

## 1 GENERAL INFORMATION

228

### 1.1 Related works

.1	General requirements	Section 01
.2	Wooden doors	Section 08 14 33
.3	Door hardware	Section 08 70 00
.4	Glazing	Section 08 80 00
.5	Exterior paint	Section 09 91 13
.6	Interior paint	Section 09 91 23
.7	Electrical Hardware	<a href="#">View Electricity Document</a>

### 1.2 Related works

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM21040 A653/A653M-06a. Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM A568-81, Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.
  - .3 ASTM B29-03, Standard Specification for Refiner Lead.
  - .4 ASTM B749-03, Standard Specification for Lead and Lead Alloy Strip. Sheet and Plate.
- .2 Approved American National Standard (ANSI/SDI)
  - .1 ANSI/SDI A250.4-2011, Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors.
  - .2 ANSI/SDI A250.8-2014, Specification Steel Doors and Frames (SDI-100).
  - .3 ANSI/DHI A115.1G-1994, Installation Guide for Doors and Hardware.
- .3 National Association of Architectural Metal Manufacturers/Hollow Metal Manufacturers Association
  - .1 HMMA 840-07, Guide specification for installation and storage of hollow metal doors and frames.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-99, zinc rich coating, prepared organic.
  - .2 CGSB 41-GP-19Ma-84, Rigid vinyl sections for windows and doors.
- .5 Canadian Standards Association (CSA)/CSA International
  - .1 CSA-G40.20-F04/G40.21-04, General Requirements for Rolled or Welded Structural Steel/Structural Steel.
  - .2 CSA W59-F03, Welded Steel Construction (Arc Welding).

- 
- .6 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.
  - .7 National Fire Protection Association (NFPA)
    - .1 NFPA 80-2016, Standard for Fire Doors and Fire Windows.
    - .2 NFPA 252-03, Standard Methods of Fire tests of Door Assemblies.

### 1.3 Regulatory Requirements

- .1 Bulletproof doors and frames under UL 752 LEVEL 4 (Bullet-Resisting Equipment, Underwriters Laboratories, Inc. Eleventh Edition September 2005 (Revised December 2006))
- .2 Unless otherwise specified, install bulletproof doors and frames in accordance with NFPA 80.
- .3 Only door products that are made of hollow steel sections and are included in the most recent edition of the "Directory of Products Made in Quebec" may be used for this work.

### 1.4 Shop drawings

- .1 Submit shop drawings in accordance with Section 01 33 00 - Documents and samples to be submitted.
- .2 The shop drawings must indicate each type of door, the material used, the thickness of the core, the thickness of the metal parts, the mortise assemblies, the reinforcing pieces, the location of the visible fastenings/openings/glazing, and the arrangement of hardware.
- .3 The shop drawings must indicate each type of frame, the material used, the thickness of the core of the metal elements, the reinforcement pieces, the glazing beads, the location of the anchors and visible fastenings, and the types of finishes.
- .4 Include the following information:
  - .1 Schedule of doors and frames;
  - .2 elevation drawings of frames and doors;
  - .3 frame sections;
  - .4 types of anchors;
  - .5 specific details for frames and doors;
  - .6 technical sheets of the selected products.

### 1.5 Quality assurance

- .1 Steel frames and doors must come from the same manufacturer.
- .2 Distributor Qualifications: Minimum of five (5) years of experience with similar projects.
- .3 Installer Qualifications: Minimum of five (5) years of experience with similar projects.

## 1.6 Delivery, storage and handling

- .1 Deliver, store, and handle products in accordance with Section 01 61 00 - General Product Requirements.
- .2 Identify products with a label that must include:
  - .1 The name of the manufacturer.
  - .2 The description of the product and its dimensions.
  - .3 The number of the opening.
- .3 Repair or replace damaged products prior to installation.
- .4 Store products in a clean, dry and secure place.
  - .1 Place welded doors and frames in an upright position.
  - .2 Place the products on blocks at least 10 cm off the ground.
- .5 Handle products with care.

## 1.7 Scope of work

- .1 The specifications in this section apply to the supply and installation of bulletproof steel frames and doors.

## 1.8 Complementarity

- .1 The plans and images for doors, frames and hardware complement each other and any contradiction or items missing from any of the documents cannot be added to the contract unless they have been reported to the Architect prior to bid entry.

## 1.9 Waste management and disposal

- .1 Sort and recycle waste in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
- .2 Discard all packaging materials from the site and transport to appropriate recycling facilities.
- .3 Place all paper, plastic, polystyrene and corrugated packaging materials in appropriate on-site recycling bins in accordance with the Waste Management Plan.
- .4 Unused or damaged glazing materials are not recyclable and are therefore excluded from municipal recycling programs.
- .5 Send unused or damaged wooden components to a professionally approved recycling facility.
- .6 Send unused metal components to a professionally approved metal recycling facility.
- .7 Send unused caulking products to a professionally approved hazardous materials collection site.
- .8 Plastic tubes containing caulk are not recyclable and must not be recycled with other plastic elements.

