

Part 1 GENERAL

1.1 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 Install work to CSDFMA Installation Guide.

1.2 Quality Assurance

- .1 Fabrication: Comply with requirements of CSDFMA.
- .2 Source Limitations: Obtain doors and frames through one source from a single manufacturer.

1.3 Requirements of Regulatory Agencies

- .1 Fire Rated Assemblies: Labelled and listed by a nationally recognized testing agency having factory inspection service in conformance with CAN4 S104M and CAN4 S105M for fire protection ratings indicated.
- .2 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

1.4 Submittals

- .1 Submit shop drawings in accordance with CW 1110.
- .2 Indicate each type of door and frame, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware and fire rating.

1.5 Delivery, Storage, and Handling

- .1 Brace and protect doors and frames to prevent distortion during shipment. Store in a secure dry location.
- .2 Store doors vertically, resting on planks, with blocking between to allow air to circulate.

Part 2 PRODUCTS

2.1 Materials

- .1 Metallic Coated Sheet Steel: ASTM A568M Class 1 Commercial grade steel, hot dip galvanized to ASTM A 653/A653M ZF75/A25 zinc coated (Galvanized) or ZF180/A40 zinc-iron alloy-coated (Galvannealed).
- .2 Minimum Core Thickness, Without Coating: Metallic Coated Sheet Steel:
 - .1 Interior Door Frames: 1.519 mm.
 - .2 Exterior Door Frames: 2.0 mm.
 - .3 Interior Doors and Panels, Hollow Steel Construction
 - .1 Face Sheets: 1.519 mm.
 - .2 Vertical Stiffeners: 0.912 mm.

- .4 Doors and Panels, Honeycomb Core Construction:
 - .1 Face Sheets, 1.2 mm.
- .5 Lock and Strike Reinforcements: 2.66 mm.
- .6 Hinge and Pivot Reinforcements: 3.416 mm thick by 38 mm wide x 150 mm longer than hinge and pivot, secured by not less than 6 spot welds.
- .7 Closer or Holder Reinforcements: 2.66 mm.
- .8 Top and Bottom End Channels and Caps: 1.6 mm.
- .9 Mortar Guard Boxes: 0.759 mm.
- .10 Glass Stops: 0.912 mm.
- .11 Floor Anchors: 1.6 mm.
- .12 Jamb Spreaders: 0.912 mm.
- .13 Frame Anchors:
 - .1 Masonry T-strap Type: 1.214 mm.
 - .2 Existing Masonry/Concrete Wall Type: 0.912 mm.
 - .3 Masonry Wire Type: 4.0 mm diameter.
 - .4 Masonry Stirrup-strap Type: 50 mm x 250 mm x 1.6 mm.
- .3 Exterior Door Insulation: One component, low pressure expanding polyurethane foam, non-solvenated, maximum flame spread of 25 tested to ULC S102.
- .4 Adhesives for Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
- .5 Touch-Up Primer: CAN/CGSB-1.181, Zinc rich primer.
- .6 Door Silencers: Single stud rubber or neoprene.
- .7 Filler: Metallic paste, Manufacturer's standard.
- .8 Thermal Break: Rigid PVC extrusion.

2.2 Fabrication - General

- .1 Fabricate work in accordance with CSDFMA specifications.
- .2 Blank, reinforce, drill and tap units for mortised, templated hardware, and electronic hardware using templates provided by the hardware suppliers. Reinforce units for surface mounted hardware.
- .3 Do welding to CSA W59.
- .4 Factory apply touch up primer to doors and frames manufactured from metallic coated steel where coating has been removed during fabrication.
- .5 Make provisions in doors and frames to suit requirements of Section providing security devices.
- .6 Fabricate fire rated assemblies to ULC requirements and bearing ULC, cUL or Warnock-Hersey International Ltd., label, as acceptable to authorities having jurisdiction.
- .7 Locate fire rating labels on the inside of the frame hinge jamb and door hinge edge midway between the top hinge and the head of the door.

2.3 Fabrication – Frames

- .1 Fabricate frames to profiles and maximum face sizes as required to suit design, welded construction complete with removable mullion.
- .2 Cut mitres and joints accurately and weld continuously on inside of frame profile.
- .3 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .4 Protect mortised cutouts with mortar guard boxes in masonry and concrete constructions. Conceal fastenings except where exposed fastenings are required. Supply and Install appropriate anchorage to floor and wall construction.
- .5 Supply and Install jamb anchors for fixing at floor.
- .6 Supply and Install three door silencers on strike jamb for each single door, and two bumpers at head of frame for each door leaf in double doors.
- .7 Fabricate thermally broken frames for exterior doors using steel core, separating exterior portion of frame from interior portion with PVC thermal breaks.

2.4 Fabrication - Doors

- .1 Fabricate doors with longitudinal edges seamless, spot welded, filled and sanded flush.
- .2 Hollow Steel Construction: Form each door face from sheet steel. Reinforce doors with vertical stiffeners, securely welded or laminated to each face sheet at 150 mm on centre maximum. Fill voids between stiffeners of exterior doors with insulation.
- .3 Fabricate doors with top and bottom steel channels full width of door and welded to both faces. Supply and Install flush steel top edge on exterior doors.

Part 3 EXECUTION

3.1 Installation - General

- .1 Install fire rated assemblies in accordance with NFPA 80.
- .2 Touch up with primer galvanized finish damaged during installation.

