and locksets.

.4 Engineer who stamped shop drawings to conduct site review and provide stamped letter stating that work conforms to the stamped, engineered drawings.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE AND HANDLING

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

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

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect hinged safety glass doors from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 – Waste Management and Disposal.

.5 Packaging Waste Management: remove for reuse and return by manufacturer of padding, pallets, crates, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 – Waste Management and Disposal.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Design frames and doors in exterior walls to:

.1 Accommodate expansion and contraction within service temperature range of -35 to 35 degrees C.

.2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E330/E330M under wind load of 1.2 kPa submit certificate of tests performed.

.3 Movement within system.

.4 Movement between system and perimeter framing components or substrate.

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

.3 Include continuous air barrier and vapour retarder through door system. Primarily in line with inside face of glass and heel bead of glazing compound.

2.2 MATERIALS

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

.2 Sheet aluminum: to Aluminum Association ASTM B209 alloy anodizing quality to match extrusions.

.3 Steel reinforcement: to CSA G40.20/G40.21.

.4 Fasteners: stainless steel non-magnetic.

.5 Weatherstrip: replaceable metal backed wool pile].

.6 Door bumpers: black neoprene.

.7 Door bottom seal: adjustable door seal of anodized extruded aluminum frame and vinyl weather seal, surface mounted with drip cap, closed ends, automatic retract mechanism when door open.

.8 Isolation coating: epoxy resin solution.

.9 Glass: tempered glass to CAN/CGSB-12.1, Type 2, Class A.

.10 Glazing materials: Glazing gasket: neoprene purpose made gasket for dry glazing.

.11 Sealants: colour selected by Departmental Representative in accordance with Section 07 92 00 – Joint Sealants.

2.3 ALUMINUM DOORS

.1 Construct doors of porthole extrusions with minimum wall thickness of 3 mm.

.2 Door stiles, top and bottom rails as indicated on drawings.

.3 Reinforce mechanically-joined corners of doors to produce sturdy door unit.

.4 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.

.5 Supply thermally broken doors for exterior with glass units for exterior glazed door: To CAN/CGSB-12.1, single glazed with profiles to match the building standard as indicated.

.6 Hardware as per Section 08 71 00 – Door Hardware.

2.4 ALUMINUM FRAMES

.1 Construct thermally broken frames of aluminum extrusions with minimum wall thickness of 3mm.

.2 Frame doors and sidelights with members and profiles as indicated, to match existing adjacent base building profiles.

2.5 ALUMINUM FINISHES

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

.1 Clear anodic finish: to designation AA-41 for exterior assembly.

.2 Appearance and properties of anodized finishes designated by Aluminum Association as Architectural Class 1

2.6 STEEL FINISHES

.1 Finish steel clips and reinforcing steel with zinc coating to CAN/CSA-G164

2.7 FABRICATION

.1 Exterior Doors, framing and sidelights by same manufacturer.

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

.3 Provide structural steel reinforcement as required.

.4 Fit joints tightly and secure mechanically.

.5 Conceal fastenings.

.6 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided under Section 08 71 00 – Door Hardware.

.7 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative 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 Departmental Representative.

3.2 INSTALLATION

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

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

.3 Anchor securely.

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

.5 Adjust door components to ensure smooth operation.

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

.7 Glaze aluminum doors and frames in accordance with Section 08 80 00 – Glazing.

.8 Seal joints to provide weathertight seal at outside.

.9 Apply sealant in accordance with Section 07 92 00 – Joint Sealants. Conceal sealant within aluminum work except where exposed use permitted by Departmental Representative.

3.3 FIELD QUALITY CONTROL

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

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

.3 Schedule site visits:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is completed, but before installation begins.

.2 Upon completion of Work, after cleaning carried out.

.4 Obtain reports within 3 days of review and submit.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions, "Cleaning".

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

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

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

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

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

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions, "Cleaning."

.3 Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 – Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 05 55 00 – Metal Fabrications

.2 Section 07 92 00 – Joint Sealants.

.3 Section 08 71 00 – Door Hardware

1.2 REFERENCE STANDARDS

.1 Aluminum Association (AA)

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

.2 American National Standards Institute (ANSI)

.1 ANSI Z97.1-2015, Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.

.3 ASTM International

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

.2 ASTM A480/480M-18a, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

.1 ASTM A653/A653M-18, Standard Specifications for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.2 ASTM B221-14, Standard Specifications for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

.3 ASTM B221M-13, Standard Specifications for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)

.4 ASTM E90-09(2016), Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

.5 ASTM E413-16, Classification for Rating Sound Insulation

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1-2017, Safety Glazing.

.5 CSA Group (CSA)

.1 CAN/CSA B651-18, Accessible Design for the Built Environment.

.6 Green Seal Environmental Standards (GS)

.1 GS-11-2015, Paints, Coatings, Stains, and Sealers.

.2 GS-36-13, Adhesives for Commercial Use

.7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.8 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1113-A2016, Architectural Coatings.

.2 SCAQMD Rule 1168-A2017, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit copies of WHMIS SDS in accordance with Section 01 35 29.06 – Health and Safety Requirements.

.3 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sliding door and glazed partition materials and include product characteristics, performance criteria, physical size, finish and limitations.

.4 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada, clearly showing structural and seismic bracing required to support glazed doors and partitions.

.2 Indicate framing for glazed entrances below and above new ceilings as well as lateral support framing required to support partitions independent of existing suspended ceiling system, to which the sliding glass doors and glazing panel assemblies will not be fastened. Indicate member design thickness exclusive of coatings, connection and bracing details, screw sizing and spacing, and anchors

.3 Indicate each type of door, sizes, hardware locations, rail shapes and materials.

