PART 1 GENERAL

1.1 REFERENCES

.1 American National Standards Organization (ANSI) / Steel Door Institute (SDI)

.1 ANSI/SDI A250.8-14, Recommended Specifications for Standard Steel Doors and Frames.

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

.1 ASTM A653/A653M-17, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A924 / A924M-17a, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.3 ASTM D4726-15, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors.

.3 Canadian Standards Association (CSA International)

.1 CSA W47.1-09(R2014), Certification of companies for fusion welding of steel, Includes Update No. 3 (2011), Update No. 5 (2012).

.2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association (CSDMA)

.1 CSDMA, Guide Specification for Installation and Storage of Hollow Metal Doors and Frames, 2016.

.2 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2016.

.5 National Fire Protection Association (NFPA)

.1 NFPA (Fire) 80, Standard for Fire Doors and Other Opening Protectives, 2016 Edition.

.6 Underwriters' Laboratories of Canada (ULC)

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

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

.3 CAN/ULC S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Division 01: Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer’s printed product literature, specifications and data sheets for each type of door and frame specified.

.3 Shop Drawings:

.1 Indicate general construction of each type of door and frame, configurations, material, material thickness, jointing methods, mortises, reinforcements, anchors, arrangement of hardware, fire ratings, finish and special features.

.2 Reference door and frame types to Door Schedule. Indicate door numbers where applicable.

1.3 QUALITY ASSURANCE

.1 Manufacturer/Fabricator: member in good standing of the Canadian Steel Door and Frame Manufacturer's Association.

.2 Installer: Use installers who are experienced with the installation of hollow metal doors and frames of similar complexity and extent to that required for the Project.

.3 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled:

.1 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.

.2 Fabricate all rated doors and frames to labelling authority standard.

.4 Manufacture door and frame assemblies to ANSI/SDI A250.8.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store and handle materials in accordance with Division 01: Common Product Requirements, and as follows:

.1 Receive and store materials as recommended by materials manufacturer.

.2 Adequately protect surfaces from damage during moving, handling and storage.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

.1 Perform work in accordance with CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, except as otherwise specified herein.

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

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

2.2 MATERIALS

.1 Steel:

.1 Doors and frames: coated steel sheets to ASTM A924/M924; coating designation to ASTM A653/A653M: Commercial Steel (CS), Type B, ZF180 galvannealed; stretcher levelled.

.2 Nominal Base Metal Thickness Requirements:

.1 Frames: refer to frame fabrication requirements specified in this section.

.2 Doors: refer to door fabrication requirements specified in this section.

.3 Hardware Reinforcement for Doors and Frames: Carbon steel, welded in place, prime painted, to the following minimum nominal thicknesses:

Hardware Reinforcement	Door (mm)	Frame (mm)
Pivot Hinge:	4.20	4.20
Mortise Hinge:	3.51	3.51
Mortise or Bored Lock or Deadbolt:	1.98	1.98
Flush or Surface Bolt Front:	1.98	1.98
Surface or Concealed Closer:	2.74	2.74
Strike Reinforcements:	1.98	1.98
Hold Open Arm:	1.98	1.98
Electronic Hardware Reinforcements:	1.98	1.98
Pull Plates and Bars:	1.30	1.30
Mortar Box:	--	0.84
Surface Exit Devices:	1.98	1.98
Door Surface Hardware Reinforcements:	1.30	1.30
Frame surface hardware reinforcements:	2.74	2.74

.3 Door Core Materials

.1 Polystyrene: Rigid extruded, closed cell insulation, fire retardant treated meeting the requirements of ULC S701, Type 4, minimum thermal resistance RSI 0.8/25 mm thickness.

2.3 ADHESIVES

.1 Polystyrene cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.2 Interlocking Edge Seam Adhesive: fire-resistant, resin-reinforced polychloroprene, high-viscosity, sealant/adhesive.

2.4 ACCESSORIES

.1 Door silencers (bumpers): Black neoprene, to ANSI/BHMA A156.16 Type 6-180; three silencers on strike jambs of single door frames; two silencers on heads of double door frames; screw fastener applied. Stick on bumpers are not acceptable.

.2 Exterior top and bottom caps: steel.

