
Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 07 44 56 – Mineral Fiber Reinforced Cementitious Panels.
- .3 Division 26 – Electricity, for power supply.

1.2 REFERENCES

- .1 The Aluminum Association Inc. (AA).
 - .1 Aluminum Association Designation System for Aluminum Finishes-DAF 45-03.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .3 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA G164-FM92 (C1998), Galvanizing of Irregularly Shaped Articles.

1.3 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 Design door assembly to withstand minimum 15,000 cycles per annum. Provide manufacturer's certificate attesting to compliance of springs and operators with this requirement.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets 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 sizes, service rating, types, materials, operating mechanisms, glazing locations and details, hardware and accessories, required clearances and electrical connections.
- .3 Verify precise dimensions of openings prior to preparation of shop drawings.
- .3 Manufacturer's instructions:
 - .1 Submit manufacturer's installation instructions.
- .4 Submit copies of manufacturer's field inspection reports.

1.5 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for sectional metal doors and hardware for incorporation into manual listed in Section 01 78 00 – Closeout Submittals.

1.6 QUALITY ASSURANCE

- .1 Test reports: submit test reports certifying compliance of products and materials with requirements for physical characteristics and performance criteria.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Packaging Waste Management: remove for reuse and return in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.8 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Partie 2 Products

2.1 MATERIALS

- .1 Galvanized steel sheet: commercial quality Z275 zinc coating to ASTM A653M.
- .2 Thermal insulation: polyurethane non-CFC injected foam insulation.
- .3 Cable: multi-strand galvanized steel aircraft cable.

2.2 DOORS

- .1 Four-panel sectional door: 45 mm foamed-in-place polyurethane core/sheet metal sandwich panel. Cold laminated sheets with thermal break separating each section's outside and inside skins. Double contact intersection moulding and PVC weatherstripping. Thermal resistance as indicated.
 - .1 Doors: 0.40 mm sheet metal (26 gauge) on outside and 0.40 mm (26 gauge) on inside, 45 mm thick. $R_{si} = 2.8$.
 - .2 Colour and finish: Polyester paint; outside paint to match adjacent exterior finish with cement composite panels, as selected by Departmental Representative.
 - .3 Surface finish: concealed attachments.
 - .4 Dimensions: 2160 mm x 2440 mm high.
- .2 Reinforced according to manufacturer's standards to meet calculation criteria.

2.3 HEAVY DUTY INDUSTRIAL HARDWARE

- .1 All hardware calculated by manufacturer to meet indicated calculation criteria.
- .2 Track: configured for use as indicated, 75 mm wide, hot-dipped galvanized steel (600 g/m²) 12 gauge or less, spring counter balance with standard brackets.
 - .1 Track supports: continuous, 12 gauge.
 - .2 Track guards: 1,500 mm high, 5 mm thick formed pre-painted steel sheet.
 - .3 Industrial hardware including components described in this Section.
- .3 Rollers: full floating grease packed hardened steel, ball bearing 75 mm diameter solid steel tire, width corresponding to tracks.
- .4 Bottom corner brackets: extra heavy duty, cast iron, adjustable.
- .5 Hinge: galvanized steel, 3 mm thick minimum, galvanized steel, graduated to ensure weathertight seal at jambs. Double end.
- .6 Spring counter balance: oil tempered steel, 10,000 cycles, 25 mm shaft, ball bearing support. Supply and install sufficient plates to support springs and door.
- .7 Cable: galvanized steel aircraft cable, 7 x 19, calculated for indicated operating frequency and safety factors as required for installation type.

- .8 Accessories:
 - .1 Weatherstripping: extruded aluminum and extreme cold resistant vinyl installed on jambs and head.
 - .2 Extruded neoprene weatherstrip, U-type, full width, integrated security contact to stop and lift door, in accordance with manufacturer's instruction.
 - .3 Security photo cell and mirror; infrared beam to stop and lift door.
 - .4 Heavy duty stop, for cable and torsion spring.
 - .5 Ball bearing bracket, UCFL.
 - .6 Electric interlock cuts power on operator when locks are in place.
 - .7 Do not install hardware on outside of door.
- .9 Finish ferrous hardware items with minimum zinc coating of 600 g/m² to CAN/CSA-G164.

2.4 ACCESSORIES

- .1 Overhead horizontal track and operator supports: galvanized steel, type and size to suit installation.
- .2 Track guards: 5 mm thick formed sheet 1,500 mm high track guards.
- .3 Chain hoist.

2.5 SECURITY

- .1 Able to stop door immediately if cable breaks on door free fall.

2.6 ELECTRICAL OPERATOR

- .1 Wall mounted electrical operator: auxiliary shaft, 12 cycles and more per hour.
- .2 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval with CSA enclosure type 1.
- .3 Power supply: 208V, 3 phase.
 - .1 Motor: 1 HP.
- .4 Controller units with integral motor reversing starter, solenoid operated brake, 3 heater elements for overload protection, including pushbuttons and control relays as applicable.
- .5 Operation:
 - .1 Remote pushbutton stations: surface mounted, in indicated locations, with "OPEN-STOP-CLOSE/OUVRIR-ARRÊT-FERMER" designations on pushbuttons in English and French.
- .6 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.

- .7 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.
- .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.

Partie 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Install doors and hardware in accordance with manufacturer's written instructions.
- .2 Rigidly support rail and operator and secure to supporting structure.
- .3 Touch-up steel doors with primer where galvanized finish damaged during fabrication.
- .4 Install operator including electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.
- .5 Lubricate and adjust door operating components to ensure smooth opening and closing of doors.
- .6 Adjust weatherstripping to form a weather tight seal.
- .7 Adjust doors for smooth operation.

3.3 FIELD QUALITY CONTROL

- .1 Ensure product manufacturer under this Section examines Work related to handling, installing, applying, protecting and cleaning of product, and submits written reports in a suitable format enabling Work to be verified for compliance with contract.

- .2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits to review Work at stages listed:
 - .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 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.
- .4 Obtain written reports from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product within 3 days of review.

3.4 CLEANING

- .1 Upon completion remove construction dirt and accumulated debris.
- .2 Clean glass and glazing materials with approved non-abrasive cleaner.
- .3 Upon completion of installation, remove surplus materials, rubbish, tools and security barriers.

END OF SECTION