.4 Submit complete list of hardware for safety glass doors, indicating catalogue and reference identification to specified standards. Include certification of conformance to referenced CGSB standards. Submit in accordance with Section 01 45 00 – Quality Control.

.5 Samples:

.1 Submit samples for each color and texture material specified, 75 mm or 150 mm square in size, trim gasket and glass.

.2 Submit hardware and accessories samples involving colour or finish selection.

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

.1 Indicate details of construction, profiles, jointing, fastening and other related details. Indicated materials, thicknesses, and finishes.

.7 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Construction Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

.2 Recycled Content:

.1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-industrial post-consumer content, and total cost of materials for project.

.3 Regional Materials: submit evidence that project incorporates required percentage 10% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.

.4 Low-Emitting Materials:

.1 Submit listing of adhesives, and sealants, paints, and coatings used in building, showing compliance with VOC and chemical component limits or restriction requirements.

1.4 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for door closers, locksets and door holders for incorporation into manual.

.3 Tools: supply 2 sets of wrenches for door closers and locksets.

.4 Engineer who stamped shop drawings to conduct site review of and provide stamped letter stating that work conforms to the stamped engineered drawings.

1.5 QUALITY ASSURANCE

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

.2 Provide interior glass door and partition assemblies complete with sliding door hardware through one source from a single manufacturer.

.3 Site review and Post-Installation Certification: Engineer who stamped shop drawings shall provide periodic site review and reports, progress billing review and reports, and signed and stamped certification that the work of this Section has been performed in conformance with shop drawings.

1.6 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect hinged safety glass doors from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 – Waste Management and Disposal.

.5 Packaging Waste Management: remove for reuse and return by manufacturer of padding, pallets, crates, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 – Waste Management and Disposal.

Part 2 Products

2.1 DOOR DESIGN CRITERIA

.1 Design doors to:

.1 Operate manually.

.2 Open horizontally, sliding to one side.

.2 Provide headrail track for installation horizontally for closing with counterweights.

.3 Assembly Acoustic Performance: sound transmission requirements STC 30: to ASTM E90 and ASTM E413.

2.2 MATERIALS

.1 Glass Panels: General:

.1 Fully tempered clear glass panel minimum 10mm thick to: CAN/CGSB-12.1, ANSI Z97.1.

.2 Provide glass panels with exposed edges machine ground and flat polished.

.2 Above ceiling structural steel supports: to CSA G40.20/G40.21, Grade, thickness and profiles as engineered by manufacturer, prime painted.

.3 Flame Spread Rating: not more than 25, unless otherwise specified.

.4 Smoke Development: less than 300.

.5 Glazing gasket: neoprene or rubber purpose made gasket for dry glazing.

2.3 METAL RAILS AND FITTINGS

.1 Aluminum: Aluminum Association alloy AA6063-T5.

2.4 ALUMINUM FINISHES

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

.1 Aluminum extrusions to: ASTM B221M and ASTMB221

.1 Colour anodized coating Class I, AA-M12C22A44.

.2 Adhesives and Sealants: VOC limit 250 g/L maximum to GS-36.

.3 Primer: VOC limit 250 g/L maximum to GS-11.

.4 Finish: VOC limit 250 g/L maximum to GS-11.

2.5 FABRICATION

.1 Cut glass to required size, finish edges as detailed, include cutouts for hardware and other attachments before heat treatment.

.2 Attach top and bottom rails and hardware before shipping doors to site.

.3 Include safety glass sidelights and glazed partitions as indicated.

2.6 DOOR SYSTEM

.1 Glass Door Types: Integrated Interior Sliding glass door assembly, with track and clamp on rail system of profiles shown as engineered by manufacturer, prefinished matte black.

.2 Head rail track: size, material and profile to manufacturer s recommendations.

.3 Door clear width: In accordance with OBC, clear open width of minimum 860 mm

.4 Performance Requirements:

.1 Structural performance to: BIFMA x 5.6 Access door tests.

.2 Acoustic performance with minimum STC 31 to ASTM E90 and ASTM E413.

.5 Glass: tempered or laminated to: CAN/CGSB-12.1, ANSI Z97.1.

.6 Glass thickness: minimum 10 mm.

.7 Door seals: to include brush and foam receiver at closer side for light and sound seal.

.8 Glass door hardware to: CSA B651, as supplied and as indicated.

.9 Track assembly: manufacturer’s standard assembly with slow down mechanism.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative 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 Departmental Representative.

3.2 INSTALLATION

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

.2 Install partitions after floor finishes by qualified installer and in accordance with manufacturer’s instructions

.1 Secure to structure above as directed in shop drawings provided by structural engineer.

.2 Install glazed partitions plumb, square, and level

.3 Accurately fit and fasten to abutting surfaces.

.4 Do not allow see-through gaps in vertical slotted uprights and installation.

.5 Install partitions with minimal damage to finished flooring and underside of suspended ceiling, to minimize repair in future work.

.3 Adjust operable parts for correct function and smooth operation.

.4 Install sliding door track system and hang doors. Install sliding glass doors plumb and true. Adjust.

3.3 FIELD QUALITY CONTROL

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

.2 Manufacturer's Field Services:

.1 Obtain written reports from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product within 3 days of review and submit.

.2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer s instructions.

.3 Schedule site visits:

.1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions, "Cleaning".

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

.2 Clean aluminum, stainless steel and bronze with damp rag and approved non-abrasive cleaner in accordance with manufacturer s instructions.

.3 Remove traces of primer, caulking; clean doors and frames.

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

.5 Polish hardware with non-abrasive cleaner polish as recommended by and in accordance with manufacturer s written instructions.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions, "Cleaning".