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

.4 Fasteners: type 304 stainless steel screws with countersunk flat head.

.5 Sealant: Section 07 92 00 – Joint Sealants.

2.5 FOAM-IN-PLACE INSULATION

.1 Foam-in-place insulation: to Section 07 21 19 - Foamed-in-Place Insulation.

2.6 FABRICATION GENERAL

.1 Welded construction: assemble units by welding in accordance with CSA W59 to produce a finished unit square, true, and free of distortion. Welding shall be continuous unless specified otherwise. Welding shall be undertaken only by a fabricator fully approved by the Canadian Welding Bureau to the requirements of CSA W47.1.

.2 Permit access by an approved inspection and testing company for the purpose of inspecting at random, doors being fabricated for this project.

.3 Make provisions in doors and frames to suit requirements of trade or section providing electrically operated hardware or security devices. Provide removable plates or knock outs for electrical contacts. Provide junction boxes on security door frames as required for door strikes, mag locks and door contacts. Ensure frames arrive on site prepared for wiring.

.4 Fabricate galvanized steel channels to reinforce frames as required for size, and for fire protection rating requirements. Extend reinforcements from floor to structure above. Design top connection to accommodate structural deflection. Conceal reinforcements in frames.

2.7 FRAME FABRICATION: WELDED

.1 Fabricate frames in accordance with CSDMA specifications.

.1 Supply frames to suit construction conditions and indicated dimensions.

.2 Provide welded type pressed steel frame components in minimum thickness of 1.5mm (16 gauge).

.3 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile and grind welds, flush and sand to smooth uniform surface; tabbed and spot-welded connections are not acceptable.

.4 Provide recessed sheet steel panels, bases, and covers, where indicated, minimum 2 mm thick. Weld panels, bases, and covers to perimeter framing in concealed manner where possible; where welds are exposed, provide continuous welds. Reinforce or laminate panels, bases, and covers as required to provide a flat uniform surface.

.5 Fill concealed void at exterior frames, between frame and rough opening, with mineral fibre insulation.

.6 On factory-assembles frame product, provide two removable steel jamb spreaders welded to the base of the jambs or mullions to maintain alignment during shipping and handling. Remove spreaders prior to anchoring frames to floor.

.7 Brace frame units to prevent distortion and protect finish during shipment.

.8 Install three bumpers in interior frames at single opening latch jambs, and two at double door frame heads.

.9 Provide mullions and rails of closed construction type. For fixed condition, attach members to frame with butt-welded joints. For removable condition, attach members with removable mullion anchors.

.10 Conceal fastenings unless otherwise indicated.

.11 Fasten removable stops by counter-sunk Phillips head screws at approximately 225mm (9") on centre symmetrically space on stop length.

.12 Form Door stops and glass stops integrally with frame and not added as a separate profile.

.13 Anchor frames to floor by 1.6 mm (0.063") thick adjustable base clips, welded to frame and Provide with 2 holes for floor anchorage.

.14 Provide minimum 3 mm anchors for connection to adjacent floor and wall construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite the strike jamb. On each jamb, install 2 anchors for openings up to and including 1525 mm (60") high and install 1 anchor for each additional height of 610 mm (24") of height or fraction thereof, except as indicated below. Frames placed in previously placed concrete, masonry or structural steel shall be Provided with anchors located not more than 150 mm (6") from top and bottom of each jamb, and intermediate anchors at 660 mm (26") on centre maximum. Fasteners for such anchors shall be provided by Section 06 20 00. Anchors for stainless steel frames shall be Type 316L stainless steel.

.15 Secure frames set in previously constructed concrete or masonry openings by countersunk expansion bolts at same centres as for adjustable Tee wall anchors. Reinforce frame at fastening location to prevent indentation of frame by fastening device. Provide steel sleeves between frame and wall.

.16 Protect strike and hinge reinforcements using guard boxes welded to frames at masonry construction. Provide guard boxes welded to frame at hinges, strikes, door alarm contacts, switches, and other hardware items recessed into frames.

.17 Reinforce head of frames wider than 1220mm (48") with steel angles or channels.

.18 Prepare door frames for security system contacts. Coordinate with Division 26.

