Part 1 General

1.1 REFERENCE STANDARDS

.1 ASTM International (ASTM)

- .1 ASTM A653/A653M-20, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM C591-20, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
- .3 ASTM E283/E283M-19, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .2 CGSB 41-GP-19MA-84, Rigid Vinyl Extrusions for Windows and Doors.

.3 CSA Group (CSA)

- .1 CSA-A440.2:19/A440.3:19, Fenestration energy performance/User Guide to CSA A440.2:19, Fenestration energy performance
- .2 CSA-G40.20-13/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .3 CSA W59-18, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association (CSDMA)

- .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
- .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.5 National Association of Architectural Metal Manufacturers (NAAMM) and Hollow Metal Manufacture’s Association (HMMA)

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

.6 National Fire Protection Association (NFPA)

- .1 NFPA 80-19, Standard for Fire Doors and Fire Windows.
- .2 NFPA 252-17, Standard Methods of Fire Tests of Door Assemblies.

.7 Underwriters' Laboratories of Canada (ULC)

- .1 CAN/ULC-S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced
- .2 CAN/ULC-S104-15, Standard Method for Fire Tests of Door Assemblies.
- .3 CAN/ULC-S105-16, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SYSTEM DESCRIPTION

.1 Design Requirements:

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

.2 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 for ratings specified or indicated.

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

.4 Maximum overall thermal transmittance of insulated exterior doors and frames shall not be more than 1.9 W/(m²xK) calculated in accordance with CSA A440.2/A440.3, “Fenestration Energy Performance/User Guide to CSA A440.2, Fenestration Energy Performance or NFRC 100, “Determining Fenestration Product U-Factors”.

.5 Doors and frames that act as environmental separators shall have an air leakage rate not greater than 0.50 L/(s x m²) when tested in accordance with ASTM E283, “Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen” at pressure differential of 75 Pa.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

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

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

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, louvres, glazed, 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, and 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 Indicate compliance with design requirements.

1.4 DELIVERY, STORAGE AND HANDLING

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

.2 Separate waste materials for reuse and recycling 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 - 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 Vertical reinforcing channels at 150mm on centre, welded or laminated to each face sheet, with voids between stiffeners filled with mineral fibre batt material.

.2 Insulated core construction:

.1 Polyisocyanurate: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3 (2.0 pcf) minimum, thermal values; RSI 1.9 (R-11) minimum, in accordance with ASTM C591 (un-faced) or ASTM C1289 (faced.)

.2 Satisfy overall maximum thermal transmittance values noted in design requirements.

.3 Vertical reinforcing channels at 150mm on centre, welded or laminated to each face sheet.

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

2.3 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.

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

2.4 PRIMER

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

.1 Maximum VOC limit 50 g/L.

2.5 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting and 09 91 13 - Exterior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

2.6 ACCESSORIES

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

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

.3 Edge details: to NAAMM 810-09, Part 2

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

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

.6 Fire labels: metal rivited.

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

.8 Glazing: in accordance with Section 08 80 00 - Glazing.

.9 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 exterior glazing stops to be tamperproof.

.10 Foam insulation: for space between door frame and wall at exterior door frames: low expanding polyurethane foam insulation compatible with frame insulation.

2.7 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, welded type construction using rigid polyvinylchloride extrusion conforming to CGSB 41-SP-19MA.

.4 Interior frames: 1.6 mm welded type construction.

.5 Strike bucket: accept a 25 mm throw deadbolt. Grout or wedge in the area of the strike bucket to prevent spreading.

.6 Anchors: “Z” shape steel wall anchors welded to frame.

.7 Frame reinforcing at lock area; secure 6.4mm x 25mm x 610mm steel plate inside the frame using tack welds on every edge. Align the centre of the pate with the lock bolt.

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

.9 Protect mortised cutouts with steel guard boxes.

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

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

.12 Ensure fire labels are located such that they are hidden when the door is in the closed position.

.13 Conceal fastenings except where exposed fastenings are indicated.

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

.15 Insulate exterior frame components with polyurethane insulation.

.16 Prepare frames to receive electronic monitoring and security devices. Refer to Section 08 71 00 - Door Hardware and Section 08 90 10 - Door, Frame and Hardware Schedule. Coordinate frame preparation with Electrical Divisions 26 and 28.

2.8 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

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

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

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

2.9 FRAMES: WELDED

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

.2 Secure anchorages and connections to adjacent construction.

.3 Latch reinforcing: as per lock manufacturer’s recommendation. Provide lock specifications to frame supplier for necessary reinforcing requirements.

.4 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.

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

.6 Caulk perimeter of frames between frame and adjacent material.

.7 Maintain continuity of air barrier and vapour retarder.

2.10 DOOR FABRICATION GENERAL

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

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

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

.4 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 NFPA 252, CAN4-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.

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

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

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

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

.4 Caps: to NAAMM 810, Figures E and F; metal flush closing channels.

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

2.12 THERMALLY BROKEN DOORS AND FRAMES

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

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

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

.4 Apply insulation.

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.

3.3 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.

.6 Maintain continuity of vapour retarder and air barrier.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Doors 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: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

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

3.6 GLAZING

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

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 American Architectural Manufacturers Association (AAMA)

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

.2 ASTM International

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

.3 Canadian General Standards Board (CGSB)

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

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

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

.4 CSA International

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

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.3 Shop Drawings:

.1 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 Sustainable Design Submittals:

.1 Construction Waste Management:

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

.2 Low-Emitting Materials:

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

1.3 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for cleaning and maintenance of aluminum finishes for incorporation into manual.

1.4 QUALITY ASSURANCE

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

1.5 DELIVERY, STORAGE AND HANDLING

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

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

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect aluminum doors and frames from damage.

.3 Replace defective or damaged materials with new.

.4 Develop Waste Reduction Workplan and Construction Waste Management Plan related to Work of this Section.

.5 Packaging Waste Management: remove for reuse and return of pallets, crates padding, and packaging materials as specified in Construction Waste Management Plan and Waste Reduction Workplan.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Design frames and doors in exterior walls to: (design based on Kawneer 500 Standard Entrance)

.1 Accommodate expansion and contraction within indoor service temperature.

