

**SECTION 08110  
METAL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- .1 Provide pressed steel frames and insulated and uninsulated hollow metal doors.
- .2 Provide pressed steel frames with removable stops for interior windows as indicated and scheduled.
- .3 For installation of pressed steel frames and hollow metal doors, refer to Section 06200 Finish Carpentry.
- .4 Fire rated doors with door grilles or glazing shall be metal doors.

**1.2 RELATED SECTIONS**

- .1 06200 Finish Carpentry.
- .2 09910 Paints and Coatings.

**1.3 REFERENCES**

- .1 ASTM A653/A653M-03, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A924/A924M-99, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .3 CAN/CSA A440-M90, Windows.
- .4 CSA A440.1-00, User Selection Guide to CSA Standard A440-00.

**1.4 SYSTEM DESCRIPTION**

- .1 Exterior Doors shall comply with the same rating and testing requirements as outlined in CAN/CSA A440-M90 Windows and CSA A440.1. User Selection Guide to CSA Standard A440. Provide minimum A, B, and C ratings as specified by the Consultant.

**1.5 SUBMITTALS**

- .1 Submit in accordance with Division 1 Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings, showing typical details of pressed steel frames, including frame schedules and hardware details, to the Consultant for approval prior to fabrication.
  - .2 Indicate doors and frames bearing ULC labels for ratings and opening classifications. This should include rated door grilles which are to be ULC labeled.
  - .3 Note: Sizes shown on Door Schedule are clear frame opening sizes. Sizes (both wood and metal) shall be based on clear opening frame sizes.

**1.6 QUALITY ASSURANCE**

- .1 In accordance with the Canadian Steel Door and Frame Manufacturers' Association "Canadian Manufacturing Specification for Doors and Frames" except as noted otherwise.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver hollow metal work to the site fully protected and with adequate location and installation details.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 General: materials used in this Contract shall be manufactured by nationally recognized manufacturers.

**2.2 DOOR FRAMES**

- .1 Metal door frames in wood frame construction shall be knock down type.

- .2 Fire-Rated Frames: Fabricate fire-rated frames as per underwriter's requirements using material not less than thickness specified unless a greater thickness is stipulated by the labeling authority.
- .3 Provide manufacturer's standard adjustable anchors for frame as required.
- .4 Frames to be thermally broken at exterior locations.
- .5 Frames shall be blanked, reinforced, drilled, and tapped for mortised butts and strike. Mortised butts and strike cut-outs shall be protected with metal mortar guard boxes where required.
- .6 Frames shall be reinforced, when required, for surface mounted hardware. (Drilling and tapping in field by others.) Hardware preparation and location shall be in accordance with ANSI standard, each door opening to be prepared for single rubber bumpers, three (3) for single door openings, two (2) for double door openings.
- .7 Two (2) channel or angle spreaders to be welded to door jambs at bottom of door opening to ensure proper alignment.
- .8 Provide frames with anchors of suitable design as shown on reviewed shop drawings.
- .9 Provide labeled frames for openings requiring fire protection ratings as determined and scheduled by Consultant. Such frames shall be in accordance with manufacturer's standards and shall be constructed as tested and approved by a nationally recognized testing agency having a factory inspection service.

**2.3 EXTERIOR DOORS**

- .1 Materials: Doors and frames shall be manufactured from tension leveled steel to ASTM A924-97(M97), Galvanized to ASTM A653.99. Commercial steel (CS) dry passivated, coating designation A40 (ZF120) known commercially as galvaneal.
- .2 Door Construction: double glazed stile and rail insulated (polyurethane core) with prefinished baked enamel sheet steel of minimum 20 gauge wipe coat galvanized steel. Colour to be approved by Consultant. Raised panel design.
- .3 Sealed glazing units to have double seals and be minimum 5 mm (3/16") tempered clear float glass on interior and exterior, separated by 6 mm (1/4" ) air space.
- .4 Weatherstripping: Vinyl wrapped foam to head and jambs, adjustable door sweep at sill.
- .5 Exterior Doors:
  - .1 Thickness: 45 mm (1-3/4" ).
  - .2 Door Construction: 20 gauge galvanized steel.
  - .3 Style: Flush panel design.
  - .4 Core: Polyurethane insulation.
  - .5 Finish: Prime painted for site finishing.
  - .6 Sill: Extruded aluminum, thermally broken.
  - .7 Frame: Thermally broken

**2.4 INTERIOR DOORS**

- .1 Materials: Door and frame product shall be manufactured from tension leveled steel to ASTM A924/A924M. Galvanized to ASTM A653/A653M, Commercial Steel (CS) dry passivated, coating designation A40 (ZF 120), known commercially as painted galvaneal.
- .2 Interior Doors:
  - .1 Thickness: 1-3/4 inch.
  - .2 Door Construction: 20 gauge galvanized steel.
  - .3 Design: Flush.
  - .4 Core: Manufacturer's Standard.
  - .5 Finish: Primed for paint finish.