.3 Waste Management: separate waste materials for recycling reuse in accordance with Section 01 74 19 – Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by hinged safety glass door installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 08 11 00 – Metal Doors and Frames

.2 Section 08 11 16 – Aluminum Doors and Frames

.3 Section 08 42 26.13 – Sliding Glass Door Assemblies

1.2 REFERENCE STANDARDS

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

.1 ANSI/BHMA A156.1-2016, Butts and Hinges.

.2 ANSI/BHMA A156.2-2017, Bored and Preassembled Locks and Latches.

.3 ANSI/BHMA A156.3-2014, Exit Devices.

.4 ANSI/BHMA A156.4-2013, Door Controls - Closers.

.5 ANSI/BHMA A156.5-2014, Cylinders and Input Devices for Locks

.6 ANSI/BHMA A156.6-2010, Architectural Door Trim.

.7 ANSI/BHMA A156.8-2010, Door Controls - Overhead Stops and Holders.

.8 ANSI/BHMA A156.13-2017, Mortise Locks

.9 ANSI/BHMA A156.14-2013, Sliding and Folding Door Hardware.

.10 ANSI/BHMA A156.16-2018, Auxiliary Hardware

.11 ANSI/BHMA A156.18-2016, Materials and Finishes.

.12 ANSI/BHMA A156.19-2013, Power Assist & Low Energy Power Operated Doors.

.2 Canadian Steel Door and Frame Manufacturers Association (CSDMA)

.1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2009.

.3 CAN/CSA B651-18, Accessible Design for the Built Environment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Coordination

.1 General Contractor to supply and install and co-ordinate conduit and service box requirements for doors, frames and hardware as required by the Departmental Representative's Security Contractor. See electrical.

.2 General Contractor to co-ordinate work with Departmental Representative and Departmental Representative's Security Contractor providing access control devices, alarms, fire alarm connections and other hardware as noted in the hardware schedule. Obtain required templates from the Departmental Representative / Security Contractor for preparation of doors and frames accordingly.

.3 Departmental Representative's Security Contractor to Supply and Install specific devices as noted in the hardware schedule.

.4 All other hardware Supplied and Installed by General Contractor.

.2 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.3 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.

.4 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

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

.4 After approval samples will be returned for incorporation in Work.

.5 Hardware List:

.1 Submit contract hardware list.

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

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

.7 Manufacturer's Instructions: submit manufacturer's installation instructions.

.8 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Construction Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

1.4 CLOSEOUT SUBMITTALS

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

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

1.5 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Stock Materials:

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

.2 Tools:

.1 Supply 2 sets of wrenches, or specific tools required for adjustment of all supplied hardware.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements:

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

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

1.7 DELIVERY, STORAGE AND HANDLING

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

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

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

.4 Storage and Handling Requirements:

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

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

.3 Protect prefinished surfaces with wrapping strippable coating.

.4 Replace defective or damaged materials with new.

.5 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 – Waste Management and Disposal.

.6 Packaging Waste Management: remove for reuse by manufacturer and return of pallets, padding, packaging materials, crates, as specified in Construction Waste Management Plan in accordance with Section 01 74 19 – Waste Management and Disposal.

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 Locks and latches:

.1 Bored and preassembled locks and latches to: ANSI/BHMA A156.2, series 2000 preassembled lock, grade 1, designed for function and keyed as stated in Hardware Schedule complete with;

.1 Cylinder: provide construction core

.2 Lever: flat face design complete with return to door, similar to L06 by Schlage.

.3 Finish: matte black 622 (US19)

.2 Mortise locks and latches to: ANSI/BHMA A156.13, series 1000, Grade 1, designed for function and keyed as stated in Hardware Schedule complete with:

.1 Cylinder: provide construction core

.2 Lever: flat face design complete with return to door, similar to L06 by Schlage.

.3 Finish: matte black 622 (US19)

.4 Escutcheons Roses: plain round. 54mm diameter

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

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.2 Use non-removeable pins for (NRP) for all hinges

.3 5 knuckle bearing for all hinges

.3 Exit devices: to ANSI/BHMA A156.3. Wide stile Mortise Exit Device, modern stile.

.1 No exposed touch bar fasteners

.2 No exposed cavities when operated

.3 Furnish strikes to suit door and frame material and application

.4 Lever design on the trim to match exactly the lever design on mortised locksets.

.5 Exit devices to be supplied with construction cylinders

.6 Finish Satin Nickel – US15, 619

.4 Door Closers and Accessories:

.1 Door closers: to ANSI/BHMA A156.4, designated by letter C and numeral identifiers, in accordance with ANSI/BHMA A156.4, Grade 1, heavy duty, surface mounted closer complete with cast iron bodies, modern type with full rectangular cover, push side parallel arm mounting, up to 120degree opening, separate valves for sweep, latching and backcheck. Finish prefinished matte black similar to 622 (US19) for all interior locations.

.2 Closers for aluminum doors are to be narrow design body and cover, designed to fit on the aluminum frame head section above the door where top jamb mounting is specified. Finish clear anodized aluminum on exterior doors,

.5 Door Operators:

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

.2 Electric operation, heavy duty built-in adjustable door stop, field adjustable speed control, electronic backcheck, clutch driven for easy manual operation, built-in electric strike interface, on-board 1 amp power supply, built-in sequencing board and solid cast housing.

.3 Operators are to be surface mounted on interior of door (pull side). The operators and their related components are to be supplied and installed as a package by this section.

.4 Actuators are to have logo only, no wording.

.6 Restroom Control and Emergency Call Kits: push button system with “PUSH TO LOCK” button, in both official languages, and magnetic door contact. Bilingual universal emergency call kit for use with control kit, “PRESS FOR EMERGENCY ASSISTANCE” mushroom push button and LED annunciator with adjustable sounder.