.2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E330 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 laminated security glazing thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20. Minimum 6 mm tempered glass.

.3 Design door system to provide average thermal resistance of:

.1 Door system (excluding vision glass areas): RSI of 0.46 (R2.6)

.2 Vision glass areas: RSI of 0.46 (R2.6)

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

2.2 MATERIALS

.1 Aluminum extrusions: to Aluminum Association alloy AA6063-T6 anodizing quality.

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

.3 Fasteners: stainless steel where exposed.

.4 Weatherstrip: replaceable neoprene.

.5 Door bumpers: black neoprene.

.6 Door bottom seal: adjustable door seal of anodized extruded aluminum frame and vinyl weather seal, recessed in door bottom, closed ends, and concealed fasteners.

.7 Isolation coating: bituminous paint.

.8 Laminated security glass units:

.1 In accordance with Section 08 80 00 - Glazing.

.9 Glazing materials: gasketing material shall be extruded black closed cell elastomer of durometer appropriate to the function.

.10 Sealants: colour 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 nominal 127 mm.

.3 Top rail nominal 127 mm.

.4 Bottom rail nominal 254 mm.

.5 Mid rail nominal 127 mm.

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

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

.8 Hardware: in accordance with Section 08 71 00 - Door Hardware.

2.4 ALUMINUM FRAMES

.1 Construct insulated curtain wall entrance system, shear block construction frames of aluminum extrusions with minimum wall thickness of 3 mm.

.2 Frame members for centre glazing.

2.5 ALUMINUM FINISHES

.1 Clear anodic finish: to designation AA-M12C22A31, clear anodized

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

2.6 STEEL FINISHES

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

2.7 FABRICATION

.1 Doors and framing to be by same manufacturer.

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

.3 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 are 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 that structural loads are 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 and air, vapour seal at inside.

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

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

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

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

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

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

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

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

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

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

.3 Waste Management: separate waste materials for reuse and 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 REFERENCE STANDARDS

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.1 Quality Standards for Architectural Woodwork, Latest edition.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.

.2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.3 CSA Group (CSA)

.1 CAN/CSA O132.2 Series-90 (R1998), Wood Flush Doors.

.4 Underwriters' Laboratories of Canada (ULC).

.1 CAN/ULC-S104-15, Fire Tests of Door Assemblies.

.2 CAN/ULC-S105-16, Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

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

.2 Shop Drawings:

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

.2 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

1.3 SAMPLES

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

.2 Submit one 305 x 305 mm corner sample of each type wood door.

.3 Show door construction, core, glazing detail and faces.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.

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

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.

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

.3 Protect doors from scratches, handling marks and other damage. Wrap doors.

.4 Store doors away from direct sunlight.

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

Part 2 Products

2.1 FIRE RATED WOOD DOORS

.1 Wood doors: tested in accordance with CAN/ULC-S104 to achieve rating as scheduled.

2.2 WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1.

.2 Performance Duty Level: AWMAC “Heavy Duty” level unless otherwise noted.

.1 Construction:

.1 Solid particleboard core: grade LD-1 or LD-2, stile and rail frame bonded to particleboard core with wood lock blocks and top blocks, 5-ply construction, 45 mm thickness. Door core and all materials shall contain no urea formaldehyde.

.2 Face Panels:

.1 Hardwood; veneer grades: Grade I (Premium), flat sliced Ash species, slip match pattern.

.3 Adhesive: Type II (water resistant) for interior doors.

.4 Finish: stain and clear varnish finish on site, in accordance with Section 09 91 23 – Interior Painting.

.3 Pre-manufactured wood flush doors.

.1 Meet specified AWMAC Grade and Performance Level

.2 Finish: Factory applied stain and clear varnish finish.

2.3 GLAZING

.1 Glass: in accordance with Section 08 80 00 - Glazing.

.2 Accessories: in accordance with Section 08 80 00 - Glazing.

2.4 FABRICATION

.1 Vertical edge strips solid hardwood compatible with face veneer. AWMAC edge type 2.

.2 Prepare doors for louvres and glazing. Provide hardwood species to match face veneer and glazing stops with mitred corners.

.3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

.4 Radius vertical edges of double acting doors to 60 mm radius.

.5 Ensure STC and fire labels are located on doors and frames such that they are hidden when the door is in the closed position.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install labelled fire rated doors to NFPA 80.

.3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.

.4 Adjust hardware for correct function.

.5 Install glazing in accordance with Section 08 80 00 - Glazing.

.6 Install louvres and stops.

3.3 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

.1 Progress cleaning: Clean in accordance with Section 01 74 00 - Cleaning

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

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

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

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

.5 On completion of installation, remove surplus materials, rubbish, tools, and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 Aluminum Association (AA)

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

.2 American Architectural Manufacturers Association (AAMA)

.1 AAMA CW-10-15, Care and Handling of Architectural Aluminum From Shop to Site.

.2 AAMA 611-14, Voluntary Specifications for Anodized Finishes Architectural Aluminum.

.3 ASTM International

.1 ASTM B221-14, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.108-M89, Bituminous Solvent Type Paint.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: co-ordinate work of this Section with installation of adjacent components or materials.

.2 Pre-Installation Meetings:

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

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

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

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for aluminum window components, anchorage and fasteners, glass, and infill, and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, expansion and contraction joint location and details, and field welding required.

.4 Test Reports:

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

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 glazed aluminum window for incorporation into manual.

1.5 QUALITY ASSURANCE

.1 Mock-ups:

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

.2 Mock-up to include mullions, vision glass light, and glass. Assemble to illustrate component assembly including glazing materials, attachments, anchors, and perimeter sealant.

.3 Locate mock-up where directed by Departmental Representative.

.4 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with work.

.5 When accepted, mock-up will demonstrate minimum standard of quality and materials for work of this Section.

.6 Mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.3 Store and protect aluminum components from damages.

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

.5 Replace defective or damaged materials with new.

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

Part 2 Products

2.1 SYSTEMS

.1 Description:

.1 Vertical glazed aluminum wall system includes tubular aluminum sections with supplementary support or self supporting framing, as per manufacture, shop fabricated, factory prefinished; related anchorage and attachment devices.