.2 Provide welded-on drip at head of exterior door frames.

2.8 DOOR FABRICATION: GENERAL

.1 Doors: swing type, flush, with provision for openings as indicated.

.2 Fabricate doors with longitudinal edges locked seamed with adhesive and spot-welded for larger doors. Seams: not visible, grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish. Bevel both stiles of single doors 1 in 16.

.3 Provide fixed transoms, side panels and base panels where indicated or scheduled, of same materials, gauge, thickness, construction and finish as door. Reinforce transoms and panels to prevent oil canning. Install transoms and panels with concealed fastenings and reinforce to accommodate hardware as required. Seal joint between transom or panel airtight. Provide accurately formed ship lap joint between door and transom panel where no transom rail occurs.

.4 Mortise, reinforce, drill, and tap doors to receive templated hardware, security, and electrical devices.

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

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

.7 Cut-outs: Where openings are required, provide integrally formed cut-outs with steel framing, and closely fitted steel glass and grille stops, as required. Mitre corners of stops. Drill and countersink fasteners symmetrically at 150 mm o.c. Supply and install coated steel stops, with same coating type and thickness as doors. Screw stops in place.

.8 Supply and install steel vent grilles in doors where indicated.

.9 Fabricate doors with a clearance of 3 mm to the frame and 6 mm to completed floor finish or threshold, except at openings in non-fire rated separations where undercuts are indicated.

.10 Provide flush top and bottom steel edge on exterior doors and doors to stair shafts.

.11 Provide touch-up primer at areas where zinc coating has been removed or damaged during fabrication.

.12 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.

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

2.9 FABRICATION: EXTERIOR DOORS

.1 Face sheets: Minimum 1.6 mm base steel sheet thickness.

.2 Stiffened, insulated and sound deadened with polystyrene core laminated under pressure to each face sheet.

.3 Longitudinal edges mechanically interlocked, adhesive assisted with edge seams continuous welded, filled, and sanded flush with no visible seam.

2.10 LAMINATED CORE CONSTRUCTION

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

2.11 EXTERIOR FRAMES

.1 Insulate exterior frame components with polyurethane foam-in-place insulation.

2.12 PRIMER

.1 Touch-up primer: Commercial rust inhibitive primer, shop prime coat doors and frames before delivery; grey or red coloured primer; in accordance with Section 09 91 00 – Painting. Clear primer not acceptable; provide primer for field touch-up.

2.13 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 00 - Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

.2 Colour: as selected by Departmental Representative from manufacturer’s colour selections; submit colour cards for initial selection prior to ordering materials.

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 EXAMINATION

.1 Verify condition and dimensions of previously installed work upon which this Section depends. Report defects to Departmental Representative. Commencement of work means acceptance of existing conditions

3.3 INSTALLATION GENERAL

.1 Install doors and frames to, CSDMA Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

3.4 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 Install hollow metal window frames at interior locations as indicated.

.6 Install door silencers.

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

.8 Maintain continuity of air barrier and vapour retarder.

3.5 DOOR INSTALLATION

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

.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, non-combustible sill, or thresholds: 6 mm.

.3 Adjust operable parts for correct function.

3.6 FINISH REPAIRS

.1 Touch-up areas where galvanized coating has been removed or damaged with primer.

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

3.7 ADJUSTING

.1 Adjust doors for smooth and balanced door movement.

3.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Division 01: Construction/Demolition Waste Management and Disposal. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.9 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 The Aluminum Association Inc. (AA)

.1 AA DAF-45-2003(R2009), Designation System for Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).

.1 AAMA 2604-13, Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

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

.1 ASTM A653/A653M-15e1, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A1008/A1008M-15, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

.3 ASTM D523-14, Standard Test Method for Specular Gloss.

.4 ASTM D822/D822M-13, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.5 ASTM E283-04(2012), Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.4 Canadian General Standards Board (CGSB)

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

.2 CAN/CGSB 12.8-97 and amendments, Insulating Glass Units.

.5 Canadian Standards Association (CSA)

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

.6 Door & Access Systems Manufacturers Association International (DASMA)

.1 ANSI/DASMA 102-2011, Specifications for Sectional Overhead-Type Doors.

