

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 This Section specifies requirements for supplying and installing exterior hollow metal doors, frames, and hardware as indicated.
- 1.2 RELATED WORK .1 Caulking of joints between frames and other building components: Section 07 92 00
- .2 Painting: Section 09 91 23
- 1.3 REFERENCES .1 Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA).
- .1 CSDFMA, Specifications for Commercial Steel Doors and Frames.
- .2 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors.
- .3 CSDFMA, Recommended Locations for Hardware for Steel Doors and Frames.
- .2 National Fire Protection Association (NFPA):
- .1 NFPA 80-2013, Fire Doors and Windows.
- .2 NFPA 252-2012, Methods of Fire Test of Door Assemblies.
- .3 ASTM A653/A653M-2013, Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-dip Process.
- .4 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .5 CSA G40.21-2013, Structural Quality Steel.
- .6 ULC S104-2010, Fire Test of Door Assemblies.
- 1.4 SHOP DRAWINGS .1 Submit shop drawings and hardware schedule in accordance with Section 01 33 00 using D.H.I. (Door and Hardware Institute) formats.
- .2 Indicate type of door and frame, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, finishes and fire ratings.

- 1.4 SHOP DRAWINGS (Cont'd) .3 Indicate proposed hardware including make, model, material, function, finish and all other pertinent information.
- 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING .1 Brace frame units to prevent distortion in shipment and protect finished surfaces by sturdy protective wrapping.
- .2 Store doors and finishing hardware in a secure, dry location. Remove wrappings when finally stored in location, secure from damage. Store doors vertically with blocking between to allow air to circulate.
- .3 Repair damage to finishes immediately after it occurs to prevent rusting. Use primer for painted surfaces and zinc primer for galvanized surfaces.
- .4 Package each item of hardware separately or in like groups of hardware, label each package as to item definition and location.
- .5 Maintain inventory list with hardware schedule.
- 1.6 REQUIREMENTS OF REGULATORY AGENCIES .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with ULC S104M and NFPA 252 for ratings specified or indicated.

PART 2 - PRODUCTS

- 2.1 DOOR MATERIAL .1 Sheet steel: 1.2 mm base thickness, commercial grade steel to ASTM A653, hot dipped galvanized, coating designation Z275 for exterior doors.
- .2 Door Core:
.1 Exterior hollow steel: vertically stiffened with steel ribs and all voids filled with semi-rigid fibrous insulation minimum density 1.5 pcf.
.2 Interior honeycomb: structural core consisting of Kraft paper having 24.5mm cell size to thickness indicated.
- .3 Exterior doors to have caps at top of door.

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- 2.2 FRAME MATERIAL
- .1 Sheet steel: commercial grade steel to ASTM A653, hot dipped galvanized, coating designation Z275 for exterior frames.
 - .1 Frames: 1.6 mm base steel thickness.
 - .2 Floor anchors, channel spreaders and wall anchors: minimum 1.6 mm base steel thickness.
 - .3 Guard boxes: minimum 0.8 mm base steel thickness.
 - .4 Hinge reinforcements: minimum 2.6 mm base steel thickness.
 - .2 Top and bottom reinforcing channels: to CSA G40.21-M, type 300W.
 - .3 Door bumpers: black neoprene single stud, three for each single door, and two for each double door.
 - .4 Frames for exterior doors to be thermally broken and must accommodate expansion and contraction with surface temperature range of -34 deg.C to 76 deg.C. Deflection must not exceed 1/175th of span under wind loads for building locality in accordance with the National Building Code, 2010. Pack frames with fibreglass insulation and/or polyurethane insulation.
- 2.3 ADHESIVES
- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
 - .2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.
- 2.4 PRIMER
- .1 Touch up primer for doors and frames to CAN/CGSB-1.181.
- 2.5 DOOR AND FRAME FABRICATION
- .1 The following fabricators are approved to perform work of this section: S.W. Fleming & Co. Ltd., Daybar, Apex Doors and Frames.
 - .2 Steel doors to be 45 mm thick unless otherwise indicated.
 - .3 Exterior frames to be thermally broken, 146 mm butt mounted; unless otherwise noted on the drawings.
 - .4 Fabricate steel doors and frames as detailed, in accordance with Steel Door and Frame Manufacturers'
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2.5 DOOR AND FRAME
FABRICATION
(Cont'd)