.7 Auxiliary locks and associated products: to ANSI/BHMA A156.5, designated by letter E and numeral identifiers listed in Hardware Schedule. Finish as indicated in Hardware Schedule.

.8 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers listed in Hardware Schedule.

.9 Auxiliary locks and associated products: to ANSI/BHMA A156.5, designated by letter E and numeral identifiers listed in Hardware Schedule, finished to 622 matte black.

.10 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers listed in Hardware Schedule, matte black 622 (US19).

.1 Door protection plates: kick plate type 200 high by door width by 1.27 thick

.2 Push plates: type, square edge 106 mm by 406 mm by 1.27 mm thick J301

.3 Pull Plates: type square edge 106 mm by 406 mm by 1.27 mm J405

.4 D-handles: round 19mm dia, 300 long, mounted on pull plate, concealed fastening.

.11 Thresholds: extruded aluminum surface, serrate compatible with Door bottom seal

.1 Thermally broken

.2 Wide to match door frame depth plus 25 mm.

.3 Length to match full door frame opening plus frames

.4 Threshold to be cut around door jamb mullions

.12 Weatherstripping:

.1 Head and jamb seal:

.1 All gasketing and seals shall be fire rated types where used on interior fire rated openings.

.2 Extruded aluminum frame and solid closed cell neoprene insert, designed to be continuous under exit device strikes and closer brackets.

.2 Door bottom seal:

.1 Extruded aluminum frame and nylon brush closed cell neoprene sweep, clear anodized finish.

.13 Acoustic package by Acoustic Door and Frame Supplier, to include sound gaskets, automatic door bottom.

.14 Astragals:

.1 Aluminum doors: Aluminum, full height to match door framing, fixed mullion type, extruded aluminum frame with pile insert, finished to match doors.

.2 Steel doors/frames: Stainless steel, full length of door, designed to be continuous without notching or grinding for strike

.15 Auxiliary hardware: to ANSI/BHMA A156.16.

.1 Floor stops shall be dome type, heavy-duty, stainless steel. (FS 436 and FS 438 with FS 435 and FS437 Risers)

.2 Wall stops shall be heavy duty, stainless steel c/w concave pad with no visible fasteners.

.3 Door Silencers: rubber, 3 per door.

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 KEYING

.1 Supply construction cores.

.2 Permanent cores and keys provided by Departmental Representative and installed by Departmental Representative's Security Contractor.

Part 3 Execution

3.1 INSTALLATION

.1 Contractor must install all door hardware and assure the door frames and doors are prepared and reinforced to receive the specified hardware.

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

.3 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

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

.5 Install hardware to standard hardware location dimensions in accordance with CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames as modified to comply with CAN/CSA B651

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

.7 Use only manufacturer s supplied fasteners.

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

.8 Remove construction cores when directed by Departmental Representative.

.1 Cooperate with Departmental Representative for installation of permanent cores and ensure locks operate correctly.

3.2 ADJUSTING

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

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

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

3.3 Operation of Universal Washroom Control and Emergency Call Kits:

.1 Vacant state: electric strike is unlocked, lever set (always locked), exterior activation button enabled. Washroom can be accessed manually or electrically from the vacant state. When an individual is inside

.2 Occupied state: press the 'Push to Lock' button to lock the electric strike and disable the exterior push button. The door can then be used manually or electrically to leave.

.3 Emergency:

.1 In the event of distress, the emergency button is pressed. This will immediately put the system in vacant mode and energize the audible visual alert indicators for assistance.

3.4 In the event where the individual can not press the emergency button, a key can be used with the storeroom function lever set to bypass the locked system

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions, "Cleaning."

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

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

.3 Remove protective material from hardware items where present.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions, "Cleaning."

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

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 DEMONSTRATION

.1 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.1 Proper care, cleaning, and general maintenance of projects complete hardware.

.2 Description, use, handling, and storage of keys.

.3 Use, application and storage of wrenches for locksets door closers and fire exit hardware.

.2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.7 PROTECTION

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

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

3.8 SCHEDULE

.1 All hardware noted to be supplied and installed by this contractor. General Contractor to coordinate preparation of the doors and frames to receive all hardware including hardware and devices supplied by the Departmental Representative.

.2 Security Contractor engaged by the Departmental Representative will supply and install;

- .1 Permanent cylinders
- .2 Electronic access control keypads/ card swipe devices and connections to security system
- .3 Alarm sensors

.3 All other hardware to be supplied by the General Contractor.

.4 The quantities stated are the unit amounts required for each door cited in references.