**2.5 FABRICATION - FRAMES**

- .1 Fabricate frames as detailed, in accordance with Canadian Steel Door and Frame Manufacturer's Association, "Canadian Manufacturing Specifications for Steel Doors and Frames" latest edition, except where specified otherwise.
- .2 Metal door frames in wood construction: "Knockdown" type.
- .3 Fire Rated Frames: Fabricate fire rated frames as per Underwriters requirements using not less than the thickness specified herein unless a greater thickness is stipulated by labeling authority.
- .4 Cut mitres and joints accurately, assemble frames in position and weld continuously on inside of frame profile.
- .5 Mortise, reinforce, drill and tap frames and reinforcements to receive hardware using templates provided by finish hardware supplier.
- .6 Grind welded corners and joints to a flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .7 Protect strike and hinge reinforcements with steel guard boxes welded to frames.
- .8 Reinforce frames for surface mounted hardware.
- .9 Weld in two channel spreaders per frame to ensure proper frame alignment.

**2.6 FABRICATION - METAL DOORS**

- .1 Fabricate steel doors as detailed, in accordance with Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames" latest edition, for honeycomb core construction, except where specified otherwise.
- .2 Fabricate fire-rated doors in accordance with the testing agency's requirements using material not less than the thickness specified herein, unless a greater thickness is specified in the rating requirements. Provide doors to receive door grilles with the prepared openings as required for the ULC label for the fire rated assembly.
- .3 Mortise, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by finish hardware supplier.
  - .1 Reinforce doors for surface hardware.
  - .2 Drill for face function holes.
  - .3 Through-drill mortise lock cylinder holes to permit standard reverse bevel interchangeability.
  - .4 Include lock case centering clips for mortise lock case reinforcing.
  - .5 Weld reinforcing plates in place.
- .4 Install hinge reinforcing of sufficient strength and tolerances to insure that reasonably even clearances can be obtained on all sides when installed in properly dimensioned frames.
- .5 Manufacture to sufficient tolerances to insure that no additional work is required on site to fit properly dimensioned mortise hardware.
- .6 Bevel hinge and lock edges 3 mm in 50 mm.
- .7 Mechanically interlock seams on hinge and lock edges and seal with silicone or epoxy.
- .8 Spot weld hinge edge seams and grind smooth 1" from each side of hinge locations.
- .9 Provide six wall anchors and two base anchors to suit wall construction. When providing anchors for existing walls, drill and countersink frames so that machine screws are flush with frames.
- .10 Install three bumpers on strike jamb for each single door and two bumpers at head for pairs of doors.
- .11 Touch up with primer where finish damaged during fabrication.
- .12 Manufacture to sufficient tolerances to insure that correctly installed frames will accept properly dimensioned doors with reasonably even clearances on all sides.

**2.7 ANCHORS**

- .1 Floor Anchors: Minimum 1.90 mm (14 ga.) thickness, securely welded inside each jamb; provide 2 holes at each jamb for floor anchorage. Note areas with depressed floor slabs.
- .2 Number of Wall Anchors per jamb:
  - .1 Frames up to 2134 mm (7'-0") Height: 3 anchors minimum.
- .3 Steel Spreaders: Provide metal frames with steel spreader temporarily attached to the feet of both jambs to serve as a brace during shipping and handling.

**2.8 ACCESSORIES**

- .1 Weatherstripping: Mechanically fastened, extruded aluminum with neoprene inserts and adjustable sweep at sill.
- .2 Rain Drip: Aluminum rain drip at head of door frame.

**2.9 HARDWARE PREPARATION**

- .1 Door Reinforcement: Mortised, reinforced, drilled and tapped at factory for fully templated hardware in conformance with hardware listed for each door in Hardware Schedule. Provide reinforcing plates only for surface mounted hardware. Drill and tap for surface mounted hardware on site.
- .2 Frames: Mortised, reinforced, drilled and tapped at the factory for fully templated and mortised hardware only, in conformance with hardware listed for each door in Hardware Schedule. Provide reinforcing plates only for surface mounted hardware. Drill and tap for surface mounted hardware on site.
- .3 Hardware Reinforcing Plates: Hard-tempered steel; minimum thickness 2.66 mm (12 ga.) except hinge and pivot reinforcements 4.55 mm (7 ga.).

**2.10 FINISHING**

- .1 Sand and clean surfaces prior to epoxy filler application.
- .2 Fill seams, depressions, intersecting comers completely with epoxy filler and sand smooth.
- .3 Clean and chemically treat metal to provide maximum paint adhesion.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- .1 Examine surfaces to which the work of this section is to be applied and ensure that conditions are suitable to provide a complete and satisfactory installation.
- .2 Correct unsatisfactory surfaces or conditions before start of work.
- .3 Commencement of work will indicate acceptance of surfaces and conditions.

**3.2 INSTALLATION**

- .1 Install hollow metal units and accessories in accordance with code requirements, approved shop drawings and manufacturer's data, and as specified in Section 06200 Finish Carpentry.

**3.3 ADJUSTING AND CLEANING**

- .1 Check and readjust operating finish hardware items just prior to final inspection. Leave work in complete and proper operating condition.
- .2 Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damaged.

END OF SECTION