## **1.10 Warranty**

- .1 Materials and workmanship must be covered by a manufacturer's warranty for five (5) years. This warranty covers the product only when it is subject to normal use, in compliance with the regular installation instructions, with the hardware for with it was prepared, and with proper finishing and maintenance. This warranty only covers a replacement.

---

## 2 Materials

### 2.1 Approved Manufacturer

- .1 Only use steel doors and frames from a single manufacturer.
- .2 The manufacturer must be a member of the Canadian Steel Door Manufacturers' Association (ACFPA/CSDMA) and must manufacture the products in accordance with the association's standards.
- .3 Manufacturer: METALEC or approved equivalent.

### 2.2 Materials

- .1 Metalec ballistic frames:
  - .1 Frame Materials: 1.91mm (14 gauge) cold rolled steel in accordance with ASTM A653M "satincoat" zinc-treated steel A40 (ZF120) 120 g zinc/m<sup>2</sup>.
  - .2 6.4mm (1/4" gauge) thick ballistic steel protective reinforcement in accordance with UL 752 LEVEL 4.
  - .3 Steel wall anchors at least 1.52mm (16 gauge) thick and steel floor anchors at least 1.52mm (16 gauge) thick. Wall anchors should be placed immediately above or below each hinge reinforcement on the hinge jamb, and directly opposite to the lock jamb. Add an anchor to the floor for each jamb. They must be adapted to the type of wall construction.
  - .4 Hinge reinforcements: 4.55 mm (7 gauge) thick perforated and threaded laminated steel. Latch reinforcements: 3.51mm (10 gauge) rolled and threaded steel, 2.75mm (12 gauge) steel door closer reinforcement.
  - .5 Lock and hinge reinforcements: protected with 6.4mm (1/4" gauge) thick ballistic steel protective housings.
  - .6 Shock absorber: gray rubber pressure inserted into pre-drilled holes, one-panel door frame: 3 shock absorbers on jamb strike.
  - .7 Electrical hardware: Provide metal boxes, welded to the frame, with 19mm (3/4") connectors.
- .2 Metalec ballistic doors:
  1. Door materials: metal sides consisting of 1.52mm (16 gauge) cold-rolled steel sheet, "satincoat" zinc-treated A40 (ZF120) 120 g zinc/m<sup>2</sup> and flattened by a tensioner in accordance with ASTM A653M. 6.4mm (1/4" gauge) thick ballistic steel protective reinforcement in accordance with UL 752 LEVEL 4.
  2. The sides of the door will have a bevel that is 3 mm by 51 mm (1/8" by 2").
  3. Install a U-shaped 2.75mm (12 gauge) steel cap that is welded into the top and bottom of the door every 6" (152 mm) from center to center.
  4. Install a U-shaped steel door closer reinforcement that is 2.75mm (12 gauge) by 155mm (6") at the top of the door.
  5. Hinge reinforcements: 2.75 mm (12 gauge) U-shaped perforated and threaded laminated steel.
  6. Lock reinforcements: 2.75mm (12 gauge) thick perforated and threaded steel.
  7. Glazing beads: flat steel moldings with a thickness of 6.4mm (1/4" gauge) x 2 3/16".

## 2.3 Manufacturing:

### .1 Ballistic frames:

1. The frames must be manufactured to the maximum profiles with frontal dimensions indicated.
2. Butt joints between mullion elements, transoms, crossbeams, sills and supports must be accurately counterprofiled.
3. Cut the tabs and seals well and weld them by running a continuous weld bead inside the section.
4. Welded joints and corners should be ground until flat, filled with metal filler, then sanded to a smooth, even finish.
5. Frames must be retouched with primer where the zinc coating has been damaged during manufacturing.
6. Anchors, types:
  1. Ground anchor: stiffening wedges (Att #3), 1.52mm (16 gauge) steel angle plate, welded securely inside each jamb.
  2. Masonry wall anchors: adjustable anchor (Att #4), 1.52mm (16 gauge) steel perforated plate, welded securely inside each jamb.
  3. Metal stud wall anchors: anchor (Att#8), Z-shaped 1.14mm (18 gauge) angled plate, welded securely inside each jamb.
7. Anchors, quantities:
  1. Frames up to 2,285mm (90") 3 anchors
  2. Frames from 2,285 mm to 2,440mm (90', to 96") 4 anchors
8. Frames must be cut, reinforced, drilled and threaded as needed to accommodate the hardware and electronic material required for mortising according to the templates provided by the door hardware distributor. Frames should be reinforced as needed to accommodate mounting hardware. The mortises must be protected by steel mortise covers.
9. When frames are welded in the workshop, provide two (2) temporary braces that are welded to each frame to keep them upright during transport.
10. Single-panel door frames must be fitted with three (3) shock absorbers on the strike plate jamb.
11. Welded ballistic steel plates inside the frame section, from the jamb to the entire end stop.