.5 Permanent keying will be done by the Departmental Representative

3.9 SCHEDULE

		S=supply, I=Install, DR= Departmental representative	
Heading	**1**	**Entrance Vestibule doors**	**Responsibility**
D100, D101			
1	each	Mortise Type Exit Device, night latch, electric latch bolt retracted by key or by card reader activation, Request to Exit option to deactivate alarm, Fail secure, complete with remote power supply with battery backup. Construction cylinder. Exterior trim fixed.	S&I by Contractor. Security system connection and permanent cylinder by DR.
3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
1	each	Card Reader	S&I by DR
1	each	Door contact	S&I by DR
1	each	Medeco mortise cylinder keyed on TC high security MEDECO system.	S&I by DR
1	each	Floor stop, LO2141 – dome floor	Contractor
3	each	Door Silencers	Contractor
1	each	Surface mounted closer on push side	Contractor
1	each	Kick Plate	Contractor
1	D100 only	Astragal covering the entire lock edge of the door. 14 ga (2mm) thickness.	Contractor
1	each	Power transfer, recesssed in door and frame	Contractor
Heading	**2**	**Closet Double Doors**	
D129			
3	each	Hinges, A5111 - 114 x 114	Contractor
1	each	Roller latch, top frame mounted	Contractor
1	each	Lever dummy trim. Lever Style and rose to match mortise locks	Contractor
1	each	Ovehead stop. Surface mounted, 90 series, heavy duty, stop only, opening range from 85 to 110 degrees, US32D	Contractor
Heading	**3**	**Sliding Glass Barn Doors**	
D103	D104,D105, D106, D110		
D123	D124, D125. D126		
1	each	Specialty Pulls both sides	Contractor
1	each	Specialty Barn door type sliding hardware track system	Contractor
1	each	Floor stop integrated into door base	Contractor
		See Section 08 42 26.13	
Heading	**4**	**Electrical Room Door**	
D107			
3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
1	each	Mortise lockset, F07	Contractor
1	each	Surface mounted closer on push side	Contractor
3	each	Door Silencer	Contractor
Heading	**5**	**Telecom Room Door**	
D109			
3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
1	each	Mortise lockset, F07	Contractor
1	each	Electric Strike	S&I by Contractor. Security system connection and permanent cylinder by DR.
1	each	Card Reader	S&I by Contractor. Security system connection and permanent cylinder by DR.
1	each	Door contact	S&I by Contractor. Security system connection and permanent cylinder by DR.
3	each	Door Silencer	Contractor
1	each	Surface mounted closer on push side	Contractor
1		Overhead stop. Surface mounted, 90 series, heavy duty, stop only, opening range from 85 to 110 degrees, US32D	Contractor

3.9 SCHEDULE cont.

Heading		**6**	**Meeting Room Door**	
D122				
	1	each	Mortise lockset, F04	S&I by Contractor. Permanent cylinder by Departmental Representative.
	3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
	1	each	Floor stop, LO2141 – dome floor	Contractor
	1	each	Kick Plate:	Contractor
	3	each	Door Silencers	Contractor
Heading		**7**	**Washroom doors**	
D112,D115				
	3	each	Hinges, A5111 - 114 x 114	Contractor
	1	each	Power door operator	Contractor
	2	each	Door activators, push button to meet B651-18	Contractor
	1	each	Push plate	Contractor
	1	each	D pull mounted on pul plate	Contractor
	1	each	Kick plate	Contractor
	1	each	Door stop, wall mounted, coordinated with position of D Pull	Contractor
	3	each	Door Silencer	Contractor
Heading		**8**	**Universal Washroom Door**	
D116				
	3	each	Hinges, A5111 - 114 x 114	Contractor
	1	each	Electromechanial mortise lockset, F70, 12 or 24 volt, complete with power supply, and door lock activators, occupacy light,and complete control system	Contractor
	1	each	Power door operator, operation coordinated with electromechanical mortise lock.	Contractor
	1	each	Power transfer, recesssed in door and frame	Contractor
	3	each	Door Silencer	Contractor
	1	each	Floor stop, LO2141 – dome floor	Contractor
Heading		**9**	**Pair, exterior aluminum doors**	
D127			Note: no access from exterior	
	1	each	Continuous hinge	
	1	each	Mortise Type Exit Device, Delayed exit 15 seconds, Exit activates alarm, Fail secure, complete with remote power supply with battery backup. No exterior trim.	S&I by Contractor. Security system connection by DR.
	1	each	Fixed Mullion / Astragal	Contractor
	1	each	Concealed closer mounted in header frame, parallel arm	Contractor
	1	each	Power transfer, recesssed in door and frame	Contractor
	1	each	Door contact	S&I and connection by DR.
	1	each	Aluminum Threshold	Contractor
	1 set	each	Weatherstripping and door bottom seal	Contractor
Heading		**10**	**Existing Exit stair door**	
D113.E			**Note: New door and frame in existing opening. Exit only. No access from 113.**	
	3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
	1	each	Mortise Type Exit Device, Delayed exit 15 seconds, Exit activates alarm, Fail secure, complete with remote power supply with battery backup. No exterior trim.	S&I by Contractor. Security system connection by DR.
	1	each	Full height Astragal	Contractor
	1	each	Surface mounted closer on push side	Contractor
	1	each	Door contact	S&I and connection by DR.
	1	each	Power transfer, recesssed in door and frame	Contractor
Heading		**11**	**Acoustic Secure Room Door**	
D111 & D111.1			**Note: STC 52**	
	3	each	Hinges, A5111 - 114 x 114 x NRP	Contractor
	1	each	Mortise lockset, F07	Contractor
	1	each	Electric Strike	S&I by Contractor. Security system connection and permanent cylinder by DR.
	1	each	Card Reader	S&I by Contractor. Security system connection and permanent cylinder by DR.
	1	each	Door contact	S&I by Contractor. Security system connection and permanent cylinder by DR.
	3	each	Door Silencer	Contractor
	1	each	Surface mounted closer on push side	Contractor
	1	each	Floor stop, LO2141 – dome floor	Contractor
	1	each	Acoustic package by door supplier, to include sound gaskets, automatic door bottom, sill.	Contractor

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 –Joint Sealants

.2 Section 08 11 00 – Metal Doors and Frames

.3 Section 08 11 16 – Aluminum Doors and Frames

.4 Section 08 87 23.16 – Security Films

1.2 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C542-05 (R2017), Standard Specification for Lock-Strip Gaskets.

.2 ASTM C1503-18, Standard Specification for Slivered Flat Glass Mirror

.3 ASTM D790-17, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.4 ASTM D1003-13, Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.

.5 ASTM D1929-16, Standard Test Method for Determining Ignition Temperature of Plastics.

