PART 1 GENERAL

1.1 Related Sections

.1 Door Hardware — Section 08 71 00

.2 Joint Sealers: Caulking of joints between frames and other building components. Section 07 92 00

.3 Painting — Section 09 91 10

1.2 References

.1 American Society for Testing and Materials (ASTM).

.1 ASTM A 653M-95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealled) by the Hot-Dip Process.

.2 ASTM B 29-(92), Specification for Pig Lead.

.3 ASTM B 749-85(1991), Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.181-92, Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.

.3 CAN/CGSB-51.20-M87, Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.4 CGSB 51-GP-21M-78, Thermal Insulation, Urethane and Isocyanurate, Unfaced.

.3 Canadian Standards Association (CSA).

.1 CSA A101-M1983, Thermal Insulation, Mineral Fibre, for Buildings.

.2 CAN/CSA-G40.21-M92, Structural Quality Steels.

.3 CSA W59-M1989, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door and Frame Manufacturer's Association, (CSDFMA).

.1 CSDFMA, Specifications for Commercial Steel Doors and Frames, 1990.

.2 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.

.5 National Fire Protection Association (NFPA).

.1 NFPA 80-1992, Fire Doors and Windows.

.2 NAPA 252-1990, Door Assemblies, Fire Tests of.

.6 Underwriters' Laboratories of Canada (ULC).

.1 CAN-S104M-M80(R1985), Fire Tests of Door Assemblies.

.2 CAN-S105M-M85, Fire Door Frames.

1.3 Design Requirements

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35ºC to 35ºC.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kpa not to exceed 1/175th of span.

1.4 Shop Drawings

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvered, arrangement of hardware and fire rating and finishes.

.2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire-rating, finishes.

.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.4 Submit test and engineering data, and installation instructions.

1.5 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 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, ASTM E 152 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 2 PRODUCTS

2.1 Materials

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, minimum base steel thickness in accordance with CSDFMA Table 1 – Thickness for Component Parts.

.2 Reinforcement channel: to CAN/CSA-G40.21, Type 44W, coating designation to ASTM A 653M.

.3 Cast or rolled pure sheet lead: to ASTM B 29, weight: 14.6 kg/m2, thickness 1.2 mm.

.4 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

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, insulated core.

.1 Fibreglass: to CSA A101, semi-rigid RSI 2.3

.2 Polyurethane: to CGSB 51-GP-21M rigid, modified polyisocyanurate, closed cell board. Density 32 kg/m3.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250ºC at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E 152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency have factory inspection service.

.4 Thermal insulation material must:

.1 Not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act;

.2 Be manufactured using a process that uses chemical compounds with the minimum ozone depletion potential (ODP) available.

2.3 Adhesives

.1 Select Adhesives which:

.1 Do not contain volatile organic compounds in excess of 5% by weight as measured by EPA Method 24-24A, 40 C.F.R., Part 60, Appendix A (1991), as demonstrated through calculation from records of the amounts of constituents used to make the product;

.2 Are accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance;

.3 Are accompanied by information describing proper disposal methods for containers.

.2 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.3 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.4 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 Primers

.1 Touch-up prime CAN/CGSB-1.181.

2.5 Paint

.1 Steel doors and frames shall be field painted in accordance with Section 09 91 10. Weatherstripping shall be protected from paint. Finish shall be free of scratches or other blemishes.

.2 Paint: water based, manufactured without compounds which contribute to ozone depletion in the upper atmosphere, does not contain toxic metal pigments.

2.6 Accessories

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top and bottom caps: steel.

.3 Interior top and bottom caps: steel.

.4 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.5 Metallic paste filler: to manufacturer’s standard.

.6 Fire labels: metal riveted.

.7 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for dry glazing of snap-on type.

.2 Design exterior glazing stops to be tamperproof.

2.7 Frames Fabrication General

.1 Fabricate frames in accordance with CSDFMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 14 gauge minimum thermally broken type construction.

.4 Interior frames: 14 gauge minimum welded type construction.

.5 Blank, reinforce, drill and tap frames for mortised, template hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.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.

.11 Insulation exterior frame components with polyurethane insulation.

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 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. 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.

.7 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.10 Door Fabrication General

.1 Doors: swing type, flush, with provision for glass and/or louver openings as indicated.

.2 Exterior doors: honeycomb construction. Interior doors: honeycomb construction.

.3 Fabricate doors to tack and fill edges at perimeter every 150mm. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E 330.

.5 Blank, reinforce, drill doors and tap for mortised, template hardware and electronic hardware.

.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.7 Reinforce doors where required, for surface mounted hardware. Provide flush PVC top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.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 strict conformance with CAN4-S104, ASTM E 152 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.

.10 Manufacturer's nameplates on doors are not permitted.

2.11 Doors: Honeycomb Core Construction

.1 Form each face sheet for exterior doors from 16 gauge sheet steel with polyurethane core laminated under pressure to face sheets.

.2 Form each fact sheet for interior doors from 16 gauge sheet steel with temperature rise rated core laminated under pressure to face sheets.

2.12 Hollow Steel Construction

.1 Form each face sheet for exterior doors from 16 gauge minimum sheet steel.

.2 Form each face sheet for interior doors from 16 gauge minimum sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with polyurethane core.

.5 Fill voids between stiffeners of interior doors with temperature rise rated core.

2.13 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 polyvinyl chloride 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.

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 CSDFMA 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.

.6 Maintain Continuity Of Air Barrier And Vapour Retarder.

3.3 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 Latch side 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.