.7 National Electrical Manufacturers Association (NEMA)

.1 NEMA 250-2014, Enclosures for Electrical Equipment (1000 Volts Maximum).

.2 NEMA MG 1-2014, Motors and Generators.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with Contractor, Consultant, installer, manufacturer’s representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with other building trades.

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

1.3 PERFORMANCE AND DESIGN REQUIREMENTS

.1 Design exterior door assembly to withstand wind load of 1 kPa with a maximum horizontal deflection of 1/240 of opening width.

.2 Air Infiltration: Maximum rate not more than 0.025 L/s/m^2 at 25 kph and 0.04 L/s/m^2 at 40 kph when tested in accordance with ASTM E283.

.3 Design door assembly to withstand minimum 100,000 cycles per annum, and 5-years total life cycle.

.4 Wiring Connections: Requirements for electrical characteristics: 115 volts, single phase, 60 Hz.

.5 Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.4 ACTION AND INFORMATION SUBMITTALS

.1 Submit product data in accordance with Division 01: Submittal Procedures:

- .1 Submit manufacturer's printed product literature, specifications and datasheets.
- .2 Preparation instructions and recommendations.
- .3 Storage and handling requirements and recommendations.
- .4 Installation methods.
- .5 Door operator motor information, indicating nameplate data and ratings, characteristics, and mounting arrangements.

.2 Submit shop drawings in accordance with Division 01: Submittal Procedures:

- .1 Indicate sizes, service rating, types, materials, operating mechanisms, hardware and accessories, required clearances and electrical connections.

.3 Manufacturer's Certificates: Certify products meet or exceed specified requirements.

.4 Submit warranties.

.5 Manufacturers' Field Reports: submit copies of manufacturers field reports.

1.5 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for overhead door hardware for incorporation into manual specified in Division 01: Closeout Submittals.

1.6 QUALITY ASSURANCE

.1 Installer Qualifications: Company or person specializing in installation of sectional overhead doors with 5 years documented experience and authorized by door manufacturer.

.2 Manufacturer: Obtain sectional overhead doors and component materials through one source from single manufacturer and as follows:

- .1 Obtain operators from sectional overhead door manufacturer.
- .2 Obtain controls from sectional overhead door manufacturer.

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

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

.5 Regulatory Requirements: electrical components, devices and accessories are listed and labelled by Canadian Standards Association (CSA), and acceptable to authority having jurisdiction.

1.7 COORDINATION

.1 Coordinate installation with work of other trades as required for complete, properly functioning systems.

.2 Provide setting drawings, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, items with integral anchors, conduit, and other items that are to be embedded in concrete, pavement or masonry.

.3 Deliver items for building-in to site in time for installation.

.4 Coordinate layout and installation of equipment with connections to power supplies, door operators, vehicle loop detector system, and security access control system (card reader system) as required.

1.8 WARRANTY

.1 Provide manufacturers 10-year warranty against delamination of panels, and manufacturer's 5-year guarantee that assembly will withstand minimum 100,000 cycles per annum, and 5-years total life cycle.

.2 Contractor agrees to correct any deficiencies found in the work performed for a period of 2-years from the date of Substantial Performance.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Provide products with recycled content.

.2 Provide products that have been extracted and manufactured within 800 km if shipped by truck or 2400 km if shipped by rail.

2.2 OVERHEAD SECTIONAL METAL DOORS

.1 Insulated Steel Sectional Overhead Doors: Units shall have the following minimum characteristics:

.1 Door Assembly: Insulated steel door assembly with rabbeted meeting rails to form weathertight joints and provide full-width interlocking structural rigidity.

.1 Galvanizing: hot-dip, to ASTM A653/A653M.

.2 Panel Thickness: 2 inches (51 mm).

.3 Exterior Surface: Flush.

.4 Exterior Steel: 16-gauge hot-dip galvanized.

.5 Back Cover: 26-gauge hot-dip galvanized steel.

.6 Center and End Stiles: 16-gauge steel.

.7 Springs: rated for 100,000 cycles.

.8 Insulation: standard expanded polystyrene, to R-value of 7.35 (1.29 W/m^2).

.2 Finish and Colour: factory-applied powder coat system, to AAMA 2604; colour as determined by Consultant.