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

2.2 MATERIALS

.1 Extruded aluminum: to ASTM B221. Aluminum Association alloy AA6063-T anodizing quality.

.2 Steel sections: to CAN/CSA G40.20/G40.21; shaped to suit mullion sections.

.3 Anchors: 3-way adjustable hot-dip galvanized cast iron.

.4 Fasteners: aluminum, finish to match aluminum window wall.

.5 Bituminous paint: CAN/CGSB 1.108, Type as required, without thinner.

.6 Glazing gaskets:

.1 Compression type design, replaceable, molded, or extruded, of ethylene propylene diene monomer (EPDM.)

.2 Provide and hardness as required to maintain uniform pressure for seal.

.7 Internal sealants and baffles.

.8 Glass and glazing components:

.1 Salvaged laminated glass: refer to Section 08 80 00 - Glazing.

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

2.3 COMPONENTS

.1 Mullion profile: (based on Kawneer Trifab 451)

.1 Overall system dimensions: 51 x 114 mm nominal dimension.

.2 Centre set glazing configuration.

2.4 FABRICATION

.1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly yet enabling installation and dynamic movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush.

.3 Prepare components to receive anchor devices. Install anchors.

.4 Arrange fasteners and attachments to ensure concealment from view.

.5 Prepare system components to receive glass.

.6 Reinforce interior horizontal head rail to receive track brackets and attachments.

.7 Visible manufacturer's identification labels not permitted.

.8 Finishes:

.1 Finish coatings: conform to AAMA 611 and AA-M12C22A44.

.2 Architectural Class II, etched, medium matte, clear / coloured anodic coating, 0.4mil minimum thickness.

.3 Touch-up primer for galvanized steel surfaces: SSPC 20 Paint zinc rich.

.4 Concealed steel items: galvanized in accordance with ASTM A123, 600 gm/m^2.

.5 Apply 1 coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

2.5 SOURCE QUALITY CONTROL

.1 Manufacturer qualifications: company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

.2 Installer qualifications: company specializing in performing the work of this section approved by manufacturer, with minimum 5 years documented experience.

Part 3 Execution

3.1 EXAMINATION

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

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

.2 Verify wall opening materials are ready to receive work of this Section.

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

.4 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Install aluminum framing and glazing system in accordance with manufacturer's instructions.

.2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

.3 Use alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.

.4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

.5 Install glass in accordance with Section 08 80 00 - Glazing, to glazing method required to achieve performance criteria. Cover caps to conceal screws and ensure continuous sightline.

.6 Install perimeter sealant to method required to achieve performance criteria. Backing materials, and installation criteria in accordance with Section 07 92 00 - Joint Sealants.

3.3 SITE TOLERANCES

.1 Maximum variation from plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.

.2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.

.3 Maximum sealant space between aluminum window wall and adjacent construction: 13 mm.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Remove protective material from prefinished aluminum surfaces.

.3 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

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

.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

3.5 PROTECTION

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

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

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

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

.1 ANSI/BHMA A156.1-2016, American National Standard for Butts and Hinges.

.2 ANSI/BHMA A156.3-2020, Exit Devices.

.3 ANSI/BHMA A156.4-2019, Door Controls - Closers.

.4 ANSI/BHMA A156.5-2020, Auxiliary Locks and Associated Products.

.5 ANSI/BHMA A156.6-2015, Architectural Door Trim.

.6 ANSI/BHMA A156.8-2015, Door Controls - Overhead Stops and Holders.

.7 ANSI/BHMA A156.13-2017, Mortise Locks and Latches Series 1000.

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

.9 ANSI/BHMA A156.18-2020, Materials and Finishes.

.10 ANSI/BHMA A156.19-2019, Power Assist and Low Energy Power Operated Swinging Doors.

.11 ANSI/BHMA A156.30-2020, Standard for High Security Cylinders.

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

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.3 Hardware List:

.1 Submit contract hardware list.

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

.3 Provide graphical representation of all hardware identified for every door.

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

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

1.3 PRE-INSTALLATION MEETING

.1 Prior to final review of product data and hardware lists, and prior to ordering of materials, convene a meeting for a full review of all door hardware. Meeting attendees to include Departmental Representatives, Contractor, and suppliers representative.

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 for locksets, door closers, electrified hardware, and fire exit hardware.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements:

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

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

1.7 DELIVERY, STORAGE AND HANDLING

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

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

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

.4 Storage and Handling Requirements:

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

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

.3 Replace defective or damaged materials with new.

.5 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section.

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 Mortise locks and latches: to ANSI/BHMA A156.13, series 1000 mortise lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.2 Lever handles and escutcheons: Sargent ‘LE1L’ design.

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

.4 Cylinders: to ANSI/BHMA A156.30, Medeco high security cylinders, 6 pin keyway complete with sidebar and patented protected keyway (drill and pick resistant). Certified UL437 high security cores.

.5 Finished to 26D satin chrome.

.6 Acceptable manufacturer: Sargent

.7 List of locksets:

a) ANSI F01; Sargent Model 8215-LE1L-26D (Passage)

b) ANSI F05; Sargent Model 8237-LE1L-26D (Classroom)

c) ANSI F07; Sargent Model 8204-LE1L-26D (Storeroom)

d) ANSI F22; Sargent Model 8265-LE1L-26D (Privacy) c/w ‘Occupied’ indicator

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, Grade 1, heavy duty, listed in Hardware Schedule, finished to 26D satin chrome.

.2 Hinges on select doors to be ‘NRP’ Type (non-removable pin) as scheduled.

.3 List of hinges:

a) FBB 168 114 x 114

b) FBB 168 114 x 114 NRP (non-removable pin)

.4 Acceptable manufacturers: Stanley, Hager, Monthard, McKinney, or approved alternate.

.3 Exit devices: to ANSI/BHMA A156.3, type and function as noted, Grade 1, finished to 626.

.1 Exit devices in fire-rated doors shall be ULC listed.

.2 Exterior trims to match Corbin Russwin ‘Newport N9’ or approved alternate.

.3 List of exit devices:

a) Rim type: Exterior trim, no cylinder lock, non-doggable, 626 finish.