### .2 Ballistic doors:

1. The metal sides will be attached by a straight seal on the sides of the door, a continuously welded joint that is ground and smoothed sanding, with a 2.75mm (12 gauge) steel reinforcement.
2. The door core consists of a ballistic plate that is welded to the surface of the wall with horizontal stiffeners that are welded to the ballistic plate and attached to the surface of the other wall by a polyurethane adhesive with maximum adhesion power.
3. The hinge reinforcement made of perforated and threaded 2.75mm (12 gauge) U-shaped steel is reinforced with a ballistic plate and welded to the door sides.

- 
4. The lock reinforcement is made of perforated and threaded 2.75mm (12 gauge) U-shaped steel and welded to the door sides.
  5. The door will have a U-shaped 2.75mm (12 gauge) steel section that is welded into the top and bottom of the door every 6" (152 mm) from center to center.
  6. The door may include a glass opening:
    1. The perimeter of the glass opening is made of 2.75mm (12 gauge) U-shaped steel and reinforced with a ballistic plate and welded to the sides.
    2. A 6.4mm x 56mm (1/4" x 2 3/16") solid steel glazing bead is secured with safety screw that can hold glass.
    3. The glass will be ballistic in accordance with UL 752 LEVEL 4 and must be installed in the door by the door manufacturer.
- .3 Shop painting system (subcontractor):
1. Electrostatic painting system provided in factory for steel doors and frames.
  2. Remove all traces of oil and dirt with Prolux cleaning solvent #12-00 or 20-00, or an approved equivalent.
  3. Prepare all galvanized surfaces with SSPC-SP7 sandblast treatment or an equivalent mechanical preparation.
  4. Primer: Coat all galvanized surfaces with Prolux Type 7023-15 Anti-Corrosion Bi-Component Epoxy Primer. This includes all screws, bolts and other accessories that are required for the frame installation.
  5. Apply at least two coats of 8000 series bi-component polyurethane paint, natural anodized aluminum color, satin 350 gloss finish, and oven dried at a temperature of 150°F (70°C).
  6. Reference product: This system must be applied by a company that is been approved by Prolux Paint Inc.
  7. Provide 4 aerosol paint cans manufactured by the paint manufacturer in the color requested by the architect, with the option of a pellet that activates the paint. These cans must allow a time of 4 hours to apply the paint.

---

## 3 Execution

### 3.1 Manufacturer's instructions

- .1 Compliance: Comply with the manufacturer's written requirements, recommendations, and specifications, including any available technical bulletins, instructions for handling/storing/implementing products, and data sheet instructions.

### 3.2 General Installation Instructions

- .1 Install fire doors and frames in accordance with the requirements of Volume 4 of the National Fire Protection Code that is issued by the National Fire Protection Association (NFPA) 80.
- .2 Cover the certification labels on doors and frames to protect them from paint. Remove the coverings after painting is complete

### 3.3 Frame installation

- .1 Install the plumb, square and level frames at the appropriate height.
- .2 Attach the anchoring and connecting elements to the elements adjacent to the frame.
- .3 Use spacers when putting frames in place. Temporarily install wooden spacers horizontally, 3 equidistant for each opening, to keep the width of the frame uniform. When the width of the opening is greater than 1,200 mm, support the center of the top crossbar with a vertical element. Remove the spacers and supports after the frames are completely installed.
- .4 Provide enough clearance to prevent loads from the structure from being transmitted to the frames.
- .5 Sound insulation: fill all cavities of the steel interior frames that are installed in the soundproofed partitions with fiberglass insulation.
- .6 Add insertion bumpers when installing and adjusting the doors inside the frames. Remove these bumpers during painting and put them back in place after painting is complete.
- .7 Thermal Insulation: fill all cavities of the new steel exterior frames that are installed in the exterior bulkheads with rock fiber insulation and blown urethane foam.
- .8 Ensure the continuity of the airtightness system and the vapor barrier.

### 3.4 Door installation

- .1 Install doors and hardware using the templates provided in accordance with the manufacturer's instructions and the requirements of Section 08 71 00 - Door Hardware.
- .2 Provide a uniform gap between the doors and jambs and between the doors and the finished floor, as follows:
  1. For doors (Pivot on vertical axis):



1. hinges side: 1.0 mm;
  2. latch side and top crossbar: 1.5 mm;
  3. finished floor: 13 mm or as indicated in the floor covering plans or specifications.
- .3 Adjust the moving parts so the doors operate smoothly.

### **3.5 Retouching**

- .1 Ensure that any damage, scratches or marks that may have occurred during transportation or handling are promptly cleaned and fixed.

### **3.6 Glazing**

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

### **3.7 Adjustment and protection**

- .1 Repair or replace any damaged products.
- .2 Fix any installation defects.
- .3 Re-adjust doors and hardware after all the work is done and make sure they are working properly and smoothly.
- .4 Protect the steel doors and frames until the building is transferred to the Owner.

### **3.8 Cleaning**

- .1 After the door installation is complete, clean up any accumulated dirt or debris in the construction area and the surrounding area.
- .2 Once the installation work is complete, dispose of surplus materials, waste materials, tools and safety barriers.

**End of the section**