.6 ASTM D2240-15e1, Standard Test Method for Rubber Property - Durometer Hardness.

.7 ASTM E84-19, Standard Test Method for Surface Burning Characteristics of Building Materials.

.8 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.9 ASTM F1233-08 (R2013), Standard Test Method for Security Glazing Materials and Systems.

.2 International Window Film Association (IWFA)

.1 IWFA Architectural Visual Inspection Standard for Applied Window Film (1999)

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1-2017, Safety Glazing.

.2 CAN/CGSB-12.2-M91 (R2017), Flat, Clear Sheet Glass.

.3 CAN/CGSB-12.3-M91 (R2017), Flat, Clear Float Glass.

.4 CAN/CGSB-12.6-M91, Transparent (One Way) Mirrors.

.5 CAN/CGSB 12.20-M, Structural Design of Glass for Buildings.

.4 CSA Group (CSA)

.1 CAN/ CSA B651-18, Accessible Design for the Built Environment

.5 Glass Association of North American (GANA)

.1 GANA Glazing Manual, 2008.

.2 GANA Laminated Glazing Reference Manual, 2009.

.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1168-A2017, Adhesives and Sealant Applications.

.7 Underwriters Laboratories

.1 UL 2761-2011, Sealing and Caulking Compounds.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:

.1 Convene pre-installation meeting 1 week prior to beginning on-site installation work of this Section, with Contractor's Representative and Departmental Representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordinate with other building subtrades.

.4 Review manufacturer's written installation instructions and warranty requirements.

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.3 Shop Drawings:

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

.2 Show elevations of all applications of custom privacy film on new and existing exterior and interior glazed units.

.4 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

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

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

.7 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Construction Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

.2 Low-Emitting Materials:

.1 Submit listing of adhesives and sealants used in building, showing compliance with VOC and chemical component limits or restrictions requirements.

1.5 CLOSEOUT SUBMITTALS

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

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

.3 Engineer who stamped shop drawings to conduct site review of and provide stamped letter stating that work conforms to the stamped engineered drawings.

1.6 QUALITY ASSURANCE

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

.2 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 45 00 – Quality Control.

.2 Construct mock-up to include glazing, privacy film application.

.3 Mock-up will be used:

.1 To judge quality of work, substrate preparation, operation of equipment and material application.

.4 Locate where directed.

.5 Allow 24 hours for inspection of mock-up before proceeding with work.

.6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Departmental Representative.

1.7 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

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

.3 Protect prefinished aluminum surfaces with wrapping strippable coating.

.4 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 – Waste Management and Disposal.

.5 Packaging Waste Management: remove for reuse by manufacturer and return of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 – Waste Management and Disposal.

1.8 AMBIENT CONDITIONS

.1 Ambient Requirements:

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

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

Part 2 Products

2.1 MATERIALS

.1 Design Criteria:

.1 Size exterior glass to withstand wind loads, dead loads and positive and negative live loads to ASTM E330.

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

.3 Mirrors, Silvered to ASTM C1503 and as follows:

.1 Type: 1B – Float glass for high humidity use.

.2 Tint: Clear

.3 Edges: Flat polished edge

.4 5 mm thick

.4 Safety glass: to CAN/CGSB-12.1, transparent

.1 Type 2-tempered.

.2 Class B-float.

.3 Category 1 11.

.4 Square Edge.

.5 Silvered mirror glass:

.1 1B-float glass for high humidity use.

.2 Translucent decorative privacy film to meet or exceed the following criteria:

.1 Visible rays transmission: 87%

.2 Ultraviolet rays transmission: <1%

.3 Insulation:

.1 Transmission: 83%
.2 Reflectivity: 8%
.3 Absorbency: 9%

.4 Shading coefficient: 0.98
.5 Heat transmission coefficient (W/m2K): 6
.6 UV resistant
.7 Matt surface
.8 Provide one custom patterned translucent film type similar to that shown on drawings. Final Artwork to be provided by Departmental Representative.
.9 Provide a medium to heavy frosted film to be selected by departmental representative.

.3 Plastic Film: in accordance with Section 08 87 23.16 – Security Films.

.4 Sealant: in accordance with Section 07 92 00 – Joint Sealants.

.1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.
.1 VOC limit: 5% maximum by weight to UL 2761.
.2 Ensure sealant does not contain chemical restrictions to UL 2761.

2.2 ACCESSORIES

.1 Setting blocks: 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, length of 25 mm for each square metre of glazing, minimum 100 mm x to suit application. Self adhesive on one face.

.2 Glazing tape:

.1 Preformed butyl compound, 10-15 Shore A durometer hardness to ASTM D2240; coiled 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%.

.3 Glazing clips: manufacturer’s standard type.

.4 Lock-strip gaskets: to ASTM C542.

.5 Mirror attachment accessories:

.1 Stainless steel clips.
.2 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

Part 3 Execution

3.1 EXAMINATION

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

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

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

.3 Visually inspect substrate in presence of Departmental Representative.

.4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

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

.3 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

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

.2 Perform work in accordance with GANA Glazing Manual for glazing installation methods.

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

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

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

.6 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.

.7 Trim protruding tape edge.

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

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

.2 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

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

.5 Rest glazing on setting blocks and push against tape and heel head of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape 16 flush with mm below sight line.

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

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

3.5 INSTALLATION: EXTERIOR - WET METHOD (SEALANT AND SEALANT)

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

.2 Place setting blocks at 1/4 or 1/3 points and install glazing light or unit.

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

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

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

3.6 INSTALLATION: INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

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

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

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

.4 Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of light or unit.

.5 Install removable stops, with spacer shims inserted between glazing and applied stops at 600 mm intervals, 6 mm below sight line.

.6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.