.1 Acceptable manufacturers: Corbin Russwin ED5200 Series, Yale 7100 Series, Von Duprin 98-F/99-F Series, Dorma F9300 Series, or approved alternate.

b) Deadbolt-style latching with positive deadlocking by auxiliary bolt, standard width stile, no exterior cylinder lock, 626 finish.

.1 Acceptable manufacturers: Corbin Russwin ED5200S, Yale 7150 Series or approved alternate.

c) Deadbolt-style latching with positive deadlocking by auxiliary bolt, standard width stile, exterior cylinder lock, exterior trim, 626 finish.

.1 Acceptable manufacturers: Corbin Russwin ED5200S, Yale 7150 Series, or approved alternate.

d) Vertical rod, top and bottom latching, interior surface mounted, complete with stainless steel rod guard protectors, doggable by keyed cylinder, exterior trim complete with cylinder lock. Provide flush with finished floor strikes.

.1 Acceptable manufacturers: Corbin Russwin ED5400 Series, Yale 7110 Series, Von Duprin 9827/9927 Series, Dorma 9400 Series, or approved alternate.

e) Vertical rod, narrow stile, top and bottom latching, interior surface mounted, complete with top and bottom stainless steel rod guard protectors, non-doggable, exterior cylinder lock, no exterior trim. Provide flush with finished floor strikes.

.1 Acceptable manufacturers: Corbin Russwin ED4400 Series, Yale 7210 Series, Von Duprin 3327A/3527A Series, Dorma 9800 Series, or approved alternate.

f) Delay release with exterior trim and cylinder lock, electrified,15 - 60 second delay, visual indicator, nuisance delay time, min 85db siren, to CAN/CGSB-69.19.

.1 Acceptable product: Von Duprin CX Series, Corbin Russwin ED5200D Series, Yale 7100D Series, Dorma DE9000 Series, or approved alternate.

.4 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4, size in accordance with ANSI/BHMA A156.4, table A1, finished to 689.

.1 Grade 1, heavy duty, parallel arm, adjustable hydraulic back check, separate regulation of closing speed and latching speed, rack and pinion action.

.2 List of closers:

.1 LCN 4040XP with delayed action function.

.2 LCN 4040H with integral hold-open function

.3 Acceptable manufacturers: LCN, Sargent, Norton, Rixson or approved alternate.

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

.5 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule and as listed below, finished to 32D.

.1 Door protection plates: kick plate type, 1.27 mm thick stainless steel, bevelled edges, 300 mm high by 25 mm less than door width, 32D finish.

.2 Push plates: 1.27 mm thick stainless steel, bevelled edges, 125 mm wide by 400 mm high, finished to 32D.

.3 Pulls: 19 mm diameter “D” style, projecting 35 mm from door, height 300 mm, without rose.

.6 Auxiliary hardware: to ANSI/BHMA A156.16, as listed in Hardware Schedule and as listed below, finished to 26D,

.1 Door check chain: heavy duty compression springs, heavy duty welded steel chain, vinyl cover. 650 mm long, 26D finish.

.2 Wall stop: concave wall stop with concealed mounting, 62 mm diameter, 30 mm projection, cast brass with rubber bumper, 26D finish.

.1 Acceptable products: Hager 234, Richelieu 2205, approved alternate.

.3 Floor stop: to ANSI/BHMA A156.16, low dome stop, 45 mm diameter, 3.2 mm thick base, cast brass, 26D finish.

.1 Acceptable products: Hager 241, Richelieu 218, approved alternate.

.7 Thresholds:

a) 127 mm wide x full width of door opening, 6.4mm height, extruded aluminum, mill finish, plain surface.

b) 127 mm wide x full width of door opening, 12.7 mm height, stainless steel, mill finish, serrated surface, with thermal break of rigid PVC.

.8 Weatherstripping:

.1 Head and jamb seal:

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

.1 Acceptable manufacturer: Pemko 375CR, DraftSeal DS131R, KN Crowder W15, or approved alternate.

.2 Door bottom seal:

.1 Heavy duty, extruded aluminum frame and closed cell neoprene sweep, surface mounted, closed ends, adjustable, clear anodized finish.

.1 Acceptable manufacturer: Pemko 3151CR, DraftSeal DS135N, KN Crowder W11, or approved alternate.

.9 Sound Seals:

.1 Head and jamb seal: (use both types on frame for double seal system)

.1 Between door frame and face of door: self-adhesive silicone perimeter gasketing.

.1 Acceptable manufacturer: Pemko S773 and DraftSeal DSS99, or approved alternate.

.2 Surface mounted on frame, butting up to door: mechanically fastened, extruded aluminum frame and closed cell neoprene seal

.1 Acceptable manufacturer: Pemko 350_SR, DraftSeal DS340CN, or approved alternate.

.2 Door bottom seal:

.1 Auto door bottom: heavy duty, surface mounted, door seal of extruded aluminum frame and solid closed cell neoprene seal, full mortise, end, automatic retract mechanism when door is open, clear anodized finish.

.1 Acceptable manufacturer: Pemko 434_RL, DraftSeal DS342AN, or approved alternate.

.10 Latch Guard: Heavy gauge formed stainless steel plate cover for protect lock strike area, full length of door, through bolt mounting formed to suit mortised locksets and mortise locksets with electric strikes.

.11 Meeting Stile: surface mounted on door edge, mechanically fastened with torx security screws, extruded aluminum frame, solid neoprene seal, butt style installation for double door system.

.12 Barrier Free Door Operator and Actuators:

.1 To ANSI/BHMA A165.19.

.2 Operator supplier shall include transformer for power for actuators. Include two push plate operators, mounted on push and pull side of doors. Tie operation of door operator to release electric strike where electric strike is provided with hardware on door. Operator shall be able to be adjusted to reduce force required to open manually from 66 N to 40 N.

.3 Operator housing: aluminum extrusions complete with end caps. All structural sections shall have a minimum thickness of 4 mm and shall be fabricated of 6063-T5 aluminum alloys. Operator housing to extend over both doors.

.4 Control boxes: complete with electric strike relay and ability to be connected to the building security system.

