

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .3 Section 07 92 10 - Joint Sealing: Caulking of joints between frames and other building components.
- .4 Section 08 71 10 - Door Hardware - General: Supply of finish hardware, including weatherstripping and mounting heights.
- .5 Section 09 91 23 - Interior Painting.
- .6 Division 26 Electrical: Wiring for electronic hardware.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A653/A653M-11, 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.
 - .2 CGSB 41-GP-19MA Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 G40.20-04/G40.21-04 R2009, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding) (Metric Version).
- .4 Canadian Steel Door Manufacturers' Association, (CSDMA).
 - .1 CSDMA, Specifications for Commercial Steel Doors and Frames, 1990.
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-99 Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S104-10, Fire Tests of Door Assemblies.
 - .2 CAN/ULC-S105-09, Fire Door Frames Meeting the Performance Required by CAN4-S104.
- .7 CAN/ULC-S702-09-AM1, Thermal Insulation, Mineral Fibre, for Buildings.

1.3 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.
- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 QUALITY ASSURANCE

- .1 Contractor shall have a minimum of five years proven satisfactory experience. Provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in repainting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with applicable trade regulations.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware and fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating and finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .5 Submit test and engineering data, and installation instructions.

1.6 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one 300 x 300 mm top corner sample of each type door.

1.7 REQUIREMENTS

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M for ratings specified or indicated.
- .2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-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.

Part 2 Products

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

2.2 DOOR CORE MATERIALS

- .1 Honeycomb construction:
 - .1 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 Stiffened: face sheets welded core.
 - .1 Fibreglass: to CAN/ULC-S702, semi-rigid Type 1, density 24 kg/m³.
 - .3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250°C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

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 prime CAN/CGSB-1.181.

2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting]. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Interior top and bottom caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma steel.
- .3 Door bottom seal: refer to hardware schedule in Section 08 71 10 - Door Hardware.

- .4 Metallic paste filler: to manufacturer's standard.
- .5 Fire labels: metal riveted.
- .6 Sealant: in accordance with Section 07 92 10 - Joint Sealing.
- .7 Steel thicknesses:
 - .1 Lock/Strike Reinforcements: 1.6mm.
 - .2 Hinge Reinforcement: 3.4mm.
 - .3 Flush Bolt Reinforcements: 1.6mm.
 - .4 Reinforcements for surface applied hardware: 1.2mm.
 - .5 Top and Bottom Channels: 1.2mm.
 - .6 Steel Top Caps: 0.9mm.
 - .7 Mortar Guard Boxes: 1.2mm.
 - .8 Floor anchors: 1.6mm.
 - .9 Wall anchors:
 - .1 Steel Stud Type: 0.9mm.
 - .2 Steel Stud Tension and associated Wall Type: 0.9mm.
 - .3 Existing Masonry/Concrete Wall type: 0.9mm.
 - .4 Jamb Spreaders: 0.9mm.

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 welded type construction.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Hardware Reinforcements: Reinforce frames to accept door hardware conforming to ANSI/DHI A115.1.
- .6 Protect mortised cutouts with steel guard boxes.
- .7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .8 Manufacturer's nameplates on frames and screens are not permitted.
- .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.

2.8 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.

- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 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.
- .4 Weld frames to jamb studs where indicated.

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.
- .7 Reinforced frames:
 - .1 Hollow Metal Frame: 1.6mm thick, 3/4 hr. fire rated, commercial quality, cold rolled steel conforming to ASTM A366/A366M or hot-rolled, pickled and oiled steel conforming to ASTM A569/A569M. The steel shall be free of scale, pitting, coil breaks or other surface blemishes. Knock down frames are not acceptable.
 - .2 Reinforce frame face on the latch side with 6.4 mm x 25 mm x 925 mm steel plate centred on strike. Tack weld at ends and at 150 mm o.c.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass openings as indicated.
- .2 Interior doors: hollow steel construction.
- .3 Fabricate doors with longitudinal edges locked seamed, adhesive assisted. Seams: visible. Also acceptable is a full welded seam door c/w spot-welded stiffeners.
- .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 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

- .7 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-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.
- .8 Manufacturer's nameplates on doors are not permitted.

2.11 HOLLOW STEEL CONSTRUCTION

- .1 Form each face sheet for interior doors from 1.6 mm sheet steel.
- .2 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.
- .3 Fill voids between stiffeners of fire rated interior doors with polystyrene core.
- .4 Fill voids between stiffeners of interior doors with honeycomb core.
- .5 Fill voids between stiffeners of interior reinforced doors with mineral fibre insulation.
- .6 Reinforced Doors:
 - .1 1.6mm thick, 3/4 hr. fire-rated commercial quality, level, cold-rolled steel conforming to ATSM A366/A366M or hot-rolled, pickled and oiled steel conforming to ASTM A-569/A569M. The steel shall be free of scale, pitting, coil breaks or other surface blemishes, matte finish. Lock forming galvanized steel sheet to ASTM A653. The degree of formation limits maximum coating weight specified as Coating Designation Z275.
 - .2 Continuously vertically stiffened with 1.2mm thick galvanized steel interlocking "z-shaped" or "hat-shaped" stiffeners spot welded at max. 150 mm o.c. Weld front skin stiffeners offset to allow for 3 mm clearance of bottom stiffeners. Weld shaped stiffeners to back skin and mechanically interlock with top stiffeners. Form bottom stiffener to fill full thickness of door. Depth of stiffener to be 41 mm. Offset stiffener in door core a minimum of 75 mm.
 - .3 Fill all voids with fibrous batt insulation.
 - .4 Top and bottom edges of the door shall be closed with continuous flush closing channel spot welded to both faces at the corners and at the center.

Part 3 Execution

3.1 INSTALLATION GENERAL

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

3.2 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.

3.3 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 10 - Door Hardware - General. Prepare new and existing doors and frames to suit door control devices. Refer to Door Hardware Schedule in Section 08 71 10 - Door Hardware – General.
- .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 and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.

3.4 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.

3.5 GLAZING

- .1 Install glazing for doors in accordance with Section 08 80 50 - Glazing.

END OF SECTION