.7 Trim protruding tape edge.

3.7 INSTALLATION: MIRRORS

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

.2 Set mirrors with clips. Anchor rigidly to wall construction.

.3 Place plumb and level in compliance with CAN/CSA B651.

3.8 PREPARATION FOR DECORATIVE PRIVACY FILM APPLICATION

.1 Clean and dust glass with previously applied security film before beginning installation using neutral cleaning solution as recommended by security film manufacturer.

.2 Coordinate and schedule with Section 08 87 23.16 – Security Films for application of privacy film over security film to allow time required for curing of security film prior to privacy film application.

.3 Ensure dust, grease, and chemical residue are removed from surface of glass or security film applied on glass before installation of privacy film.

.4 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems. Report findings to Departmental Representative.

.5 Proceed with Work only after receipt of written approval from Departmental Representative.

.6 Before beginning Work, place absorbent material on window sill to absorb moisture accumulation generated by film application.

3.9 INSTALLATION: PLASTIC FILM

.1 Section 08 87 23.16 – Security Films for security film to new and existing glazing.

.2 Install privacy and decorative film over security film where scheduled in accordance with film manufacturer’s instructions.

.3 Place without air bubbles, creases or visible distortion.

.4 Fit tight to glass perimeter with razor cut edge.

3.10 INSTALLATION OF DECORATIVE PRIVACY FILM

.1 Cut film edges straight and square.

.2 Cut edges in accordance with manufacturer’s written instructions.

.3 Apply and attach film to glass in accordance with manufacturer's written instructions.

.4 Splicing:

.5 Splice film only when glass is greater in width than film.

.6 Splice film only after receipt of written approval from Departmental Representative

.7 Use butt factory edges only.

.8 Use only water and film slip solution on glass to facilitate positioning of film.

.9 Ensure removal of excess water from between film and glass.

.10 Remove left over material form work area and return work area to original condition.

3.11 FILM INSTALLER'S INSPECTION

.1 Visual Inspection: in accordance with IWFA Architectural Visual Inspection Standard for Applied Window Film.

.2 Remove and replace film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30-day period.

.3 Remove and replace without glass replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30-day period.

3.12 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions, "Cleaning."

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

.1 Remove traces of primer, caulking.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions, "Cleaning."

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

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.13 PROTECTION

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

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

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

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

3.14 SCHEDULE

.1 Provide double glazing at level C3.

.1 Apply security film on C3 side as described in Section 08 87 23.16 – Security Films.

.2 Apply frosted privacy film from top of base to 2135mm a.f.f. on C2 side of partition.

.2 Provide double glazing at Metal Door and Frame units D100 and D101

.1 Apply security film on interior side as described in Section 08 87 23.16 – Security Films.

.2 Apply custom graphic patterned privacy film on interior as shown in elevation details A507.

.3 Existing nominally 3050 mm high Atrium facing bay window glazing of 6 mm tempered glass.

.1 Apply security film on interior side as described in Section 08 87 23.16 – Security Films.

.2 Apply continuous width band of custom patterned privacy film over security film on interior similar to elevation details for Metal Door and Frame D100 and D101 on A507.

.4 Sliding Glass Door Assemblies by Section 08 42 26.13 – Sliding Glass Door Assemblies.

.1 Apply signage film application in accordance with Signage and Wayfinding drawings D.01 to D.16 and as shown in detail elevations on A507.

.5 Existing exterior glazing units.

.1 Apply security film on interior side as described in Section 08 87 23.16 – Security Films.

.2 Apply continuous width band of custom patterned privacy film over security film on interior similar to elevation details for Metal Door and Frame D100 and D101 on A507.

END OF SECTION

Part 1 General

1.1 SUMMARY

1.2 Related Requirements

.1 Section 08 11 00 – Metal Doors and Frames

.2 Section 08 11 16 – Aluminum Doors and Frames

.3 Section 08 42 26.13 – Sliding Glass Door Assemblies

.4 Section 08 80 00 – Glazing

1.3 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI Z97.1-2015, Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.

.2 International Window Film Association (IWFA)

.1 IWFA Visual Quality Standard for Applied Window Film (1999).

.3 Consumer Product Safety Commission Publications (CPSC)/Code of Federal Regulations (CFR)

.1 CPSC, 16 CFR 1201 CAT I.

.2 CPSC, 16 CFR 1201 CAT II.

.4 US General Services Administration (GSA)

.1 GSA TS01-2003, Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.

.5 Government of Canada

.1 Canada Labour Code, WHMIS datasheets.

.6 Underwriters laboratories of Canada (ULC)

.1 CAN/ULC-S332-93 (R2016), Standard for Burglary Resisting Glazing Material.

.2 NIJ (National Institute of Justice) 0108.01 Level III-A Ballistic Resistant Protective Materials.

1.4 DEFINITIONS

.1 Safety: reduction of risk of injury, loss or death of persons due to accidental, natural or unintentional causes.

.2 Security: reduction of risk of injury, loss or death of persons due to intentional actions of others.

.3 Security and Safety Film Types:

.1 Type 1 Safety: areas of concern related to common residential or light commercial accidents.

.2 Type 2 Safety/Security/Seismic: areas of concern related to seismographic upgrade, low end smash and grab break and entry and over pressure due to violent weather.

.3 Type 3 Security/Blast: areas of concern related to bomb blasts.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data: submit WHMIS SDS – Material Data Sheets in accordance with Section 01 00 10 – General Instructions, "Hazardous Materials".

.3 Submit shop drawings and product data in accordance with Section 01 33 00 – Submittal Procedures.

.4 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.1 Submit Frosted and transparent samples on 500 x 500 x 6 mm thick clear plate glass.