.5 Power operator door switches with 150 x 915 mm, #4 satin finish stainless steel bump bar with engraved "barrier free" symbols and " PUSH TO OPEN" mounted in tamper resistant assembly installed by Factory Certified Personnel.

.6 Wall mounted switches: recess mounted switch and box, hard wired to operator housing. Mount operators on push and pull sides of doors as indicated.

.7 Provide one push button on each side of each power operated door

.8 Operation: to

.1 In conjunction with exit device and card reader. Coordinate installation and operation with exit devise and card reader.

.2 Public hours: Push button operates electric strike in door frame to release electric strike and activate power operator to open door.

.3 Secure hours: Push button is deactivated, electric strike is locked.

.4 Provide switch in operator housing to deactivate door operators when doors are locked by deadbolt.

.9 Provide switched line voltage to control box. Locate switch adjacent to box.

.10 Operator supplier shall be responsible for wiring of all low voltage wiring for controlling door. Electrical Division will provide 120V.

.11 Mount control box in location as directed by Departmental Representative.

.12 Acceptable manufacturers: Gyrotech 500, Horton, Stanley, or approved alternate.

2.3 MISCELLANEOUS HARDWARE

.1 Electric strike: To ANSI/BHMA A156.5, Grade 1, to accept locksets and exit devices scheduled. Heavy duty, stainless steel construction, dual voltage, fail secure operation unless noted otherwise, 630 finish. ULC listed for fire rated doors.

a) Acceptable product: SDC Uni-Flex 55-ABCDU-630 or approved alternate.

b) Acceptable product for double doors: HES 310-4-X Folger Adams Electric Strike for Surface Vertical Rod Exit Devices.

.2 Card reader: provided by security contractor.

.3 Combination card reader and keypad: provided by security contractor.

.4 Lock release system: refer to Electrical Drawings E3.2 and E3.3.

.5 Request to exit system, passive infrared and push button: provided by security contractor.

.6 Indexed key control cabinet: to ANSI/BHMA A156.5, wall mounted system, minimum 1.2 mm cold rolled steel, heavy duty continuous hinge, digital keypad locking system, enamel paint finish, colour to be selected by Departmental Representative from manufacturer's complete range. Key Cabinet and key control system shall accommodate all keys for this project plus 25%.

.7 Door viewer: one-way, ultra wide viewing angle, silver anodized finish. Mount 1.57m above floor level. Pre-cut holes by door manufacturer to maintain listing of fire rated doors.

.1 Acceptable product: ASD Doorscope DS238 or approved alternate.

2.4 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.

2.5 KEYING

.1 Doors to be master keyed, unless noted otherwise, and keyed differently. Keying schedule will be provided by Departmental Representative, including sub-master requirements.

.2 Supply keys in duplicate for every lock in this Contract, unless noted otherwise.

.1 Door 150.8.1 to be supplied with 3 keys.

.2 Doors 150.1.1, 150.1.4, 150.20.1, 150.20.2, 150.20.3 are to be supplied with 5 keys for each lockset.

.3 Supply 2 master keys for each master key group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Provide construction cores and permanent cores.

.6 Permanent cores to be 6 pin Medeco keyway complete with sidebar. Certified UL437 high security cores.

.7 Hand over all keys to Departmental Representative.

Part 3 Execution

3.1 INSTALLATION

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

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

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

.4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).

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

.6 Install key control cabinet.

.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 Install permanent cores and ensure locks operate correctly.

.2 Complete keying as per keying schedule.

3.2 ADJUSTING

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

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

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

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

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

.3 Remove protective material from hardware items where present.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

3.4 DEMONSTRATION

.1 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key to Departmental Representative.

.2 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

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

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

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

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

3.5 PROTECTION

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

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

3.6 SCHEDULE

Door 007

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 wall stop
1 closer

Door 105.1.1

1 exit device a) (fixed lever on Room 105.1 side)
3 hinges NRP
1 closer
1 wall stop

Door 105.1.2

1 exit device b) no exterior trim
3 hinges NRP
1 closer
1 wall stop (exterior)
1 threshold b)
1 set weatherstrip c/w door bottom seal
1 latch guard
1 kick plate
1 door contact (base building)

Door 105.2.1

1 lockset c) (ANSI F07 Storeroom)
(keyed to base building)
3 hinges
1 closer
1 wall stop
EAC (see Note 2 below)
1 door contact (base building)

Door 106.1

1 door contact

Door 150.1.1

2 exit devices d) (fixed lever on Corr 104)
6 hinges NRP
2 wall stops
1 electric strike b) – head mounted (see Note 1 below)
EAC (see Note 2 below)
2 door contacts
IDS (see Note 2 below)
2 meeting stiles
1 automatic door operator c/w associated activating devices to tie into card access system (see Note 3 below)

Door 150.1.2

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
1 kick plate

Door 150.1.3

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
1 kick plate

Door 150.1.4

1 exit device c) (fixed lever on Corr 102 side)
3 hinges NRP
1 closer
1 wall stop
1 electric strike a) (see Note 1 below)
1 latch guard
1 door viewer
EAC (see Note 2 below)
1 door contact
IDS (see Note 2 below)

Door 150.1.5

1 exit device f) (fixed lever on 150.5 side)
3 hinges NRP
1 closer
1 wall stop
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact

Door 150.2.1

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
1 lock release

Door 150.2.2

1 lockset a) (ANSI F01 Passage)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)

Door 150.3.1

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
1 lock release

Door 150.3.2

1 lockset a) (ANSI F01 Passage set)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)

Door 150.4.1

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)
1 electric strike
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact

Door 150.4.2

1 lockset c) (ANSI F07 Storeroom) egress from Rm 150.4
3 hinges
1 closer
1 floor stop
1 kick plate
1 electric strike a) (See Note 1 below)
EAC (see Note 2 below) (card access required on both sides of the door)
1 door contact

Door 150.5.1

1 exit device f) (with fixed lever on 150.5 side)
3 hinges
1 push plate
1 closer
1 wall stop
1 door contact
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)

Door 150.6.1

1 lockset c) (ANSI F07 Storeroom)
3 hinges NRP
1 closer
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)
2 kick plates
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact

