

Part 1 General

1.1 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM A653/A653M-08, 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 Canadian Standards Association (CSA)
 - .1 CSA G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frame Products, 2006.
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Door and Frame Products, 2009.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-2007, Standard for Fire Doors and Other Opening Protectives.
 - .2 NFPA 252-12, Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC S104.

1.2 SYSTEM DESCRIPTION

- .1 Design Requirements:
 - .1 Provide fire labelled frames for openings requiring fire protection ratings.
 - .2 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 or NFPA 252 for ratings specified or indicated.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 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 reinforcing, fire rating, and finishes.
- .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, handle, and store doors and frames at the job site to prevent damage.
- .3 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.
- .4 Waste Management and Disposal: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: To ASTM A653/A653M, CS Type B.
 - .1 Galvanizing thickness: Z120 (G40).

2.2 DOOR CORE MATERIALS

- .1 Honeycomb construction: Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum, sanded to required thickness.

2.3 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.

2.4 PRIMER

- .1 Touch-up primer to CAN/CGSB 1.181.

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.

2.6 ACCESSORIES

- .1 Door Hardware and Weatherstripping: Specified in Section 08 71 00.
- .2 Door silencers: Single stud rubber/neoprene type.
- .3 Metallic paste filler: To manufacturer's standard.
- .4 Fire labels: Metal riveted.
- .5 Sealant: Refer to Section 07 92 00 – Joint Sealing.
- .6 Finish painting: Refer to Section 09 91 00 – Painting.

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 Interior frames: 1.6 mm thick steel, welded type construction.
- .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 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .6 Conceal fastenings except where exposed fastenings are indicated.
- .7 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

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 not more than 150 mm from top and bottom of each jambs 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 Form face sheets for interior doors from 1.3 mm thick sheet steel with honeycomb core laminated under pressure to face sheets.
- .3 Fabricate doors with longitudinal edges lock-seamed, adhesive assisted.
 - .1 Seams: Visible.
- .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 inverted, recessed, spot welded channels to top and bottom of interior doors.
- .7 Factory install glazing.
- .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN/ULC S104 or NFPA 252 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.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

- Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .1 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.

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.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
 - .1 ANSI/BHMA A156.1-2013, American National Standard for Butts and Hinges.
 - .2 ANSI/BHMA A156.2-2011, Bored and Preassembled Locks and Latches.
 - .3 ANSI/BHMA A156.3-2014, Exit Devices.
 - .4 ANSI/BHMA A156.4-2013, Door Controls - Closers.
 - .5 ANSI/BHMA A156.5-2014, Cylinders and Input Devices for Locks.
 - .6 ANSI/BHMA A156.6-2010, Architectural Door Trim.
 - .7 ANSI/BHMA A156.8-2010, Door Controls – Overhead Stops and Holders.
 - .8 ANSI/BHMA A156.22-2012, Door Gasketing and Edge Seal Systems.
- .2 ASTM International
 - .1 ASTM E283-04 (2012), Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .3 Canadian Standards Association (CSA)
 - .1 CSA B651-12 – Accessible Design for the Built Environment.
- .4 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
 - .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA (Fire) 80 - Standard for Fire Doors and Other Opening Protectives, 2007 edition.
 - .2 NFPA (Fire) 252 - Fire Tests of Door Assemblies, 2012 edition.
- .6 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-M80, 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; 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.
- .5 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical 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 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 HARDWARE ITEMS

- .1 Use one manufacturer's products only for similar items.

2.2 DOOR HARDWARE

- .1 Cylindrical locks: To ANSI/BHMA A156.2, Series 4000, Grade 1; through-bolt style. Provide lever locksets and keyways to match existing.

- .1 Chassis: Zinc-dichromated steel.
- .2 Latchbolt: Minimum 13 mm throw.
- .3 Levers: Solid cast.
- .4 Front: Wrought brass.
- .5 Strikes: Curved lip, 124 mm height.
- .6 Cylinders: To ANSI/BHMA A156.5, brass, 6-pin.
- .7 Finish: Brass.
- .8 Function: As scheduled.
- .9 Acceptable manufacturer: Corbin Russwin.
- .2 Hinges: To BHMA A156.1, five-knuckle, heavy weight, 0.180 gauge steel.
 - .1 Provide hinges with non-removable pins where scheduled.
 - .2 Provide pre-wired hinges where scheduled.
- .3 Door closers: To BHMA A156.4, Grade 1, and ANSI A117.1, rack and pinion operation, aluminum case, adjustable backcheck intensity.
 - .1 Arms: Heavy duty forged steel; standard and parallel, as scheduled.
- .4 Door bottom: Aluminum case with movable drop bar seal. Seal actuated by plunger contacting jamb. Aluminum with sponge neoprene insert.
- .5 Overhead stop: To ANSI/BHMA A156.8, Grade 1 and 2; low-profile, concealed mounting; UL listed for fire doors.
- .6 Floor stops: To BHMA A156.16, dome style, solid cast brass, heavy duty casting with solid pin, complete with rubber bumper.
- .7 Wall stops: Brass, bronze, and stainless steel with rubber bumper, 63 mm diameter, 19 mm projection, concealed mounting.
 - .1 Bumper: Convex or concave as indicated in schedule.
- .8 Flush bolts: To ANSI/BHMA A156.16; cast brass, 19 mm bolt throw, 19 mm backset.
 - .1 Dust proof strike: Brass; compatible with flush bolt; adjustable height, barrel 22 mm diameter x 51 mm depth.
- .9 Perimeter gasketing: To ANSI/BHMA A156.22 Category J, extruded tempered aluminum retainer, alloy 6063-T6; with black sponge silicone seal, heavy duty type; stainless steel fasteners.
- .10 Architectural door trim: To BHMA A156.6.
 - .1 Door protection plates: Kick plate type 1.27 mm thick stainless steel, No. 4 finish.

2.3 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.

2.4 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.
- .7 Remove construction cores when directed by Departmental Representative.
 - .1 Install permanent cores and ensure locks operate correctly.

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: in accordance with Section 01 74 11 - 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 11 - Cleaning.
- .2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition 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 SCHEDULE

- .1 Set 1:
 - .1 Heavy duty hinges x 6.
 - .2 Top and bottom flush bolts.
 - .3 Kick plates.
- .2 Set 2:
 - .1 Heavy duty hinges x 3.
 - .2 Cylindrical lockset, storeroom function.
 - .3 Perimeter gasketing.
 - .4 Kick plate.
 - .5 Door bottom.
 - .6 Surface-mounted closer.
- .3 Set 3:
 - .1 Heavy duty hinges x 8.
 - .2 Cylindrical lockset; keyed cylinder on push side, passage function on pull side.
 - .3 Vertical rods, concealed.
 - .4 Perimeter gasketing.
 - .5 Kick plates.
 - .6 Door bottom.
 - .7 Surface-mounted closers.
- .4 Set 4:
 - .1 Heavy duty hinges x 8.

- .2 Top and bottom flush bolts.
- .3 Perimeter gasketing.
- .4 Kick plates.
- .5 Door bottom.
- .5 Set 5:
 - .1 Heavy duty hinges x 8.
 - .2 Cylindrical lockset, storeroom function.
 - .3 Flush bolts on inactive leaf.
 - .4 Perimeter gasketing.
 - .5 Kick plates.
 - .6 Door bottom.
 - .7 Surface-mounted closer on active leaf.

END OF SECTION