.3 Windload Design: Provide to meet the Design/Performance requirements specified.

.4 Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.

.5 Lock: Locking mechanism designed to maintain security for exterior while permitting break out when impacted from the inside. Coordinate with Division 26.

.6 Weatherstripping:

.1 Flexible bulb-type strip at bottom section.

.2 Flexible Jamb seals.

.3 Flexible Header seal.

.7 Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

2.3 ELECTRICAL OPERATORS

.1 Electrical jack shaft side mounted type operator

.2 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval.

.3 Motor: Industrial ¾ HP, 208/230 Volt Three Phase; with automatic reset thermal overload protection, high starting torque, continuous duty motor; separate from reduction mechanism; factory pre-wired motor controls, starter; rated for door size and usage classification.

.4 Operator Controls:

.1 Remote pushbutton stations: surface mounted, in 2 locations, with "OPEN STOP CLOSE" "SECURITY LOCKOUT" designations on pushbuttons in English and French, key operated.

.5 Safety switch: combination roll rubber with limit switches for full length of bottom rail of bottom section of door, to reverse door to open position when coming in contact with object on closing cycle.

.6 For jack shaft operators:

.1 Provide floor level disconnect device to allow for manual operation in event of power failure.

.2 Equip Operator with:

.1 Electrical interlock switch to disconnect power to operator when in manual operation.

.2 Built in chain hoist for manual operation in event of power failure.

.7 Automatic illumination, complete with time delay, self extinguishing.

.8 Door speed: 300 mm per second.

.9 Control transformer: for 24 VAC control voltage.

.10 Mounting brackets: galvanized steel, size and gauge to suit conditions.

.11 Obstruction Detection Device: Equip each motorized door with external automatic safety sensor capable of protecting full width of door opening; activation of sensor immediately stops and reverses downward door travel, as follows:

.1 Pressure Sensor Edge: Self monitoring Electrically actuated located within astragal or weather stripping mounted to bottom bar; contact with sensor immediately stops and reverses downward door travel, connect to control circuit using manufacturer's standard take up reel or self coiling cable.

2.4 WINDOWS

.1 Windows: Double glazed insulating windows fabricated in accordance with CAN/CGSB 12.8, set in EPDM rubber or neoprene glazing channel, and as follows:

.2 Stops: Removable stops of same material as door section frames.

.3 Layout: windows as indicted; refer to elevations

.4 Size (each): 300 mm high x 600 mm wide.

.5 Glass:

.1 Clear Tempered Glass: to CAN/CGSB 12.1, Type 2 Tempered, Class B Float Glass, Category: II - 540 J impact resistance, each pane 4 mm thick with 13 mm airspace, overall insulating glass unit thickness, 21 mm.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer’s printed installation instructions, standard and job-specific details, technical data sheets, and specifications.

3.2 EXAMINATION

.1 Do not begin installation until openings have been properly prepared.

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

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

3.3 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.4 INSTALLATION

.1 Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

.2 Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

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

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

.5 Fit and align door assembly including hardware.

.6 Coordinate installation of electrical service with Division 26. Complete power and control wiring from disconnect to unit components.

.7 Ensure connection to embedded detection loops and the mounted access control unit (card reader) at the exit and entrance ramps respectively.

3.5 TESTING, ADJUSTING AND 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 Perform the following field tests and inspections, prepare test reports, and make the adjustments required for smooth and proper function and operation:

- .1 Comply with the requirements of section 01 75 00 - Starting and Adjusting.
- .2 Confirm proper motor rotation and unit operation after electrical circuitry has been energized.
- .3 Test controls and safeties and adjust to suit field conditions.
- .4 Report any damaged and malfunctioning controls and equipment.
- .5 Remove and replace equipment where test results indicate that they do not comply with specified requirements.
- .6 Adjust door assembly to smooth operation and in full contact with weatherstripping.

.4 Schedule site visits to review Work at stages listed:

- .1 After delivery and storage of products, and when preparatory Work upon which Work of this Section depends is complete, but before installation begins.
- .2 Upon completion of Work, after cleaning is carried out.

.5 Obtain reports within five days of review and submit.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

3.7 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION