

Part 1 General

1.1 REFERENCES

- .1 ASTM International
 - .1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 CSA Group
 - .1 CAN/CSA A440.4-07, Window, Door, and Skylight Installation.
 - .2 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .3 CSA W59-18, Welded Steel Construction (Metal Arc Welding).
- .4 Fenestration & Glazing Industry Alliance (FGIA) (formerly American Architectural Manufacturers Association (AAMA))
 - .1 AAMA 812-19, Voluntary Practice for Assessment of Frame Deflection When Using One Component Polyurethane Foams for Air-Sealing Rough Openings of Fenestration Installations.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-2013, Standard for Fire Doors and Other Opening Protectives.
 - .2 NFPA 252-2017, Standard Methods of Fire Tests of Door Assemblies.
- .6 Steel Door Institute (SDI)
 - .1 SDI-108-18, Recommended Selection and Usage Guide for Standard Steel Doors.
 - .2 SDI-111-09, Recommended Details for Standard Steel Doors, Frames, Accessories and Related Components.
 - .3 SDI-122-15, Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN/ULC S105:2016, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC S104.
 - .3 CAN/ULC S705.2-05, Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application.

1.2 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's printed product literature, specifications, and datasheets. Include product characteristics, performance criteria, physical size, finishes, and limitations.
- .2 Submit WHMIS SDS - Safety Data Sheets in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .3 Shop drawings:
 - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware, fire ratings, and finishes.
 - .2 Indicate each type of frame material, core thickness, reinforcements, location of anchors and exposed fastenings, fire ratings, and finishes.
 - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original packaging, labelled with manufacturer's name and product identification.
- .3 Storage and Handling Requirements:
 - .1 Store and protect products from damage.
 - .2 Store doors and frames under cover with doors stored in a vertical position on blocking, clear of floor, and with blocking between doors to permit air circulation.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC S104 or NFPA 252 for ratings specified or indicated.
- .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN/ULC S106 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

2.2 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653/A653M, minimum base steel thickness in accordance with SDI-111.
 - .1 Galvanizing thickness: Z120 (G40).

2.3 DOOR CORE MATERIALS

- .1 Honeycomb construction: Structural small cellular kraft paper, 25 mm maximum cores.

2.4 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
- .2 Lock-seam doors: Fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 00 – Painting. Protect weather strips from paint. Provide final finish free of scratches or other blemishes.
- .2 Touch-up zinc primer: to CAN/CGSB 1.181.

2.6 ACCESSORIES

- .1 Door Hardware: Refer to Section 08 71 00 – Door Hardware.
- .2 Door silencers: Single stud rubber/neoprene type.
- .3 Metallic paste filler: To manufacturer's standard.
- .4 Fire labels: Metal riveted.
- .5 Sealants: Refer to Section 07 92 00 – Joint Sealants.
 - .1 Rough opening fill: low pressure build spray applied polyurethane foam.
 - .2 Perimeter joint sealing:
 - .1 Interior doors: Polyurethane.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with SDI-111.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Frames: 1.6 mm thick steel, welded construction.
 - .1 Provide 16 mm minimum stop height for factory-sealed double-glazed units.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Protect mortised cut-outs with steel guard boxes.
- .6 Reinforce frames for surface mounted hardware.
- .7 Prepare door openings for single stud rubber door silencers.
- .8 Label fire-rated frames.
- .9 Conceal fastenings except where exposed fastenings are indicated.
- .10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

- .11 Fill frame cavity with low pressure build spray applied polyurethane foam.

2.8 FRAME ANCHORAGE

- .1 Shim and anchor new doors in accordance with CAN/CSA A440.4.
- .2 Provide appropriate anchorage to floor and wall construction.
- .3 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .4 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.
- .5 Locate anchors for frames in existing openings maximum 150 mm from top and bottom of each jamb and intermediate at 660 mm on centre maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails, and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: Swing type, flush.
- .2 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .3 Factory-prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .4 Reinforce doors where required, for surface mounted hardware.
- .5 Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .6 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .7 Label fire rated doors with riveted metal label.

2.11 DOORS: LAMINATED CORE CONSTRUCTION

- .1 Form face sheets for interior doors from 1.2 mm sheet steel with honeycomb core laminated under pressure to face sheets.

- .1 Provide inverted, recessed, spot welded channels to top and bottom of interior doors, except reinforced doors.
- .2 Prepare doors for recessed mounting of automatic door bottoms.
- .2 Fabricate doors with longitudinal edges lock-seamed, adhesive assisted.
 - .1 Seams: Visible.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify conditions of substrates are acceptable for product installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION GENERAL

- .1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- .2 Install doors and frames to SDI-122 and CSA A440.4.
- .3 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

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 until built-in:
 - .1 Remove temporary steel shipping jamb spreaders.
 - .2 Supply and install wood spreaders at third points of frame rebate height to maintain frame width until building-in work completed.
 - .3 Supply vertical support at centre of head for openings exceeding 1200 mm in width.
 - .4 Remove wood spreaders after frames have been built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Fill gaps between rough openings and frames with low pressure build spray applied polyurethane foam.
- .6 Caulk perimeter of frames between frame and adjacent material.