Door 150.7.1

1 lockset c) (ANSI F07 Storeroom)

- Keys are not on master key system.
- Stamp keys with "Do Not Duplicate"

3 hinges
1 closer
1 wall stop
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
IDS (see Note 2 below)

Door 150.8.1

1 lockset b) ANSI F04 Classroom)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)

Door 150.9.1

1 lockset a) (ANSI F01 Passage)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)

Door 150.10.1

1 lockset a) (ANSI F01 Passage)
3 hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold a)

Door 150.11.1

1 lockset c) ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 kick plate
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
IDS (see Note 2 below)

Door 150.14.1

1 lockset d) (ANSI F22 Privacy)
3 hinges
1 electric strike a) (see Note 1 below)
1 kick plate
1 automatic door operator c/w associated activating devices to tie electric strike system (see Note 3 below)

Door 150.17.1

1 lockset c) (ANSI F07 Storeroom)
- Keys are not on master key system.
- Stamp keys with "Do Not Duplicate"

3 hinges NRP
1 closer
1 wall stop
1 kick plate
1 set sound seals c/w auto door bottom
1 threshold a)
1 door contact
IDS (see Note 2 below)
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)

Door 150.18.1

1 lockset c) (ANSI F07 Storeroom)
- Keys are not on master key system.
- Stamp keys with "Do Not Duplicate"

3 hinges NRP
1 closer
1 wall stop
1 door contact
1 kick plate
1 set sound seals c/w auto door bottom
1 threshold a)
IDS (see Note 2 below)
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)

Door 150.19.1

1 lockset c) (ANSI F07 Storeroom)
3 hinges
1 closer
1 wall stop
1 kick plate
1 door contact
1 electric strike
EAC (see Note 2 below)
REX (see Note 2 below)

Door 150.20.1

1 exit device c) (fixed lever on Vest 150.20 side)
3 hinges NRP
1 closer
1 wall stop
1 kick plate
1 latch guard
1 door viewer
1 set weatherstripping c/w door bottom seal
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
REX (see Note 2 below)
1 door contact
IDS (see Note 2 below)

Door 150.20.2 (existing aluminum pair doors)

2 exit device e)
2 pulls (on exterior)
1 keyed cylinder for exit device
1 door closer (non-operated door)
1 electric strike a) (see Note 1 below)
EAC (see Note 2 below)
2 door contacts
IDS (see Note 2 below)
1 automatic door operator c/w associated activating devices to tie into card access system (see Note 3 below)

Door 150.20.3 (existing aluminum pair doors)

2 exit devices e)
2 closers
Remove pulls and replace with blank covers
2 door contacts
IDS (see Note 2 below)

Door 170.1.1

6 hinges
Remainder of the hardware to be determined

Door 170.1.2

Existing hardware to remain

Door 170.2.1

1 lockset b) (ANSI F05 Classroom)
3 hinges

Note1: Prepare frame for installation of SDC Model 55 Uni-flex electric strike. Ensure deadbolt keepers are installed and aligned in door frame where there are locksets with deadbolts.

Note 2: Electronic Access Control (EAC), Intrusion Detection System (IDS), and Request to Exit System (REX) – Refer to Electrical Drawing E3.2 for Access Control Rough-In Details, Division 28, appended Z1 Security drawing, and appended Security Design Brief.

Note 3: Prep door with HES 310-4-X Folger Adams electric strike specified for handicap assist door latch release.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C542-05(2017), Standard Specification for Lock-Strip Gaskets.

.2 ASTM C1172-19, Standard Specification for Laminated Architectural Flat Glass.

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

.2 Canadian General Standards Board (CGSB)

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

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

.3 CAN/CGSB-12.8-2017, Insulating Glass Units.

.3 Glass Association of North American (GANA)

.1 GANA Glazing Manual - 2008.

.2 GANA Laminated Glazing Reference Manual - 2009.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:

.1 Convene pre-installation meeting 2 weeks prior to beginning work of this Section, with Contractor's Representative, Installer, Consultant, and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.3 Shop Drawings:

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

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

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

.1 Submit testing of glass under provisions of Section 01 45 00 - Quality Control.

1.4 CLOSEOUT SUBMITTALS

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

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

1.5 QUALITY ASSURANCE

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

.2 Mock-ups:

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

.2 Mock-up will be used:

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

.3 Locate where directed.

.4 Allow 48 hours for inspection of mock-up before proceeding with work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect glazing and frames from damages.

.3 Protect prefinished aluminum surfaces with strippable coating or wrapping.

.4 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section.

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

1.7 AMBIENT CONDITIONS

.1 Ambient Requirements:

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

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

Part 2 Products

2.1 MATERIALS

.1 Flat Glass:

.1 Float glass: to CAN/CGSB-12.3, glazing quality, thicknesses as indicated.

.2 Safety (tempered) glass: to CAN/CGSB-12.1, transparent, 6 mm (typical) and 10 mm thicknesses as indicated on schedules and drawings.

.1 Type 2-tempered.

.2 Class B-float

.3 Category 1

.3 Silvered mirror glass: refer to section 10 28 00 – Toilet and Bath Accessories.

.4 Laminated security glazing: to ASTM C1172

.1 Full surface layer of 0.762 mm polyvinyl butyral (PVB) interlayer compressed between two panes of 6 mm tempered glass unless noted otherwise, 12.7 mm overall thickness.

.2 Colour: clear.

.5 Spandrel glass: to CAN/CGSB-12.9, colour to be selkected. Thickness to fit within existing aluminum curtain wall framing and as determined by windload and size calculations, minimum 6mm thick glass.

.1 Type 1-tempered.

.2 Class A-float.

.3 Exterior pane tint: grey.

.4 Form L-laminated. Full surface layer of 0.762 mm polyvinyl butyral (PVB) interlayer compressed between two panes of tempered glass.

.5 Interior pane backpaint: grey colour. Provide samples for final colour selection by Departmental Representative.

.2 Plastic Film: in accordance with Section 08 87 23.16 - Security Films for application on existing windows.

.3 Plastic Film: in accordance with Section 08 87 33 - Decorative Films.