.5 Submit test reports in accordance with Section 01 33 00 – Submittal Procedures.

.1 Submit test reports from approved independent testing laboratory, certifying film's compliance with specified requirements.

.2 Provide evidence that security film application to exterior windows will not cause thermal breakage.

.6 Submit Closeout Submittals in accordance with Section 01 78 00 – Closeout Submittals.

.1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

.2 Follow manufacturer's written instructions for care and maintenance of security and safety film.

.3 Use only cleaning solution recommended by manufacturer for regularly scheduled cleaning of security film.

1.6 QUALITY ASSURANCE

.1 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

.2 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets acceptable to Canada Labour Code.

1.7 DELIVERY, STORAGE AND HANDLING

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

.2 Provide and maintain dry, off-ground weatherproof storage.

.3 Store rolls of film flat on cross supports. Do not stand rolls of film on end.

.4 Remove from storage, in quantities required for same day use.

.5 Store materials in accordance with manufacturers written instructions.

.6 Waste Management and Disposal:

.1 Separate and recycle waste materials in accordance with Section 01 74 19 – Waste Management and Disposal, and with Construction Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely.

1.8 WARRANTY

.1 Work of this Section 08 87 23.16 – Security Films: 12 months warranty period prescribed in subsection GC 32.1 of General Conditions C is extended to 10 years.

1.9 MAINTENANCE DATA

.1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

Part 2 Products

2.1 MATERIALS

.1 Security Film – General: optically clear polyester film, abrasion resistant coating and release liner.

.1 Type 3 Security/Blast Film: Institutional, corporate, government, small arms fire and high-powered weapons

.1 Testing in accordance with GSA-TS01, ANSI Z97.1, and CPSC 16 CFR 1201 CAT II.

.2 Transparent

2.2 FABRICATION

.1 Shop installation of security film to new interior and exterior glass panels:

.1 Ensure dust, grease, and chemical residue are removed from surface of new glass before installation of film.

.2 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems. Report defects to the glazing supplier for remedial action or replacement.

.3 Install security film to glass panels ensuring no blisters, bubbles, scratches, edge defects or distortions.

.4 Cut film edges straight and square to within 3 mm of edge of panel.

.5 Ensure film is installed to extend behind window stops in finished assembly.

.6 Deliver glass panels complete with security film installed and labels intact and legible in accordance with Section 01 61 00 – Common Product Requirements for installation in new metal framing assembly.

.7 See Section 08 80 00 – Glazing for Privacy Film application on top of Security Film.

Part 3 Execution

3.1 PREPARATION FOR FIELD INSTALLATION ON EXISTING GLAZING

.1 Clean glass before beginning installation using neutral cleaning solution.

.2 Ensure no deleterious material adheres to glass.

.3 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.

.4 Examine existing conditions to ensure ability to apply security film to substrate in compliance with performance requirements.

.5 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems. Report findings to Departmental Representative.

.6 Proceed with Work only after receipt of written approval from Departmental Representative.

.7 Before beginning Work, place absorbent material on window sill to absorb moisture accumulation generated by film application.

3.2 INSTALLATION

.1 Field Installation of Security Film to Existing Glass:

.1 Install transparent security film to full extent of all existing perimeter interior and exterior glazing units as recommended by manufacturer.

.2 Install film in the same manner as tested.

.3 Remove any window stops and window sealing device to ensure that edge of film will be covered by stop.

.4 If stop does not exist or cannot be removed apply caulking and protective stop to cover and protect edge of film and overlap the metal frame.

.5 Ensure no deleterious material adheres to glass by scraping surface of glass using industrial razors.

.6 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.

.7 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems. Report findings to Departmental Representative before starting Work.

.8 Proceed with Work only after receipt of written approval from Departmental Representative.

.9 Install security film to glass windows ensuring no blisters, bubbles, scratches or distortions.

.2 Cut film edges straight and square.

.3 Ensure film is installed behind window stops.

.4 Cut edges in accordance with manufacturer's written instructions and 3 mm maximum from edge of glass sealing device.

.5 Apply and attach film to glass in accordance with manufacturer's written instructions.

.6 Splicing:

.1 Splice film only when glass is greater in width than film.

.2 Splice film only after receipt of written approval from Departmental Representative.

.3 Use overlapped butt factory edges only as recommended by manufacturer.

.4 Ensure maximum overlap of 3 mm.

.7 Use only water and film slip solution on glass to facilitate positioning of film.

.8 Ensure removal of excess water from between film and glass.

.9 Remove left over material from work area and return work area to original condition.

3.3 INSTALLER S INSPECTION

.1 Visual Inspection: in accordance with IWFA Visual Quality Standard for Applied Window Film.

.2 Remove and replace glass panel that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30-day period.

.3 Remove and replace without glass replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30-day period.

3.4 FINAL CLEANING

.1 Wash interior and exterior of each glass panel and film using cleaning solution recommended by film manufacturer.

3.5 SCHEDULE

.1 Coordinate with Section 08 80 00 – Glazing for application of privacy film over security film to allow for sufficient curing time of security film prior to privacy film application.

.2 Shop apply security film full height on the interior side of the glazed partition on level C3. Secure edges of film behind glazing stop.

.3 Field apply security film continuous full height on the interior face of the atrium bay window.

.4 Field apply security film continuous full height on the interior face of the entire two storey Sparks Street Lantern.

.5 Field apply security film continuously on the full interior face of all exterior windows facing Kent and Queen Streets.

.6 Field apply security film continuously full height on the interior face of exterior existing and glazing in the South lantern.

.7 Apply security film continuous on the full interior face of glazing on both new doors and side lights in the entrance vestibule room 100, Doors D100 and D101.

END OF SECTION