3.4 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor: 13 mm.
- .3 Adjust operable parts for correct function.

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 CLEANING

- .1 Cleaning: in accordance with Section 01 74 00 - Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.
- .4 Waste Management: Remove waste materials in accordance with Section 01 74 19 - 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 steel doors and frames installation.
- .3 Protect hardware, frames, and doors from damage. Lock operative door bottoms in up position.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
 - .1 ANSI/BHMA A156.1-2016, Butts and Hinges.
 - .2 ANSI/BHMA A156.2-2017, Bored and Preassembled Locks and Latches.
 - .3 ANSI/BHMA A156.4-2019, Door Controls - Closers.
 - .4 ANSI/BHMA A156.5-2020, Standard for Cylinders and Input Devices for Locks.
 - .5 ANSI/BHMA A156.6-2015, Architectural Door Trim.
 - .6 ANSI/BHMA A156.16-2018, Auxiliary Hardware.
 - .7 ANSI/BHMA A156.22-2017, Door Gasketing and Edge Seal Systems.
- .2 CSA Group
 - .1 CSA B651-18 – Accessible Design for the Built Environment.
- .3 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
 - .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.
- .4 National Fire Protection Association (NFPA)
 - .1 NFPA (Fire) 80, Standard for Fire Doors and Other Opening Protectives, 2019 edition.
 - .2 NFPA (Fire) 252-2017 - Fire Tests of Door Assemblies, 2017 edition.
- .5 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.

1.2 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.
- .4 Manufacturer's Instructions: Submit manufacturer's installation instructions.

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 door hardware for incorporation into manual.

1.4 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.

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 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, well-ventilated area.
 - .2 Store and protect door hardware from nicks, scratches, and blemishes.
 - .3 Protect prefinished surfaces with wrapping or strippable coating.
 - .4 Replace defective or damaged materials with new.

Part 2 Products

2.1 DOOR HARDWARE

- .1 Cylindrical locks: To BHMA A156.2, Series 4000, Grade 1; through-bolt style.
 - .1 Latchbolt: stainless steel, 13 mm throw.
 - .2 Levers: Solid cast.
 - .3 Roses: Heavy wrought.
 - .4 Strikes: Curved lip, 124 mm height.
 - .5 Cylinders: To BHMA A156.5, brass, 6-pin.
 - .6 Function: As scheduled.
- .2 Standard weight hinges: BHMA A156.1 and ANSI A8112; five-knuckle; ball bearings; 3.4 mm (0.134 gauge) steel.
 - .1 Size: 127 x 114 mm (5 x 4-1/2 inches).
 - .2 Provide hinges with non-removable pins (NRP).
- .3 Surface closers: BHMA A156.4, Grade 1; rack-and-pinion style; cast aluminum body; adjustable closing speed, latching speed, and backcheck; high impact plastic cover. Include mounting plate as required.
 - .1 Arms: forged steel, type as scheduled.
 - .1 Parallel arm: ANSI C02021.

- .4 Concealed automatic door bottoms: ANSI/BHMA A156.22 and ANSI R3E325; for hollow metal doors; aluminum retainer with movable drop bar seal. Seal actuated by plunger contacting jamb.
 - .1 Acceptable seal materials: neoprene or silicone.
- .5 Floor dome stops: BHMA A156.16 and ANSI L02141, dome style, solid cast brass, heavy duty casting with solid pin; 47 mm diameter, complete with rubber bumper.
- .6 Bulb gasketing: BHMA A156.22 and ANSI R0E154; silicone extrusion, compression bulb profile with stabilizer flange, 12.7 mm width, 6 mm height, adhesive backing; provide for jambs and header.
- .7 Kick plates: BHMA A156.6 and ANSI J102; 1.27 mm thick stainless steel, No. 4 finish, bevelled on all edges, with pre-drilled countersunk holes.
 - .1 Height: 250 mm.
 - .2 Push side width: 50 mm less than door width.
 - .3 Pull side width: 38 mm less than door width.

2.2 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.

2.3 KEYING

- .1 Contact Departmental Representative for Keying Strategy.
- .2 Provide keys in duplicate for every lock.
- .3 Stamp keying code numbers on keys and cylinders.

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 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) and CSA B651.
- .5 Where doorstop contacts door pulls, mount stop to strike bottom of pull.
- .6 Use only manufacturer's supplied fasteners.
 - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

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 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.
- .2 Remove waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by door hardware installation.

3.5 DOOR HARDWARE SCHEDULE

Set: 1.0

3 Hinge, Full Mortise		US26D
1 Storeroom/Closet Lock	ANSI F86	US26D
1 Surface Closer		
1 Kick Plate		US32D
1 Door Stop		US26D
1 Bulb Gasketing		
1 Door Bottom		

END OF SECTION