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

2.2 ACCESSORIES

.1 Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.

.2 Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.

.4 Glazing splines: as recommended by aluminum window manufacture, pressed steel frame manufacturer, and glazing supplier.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C542.

.7 Mirror attachment accessories:

.1 Concealed stainless steel clips.

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 Proceed with installation only after unacceptable conditions have been remedied.

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: INTERIOR - DRY METHOD (TAPE AND TAPE)

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

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

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

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

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

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

.7 Knife trim protruding tape.

3.4 INSTALLATION: MIRRORS

.1 Set mirrors with clips as per manufacturer’s written recommendation. Anchor rigidly to wall construction.

.2 Place plumb and level.

3.5 INSTALLATION: PLASTIC FILM

.1 Install plastic film in accordance with Section 08 87 23.16 - Security Films and Section 08 87 33 - Decorative Films.

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

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

.4 Install behind window stops. Remove and replace window stops on existing windows.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.1 Remove traces of primer, caulking.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

3.7 PROTECTION

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

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

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

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

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI Z97.1-2015 (R2020), 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 Underwriters laboratories of Canada (ULC)

.1 ULC-S332-93(R1998), Standard for Burglary Resisting Material.

1.2 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

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

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

.1 Submit one 450 x 450 mm sample of film installed on 6 mm thick clear plate glass.

.4 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.

.5 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 manufacturers 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.

1.4 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.

1.5 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.

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

.3 Ensure emptied containers are sealed and stored safely.

1.6 WARRANTY

.1 Work of this Section 08 87 23.16 - Security Films, the 12 months warranty period is extended to 10 years.

.2 Contractor hereby warrants that Security and Safety Film will stay in place without delaminating, peeling, or blistering, for 10 years.

.3 Ensure warranty includes items as follows:

.1 Maintaining adhesion properties without blistering, bubbling, or delaminating from glass surface.

.2 Maintaining appearance without discolouration.

.3 Removing, replace and reapply defective materials.

.4 In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Departmental Representative.

1.7 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. Triple laminated sheet.

.1 Type 2 Safety/Security/Seismic Film:

.1 Testing in accordance with ANSI Z97.1, CPSC 16 CFR 1201 CAT II, and ULC - S332.

.2 Thickness: 0.36 mm

.3 Tensile strength: 172 Mpa

.4 Surface burn: Class A

.5 Visible light transmittance: >80%.

.6 Solar heat gain coefficient: 0.80

.7 Acceptable manufacturers:

.1 3M Safegard S140 SH14CLARL

.2 Approved alternative.

Part 3 Execution

3.1 PREPARATION

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

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

.3 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of 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 and at sash frame to absorb moisture accumulation generated by film application.

3.2 INSTALLATION

.1 Field Installation of Security Film to Glass Windows:

.1 Install film in the same manner as tested.

.2 Remove any window stops and window sealing device.

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

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

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

.2 Cut film edges straight and square.

.3 Install film behind window stops.

.4 Cut edges in accordance with manufacturers written instructions, but no more than 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 butt factory edges only.

.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 form 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 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, window, and film using cleaning solution recommended by film manufacturer.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI Z97.1-2015 (R2020), 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 Government of Canada

.1 Canada Labour Code, WHMIS datasheets.

1.2 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 decorative films and include product characteristics, performance criteria, physical size, finish, and limitations.

.3 Shop drawings:

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

.4 Samples:

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

.2 Submit up to 3 - 500 x 500mm samples of film installed on 5 mm thick clear polycarbonate.

.5 Mock-Up

.1 Provide mock-up in accordance with Section 01 33 00 – Submittal Procedures.

.2 Install decorative film on max 3 window locations as selected by Departmental Representative. Decorative film for mock-up will be selected by Departmental Representative. Up to 3 different types of film material may be used in mock-up. Mock-up will determine the selection of the material to be ordered.

.3 Approved mock-up may remain in place.

1.3 CLOSEOUT SUBMITTALS

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

.1 Provide operation and maintenance data for window film for incorporation into manual.

.2 Follow manufacturers 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.

1.4 QUALITY ASSURANCE

.1 Health and Safety:

.1 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Canada Labour Code.

1.5 DELIVERY, STORAGE AND HANDLING

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

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

.3 Store materials in accordance with manufacturers written instructions.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

1.7 WARRANTY

.1 Contractor hereby warrants that Decorative Films will stay in place without delaminating, peeling or blistering for 10 years.

.2 Ensure warranty includes items as follows:

.1 Maintaining adhesion properties without blistering, bubbling, or delaminating from glass surface.

.2 Maintaining appearance without discolouration.

.3 Removing, replace and reapply defective materials.

.4 In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Departmental Representative.

Part 2 Products

2.1 MATERIALS

.1 Polyester.

.2 Abrasion resistant coating.

.3 Release liner.

.4 Acrylic pressure sensitive adhesive.

.5 Film thickness: minimum 2.76 mil.

.6 Pattern: to be selected from manufacturers full range of patterns and gradients.

2.2 TYPE 1 – DECORATIVE

.1 Height: as shown in drawings.

.2 Obscuring percentages:

.1 Level 1: vision obscuring approximately 40%

.2 Level 2: vision obscuring approximately 60%

.3 Level 3: vision obscuring approximately 80%

.4 Level 4: vision obscuring approximately 100%

.3 Colour: white.

.4 Pattern: selected by Departmental Representative from full range of manufacturers patterns.

2.3 TYPE 2 – PRIVACY FILM

.1 Obscurity: vision obscuring approximately 90%.

.2 Colour: selected by Departmental Representative from manufacturer's full range of film.

.3 Pattern: selected by Departmental Representative from manufacturer's full range of film.

.4 Compatibility: must be able to be applied directly to existing glazing, existing security film and/or new security film.

.5 Refer to drawings for heights.

2.4 TYPE 3 – DECORATIVE

.1 Pattern and height: as shown in Drawings.

.2 Colour: selected by Departmental Representative from manufacturer's full range of film.

.3 Acceptable product: 3M 7725SE-314 Crystal Glass Dusted Crystal or approved alternate.

Part 3 Execution

3.1 PREPARATION

.1 See drawings and specifications for locations of decorative film.