- .4 (Cont'd)
Association, "Canadian Manufacturing Specifications for Steel Doors and Frames".
- .5 Mortise, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by finish hardware supplier.
- .6 Shop prime cold rolled steel sheet.
- .7 Touch up doors and frames at factory with primer where galvanized finish damaged during fabrication.
- .8 Cut mitres and joints of frames accurately and weld continuously on inside of frame profile.
- .9 Grind welded corners and joints of frames to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .10 Prepare doors and frames for installation of hardware. Provide all steel reinforcements. Drill and tap to template information.
- .11 Reinforce all doors and frames for door closers whether closers are scheduled or not.
- .12 Install three (3) door bumpers on strike jamb for each single door and two (2) door bumpers at head for double doors.
- .13 Reinforce heads of frames wider than 1200 mm.
- .14 Provide floor anchors, adjustable tee anchors, and steel anchors in accordance with Canadian Steel Door and Frame Manufacturers Association. Weld floor anchors to frame.
- .15 Close tops and bottoms of doors with recessed spot welded channel and closures. Mechanically interlock longitudinal edges.
- .16 Install galvanized steel top caps for all exterior doors.
- .17 Construct thermally broken frames using steel core, separating exterior portion of frame from interior portion with polyvinyl chloride thermal break.
- .18 Insulate exterior frame components with polyurethane insulation.

2.6 THERMALLY
BROKEN DOORS AND
FRAMES

- .1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.
- .2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break.
- .4 Apply insulation.

2.7 HARDWARE
MATERIAL

- .1 Hardware schedule as specified on the Project Drawings.
- .2 Locks and lock set trim will be provided by the Owner.
- .3 Lock fronts and strikes must be bevelled, rounded or rabbeted as required. The hardware supplier will determine and be responsible for the hand and bevel of all doors.
- .4 Butt hinges to be product of one (1) manufacturer. Construct loose pin hinges for exterior doors opening outward with non-removable pins, when doors are closed. Furnish half mortise and full surface hinges for exterior doors opening out with one-way or twin-head screws or bolts.

PART 3 - EXECUTION

3.1 DOOR
INSTALLATION

- .1 Install doors in accordance with manufacturer's instructions.
- .2 Fit doors with 6 mm clearance at jambs and head of frame, and 10 mm clearance over threshold.

3.2 HARDWARE
INSTALLATION

- .1 Hardware supplier to furnish and deliver to the Contractor in sufficient time so as not to impede the progress of the work, all necessary templates and schedules required to fabricate doors and frames.
- .2 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 HARDWARE
INSTALLATION
(Cont'd)

- .3 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular construction) prepared by Canadian Steel Door and Frame Manufacturers Association.
- .4 The mounting height may be varied conforming to the manufacturer's specific instructions and as approved by the Departmental Representative.
- .5 Install hardware and trim square and plumb to doors.
- .6 Use all the installation aids available for a proper installation of the hardware items.
- .7 Protect exposed surfaces from scratches and abrasions with suitable covering until building is ready for final inspection.
- .8 All hardware must be thoroughly cleaned before it is turned over to the Departmental Representative.
- .9 Adjust all hardware as required to provide smooth operation. Lubricate hardware if required by supplier's instructions.
- .10 Deliver keys to Departmental Representative at building completion.

3.3 ADJUSTMENT

- .1 Adjust hinged doors to swing freely and easily, to remain stationary at any point of swing, to close evenly and tightly against stops without binding, and to latch positively when doors are closed with moderate force.

3.4 DOOR &
HARDWARE SCHEDULE

- .1 Door: sizes and materials as shown on Drawings.
- .2 Hardware: as shown on Drawings.

3.5 FINISH
REPAIRS

- .1 Touch up finishes damaged during installation.
- .2 Fill exposed frame anchors, and surfaces with imperfections, marks/scratches/dents, etc with metallic paste filler and sand to a uniform smooth finish. Prime areas affected.
- .3 Finish paint doors and frames as specified in section 09 91 23.