.2 Clean surface of glazing before beginning installation using neutral cleaning solution. Ensure no deleterious material adheres to glass.

.3 Ensure dust, grease, and chemical residue are removed from surface of glazing before installation of film. Examine 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. Correct deficiencies as required to acceptance of Departmental Representative.

.4 Before beginning Work, place absorbent material on windowsill or at sash frame to absorb moisture accumulation generated by film application.

3.2 INSTALLATION

.1 Do not proceed with installation until mock-ups are approved.

.2 Field Installation of Film to glazing:

.1 Remove window stops prior to installation of film.

.2 Install film to glazing ensuring no blisters, bubbles, scratches, or distortions.

.3 Cut film edges straight and square within 3mm of edge of glazing sheet.

.4 Ensure film is installed behind window stops.

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

.6 Apply and attach film to glazing in accordance with manufacturer's written instructions.

.7 Apply decorative film on top of security film as noted in drawings. Ensure films and adhesives are compatible with each other.

.8 Remove left over material form 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 without glazing replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 1.0 m minimum after 30-day period.

3.4 FINAL CLEANING

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

3.5 SCHEDULE

.1 Refer to Section 08 90 10 - Door, Frame and Hardware Schedule.

.2 Refer to drawings for locations and sizes.

END OF SECTION

General notes:

.1 This schedule is to be read in conjunction with the Drawings and applicable Specification Sections**.**

.2 Refer to Section 08 71 00, Door Hardware for hardware groups.

.3 Refer to Drawings for door and frame types

.4 Refer to Electrical Drawings for Card reader rough-ins, door contacts, power operators and associated power. Hardware manufacturer/installer shall be responsible for making all low voltage connections.

.5 Verify all door and frame sizes prior to ordering.

Door No.	Door				Frame			Rating (Min.)	Glass	Additional Requirements
	Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.			
Basement										
007	900 x 2150	E	HM	PT3	F1	PS	PT3		TG	
Main Floor										
105.1.1	900 x 2150	D	HM	PT7	F1	PS	PT3	90 MIN	-	
105.1.2	900 x 2150	D	HMI	PT7/ PT10	F1	PS	PT3/ PT10	-	-	
105.2.1	900 x 2150	D	HM	PT3	F1	PS	PT3	-	-	
106.1	Existing	-*	-	-	-	--		-	-	Additional hardware as per Section 08 71 00
150.1.1	2 - 900 x 2150	F*	AL	AA	F6	AL	AA	0-HR	LG	
150.1.2	900 x 2150	B*	SCW	S/V	F1	PS	PT	-	TG	
150.1.3	900 x 2150	B*	SCW	S/V	F1	PS	PT33	-	TG	
150.1.4	900 x 2150	A*	HM	PT3	F1	PS	PT3	0-HR	-	
150.1.5	900 x 2150	B*	SCW	S/W	F1	PS	PT	-	TG	
150.2.1	900 x 2150	C*	SCW	S/V	F2	PS	PT3	-	-	Decorative film for door glazing and sidelite
150.2.2	900 x 2150	C	SCW	S/V	F4	PS	PT3	-	TG	10mm tempered glass for sidelite
150.3.1	900 x 2150	C*	SCW	S/V	F2	PS	PT3	-	-	Decorative film for door glazing and sidelite
150.3.2	900 x 2150	C	SCW	S/V	F4	PS	PT3	-	TG	10mm tempered glass for sidelite
150.4.1	900 x 2150	C*	SCW	S/V	F2	PS	PT3	-	TG	Decorative film for door glazing and sidelite
150.4.2	900 x 2150	B*	SCW	S/V	F1	PS	PT3	-	TG	
150.5.1	900 x 2150	B*	SCW	S/V	F1	PS	PT3	-	TG	
150.6.1	900 x 2150	B*	SCW	S/V	F1	PS	PT3	-	TG	
150.7.1	900 x 2150	D*	HM	PT3	F1	PS	PT3	-	-	
150.8.1	900 x 2150	A	SCW	S/V	F2	PS	PT3	-	-	Decorative film for sidelite
150.9.1	900 x 2150	C	SCW	S/V	F1	PS	PT3	-	TG	Decorative film for door glazing

Door No.	Door				Frame			Rating (Min.)	Glass	Additional Requirements
	Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.			
Main Floor continued										
150.10.1	900 x 2150	C	SCW	S/V	F1	PS	PT3	-	TG	Decorative film for door glazing
150.11.1	900 x 2150	A*	SCW	S/V	F1	PS	PT3	-	-	
150.14.1	900 x 2150	A*	SCW	S/V	F1	PS	PT3	-	-	
150.17.1	900 x 2150	D*	HM	PT3	F1	PS	PT3	-	-	F5 frame and laminated security glass for east partition
150.18.1	900 x 2150	D*	HM	PT3	F1	PS	PT3	-	-	
150.19.1	900 x 2150	B*	SCW	S/V	F1	PS	PT3	-	TG	
150.20.1	900 x 2150	D*	HM	PT3	F1	PS	PT3	-	TG	
150.20.2	Existing	-*	-	-	-	-	-	-	-	Additional hardware as per Section 08 71 00
150.20.3	Existing	-*	-	-	-	-	-	-	-	Additional hardware as per Section 08 71 00
170.1.1	2 – 900 x 2150	E	HM	PT3	F1	PS	PT3	-	-	
170.1.2	Existing	-	-	-	-	-	-	-	-	Existing hardware to remain
170.2.1	900 x 2150	D	HM	PT3	F1	PS	PT3	-	-	

Abbreviations:

AA – Anodized Aluminum
AL – Aluminum
HM – Hollow Metal Door (08 11 00)
HMI – Hollow Metal Insulated (08 11 00)
LG – Laminated Security Glass (08 80 00)
PS – Pressed Steel Frame (welded) (08 11 00)
PT – Paint (09 91 13 & 09 91 23)
TG – Tempered Glass (08 80 00)
SCW – Solid Core Wood Door (08 14 16)
S/V – Stain and Varnish (09 91 23)

Notes:

* denotes a frame with special security requirements, refer to Electrical drawings