3.2 Installation - Frames

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Supply and Install suitable anchors to suit construction. Use one base anchor and two wall anchors per jamb side for frames up to 1500 mm and one additional wall anchor per jamb side for each additional height of 750 mm or fraction thereof.
- .3 Secure anchorages and connections to adjacent construction.
- .4 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Remove temporary spreaders after frames are built-in.
- .5 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .6 Apply insulation to fill voids in exterior frame assemblies.

3.3 Installation - Doors

- .1 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:
 - .1 Hinge side: 3 mm.
 - .2 Latchside and head: 3 mm.
 - .3 Finished floor for non-rated assemblies: 12 mm, unless otherwise indicated.
 - .4 Finished floor for rated assemblies: To NFPA 80 requirements.
- .2 Adjust operable parts for correct function.

3.4 Cleaning

- .1 Clean and make good all surfaces soiled or otherwise damaged in connection with work. Upon completion of work and remove debris, equipment and excess material from Site.

END OF SECTION

Part 1 GENERAL

1.1 Quality Assurance

- .1 Furnish services of an AHC for preparation of hardware shop drawings, keying, co-ordination with other Sections, consultation with the Owner and the Contract Administrator and for on Site inspections.
- .2 Inspect all hardware after installation by the Manufacturer's Representative who shall certify in writing to the Owner, that all hardware has been supplied and installed in accordance with the Specifications and reviewed shop drawings, and are functioning properly.
- .3 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .4 Provide to applicable Sections templates and information required for proper preparation and application of hardware in ample time to facilitate progress of Work.
- .5 Before supplying and installing any hardware, carefully check Hardware Schedule, Drawings and Specifications. Verify door hands, door and frame material and operating conditions, and assure that hardware will fit work to which it is to be attached. Advise Contract Administrator in writing of required revisions.
- .6 Templates: check Hardware Schedule, Drawings and Specifications and supply promptly to applicable Sections any templates, template information and Manufacturer's literature, required for proper preparation for hardware, in ample time to facilitate progress of work.
- .7 Provide services of competent mechanics for the installation of hardware. Make adjustments necessary to leave hardware in perfect working order. Provide written summary of work completed and status of all items, including any adjustments, revisions or modifications.
- .8 Maintenance Seminar: instruct the Owner regarding proper care, cleaning and general maintenance.
- .9 Source Limitations: obtain each type of product from a single Manufacturer.

1.2 Regulatory Requirements

- .1 Ensure hardware for fire-rated openings complies with requirements of authorities having jurisdiction, with door and frame Manufacturer's tested assemblies, and that hardware items bear labels acceptable to authorities having jurisdiction.

Part 2 PRODUCTS

2.1 Materials

- .1 Type and Design: Matching in all respects to samples of hardware and finishes approved by Owner. Use one Manufacturer's products for all similar items.
- .2 Metal Finishes: Free from defects, clean and unstained, and of uniform colour.
- .3 Fire Rated Doors: Meeting requirements of ULC as part of fire rated door assembly, with ULC or WHI label, or as acceptable to authority having jurisdiction.

- .4 Fasteners: Screws, bolts, expansion shields and other fastening devices as required for satisfactory installation and operating of hardware.
 - .1 Same finish as hardware to which it is to be fastened.
- .5 Supply hardware complete with all necessary screws, bolts and other fastening of suitable size and type to anchor the hardware in position neatly and properly in accordance with the best practices and to the Contract Administrator's approval.
- .6 Fastenings: All fastenings shall harmonize with the hardware materials and finishes.
- .7 Hardware for fire rated and labelled door and frame assemblies: ULC listed or as accepted by authorities having jurisdiction.
- .8 Following Manufacturer's are acceptable subject to review by the Owner of samples and list of items proposed.
 - .1 Hinges:
 - .1 All Doors: Full mortised, stainless steel, minimum 114 mm x 102 mm, heavy weight, 5 knuckles, ball bearing, stainless steel screws.
 - .2 Non Removal Pin: Out swinging exterior doors and where scheduled.
 - .3 Stamp hinge catalogue numbers on face of leaf of each hinge at factory to enable easy recognition of hinge material and manufacture after doors are hung.
 - .4 Where doors are required to swing to 180 degrees, Supply and Install hinges of sufficient throw to clear trim.
 - .2 Locksets:
 - .1 Type and Finish: Heavy duty, stainless steel construction, orb handle and raised escutcheon.
 - .2 Backset: 125 mm for exterior doors, 70 mm for interior doors.
 - .3 Cylinders: 6 pin cylinders.
 - .4 Strikes: Stainless Steel, ANSI standard size with curved lip strikes for latch bolts and no lip strikes for dead locks. Provide complete with wrought boxes finished to match strike.
 - .3 Closers:
 - .1 Hydraulically controlled and full rack and pinion operation, clear anodized aluminum arm and full cover.
 - .2 Adjustable closing speed, latch speed and back check control.
 - .3 Adjustable swing power.
 - .4 Install all necessary attaching brackets, mounting channels, cover plates where necessary for correct application of door closers.
 - .5 Parallel arms at out swinging exterior doors and at interior doors where specified.
 - .6 Delayed action for barrier free application.
 - .7 Coordinate closers with overhead holders.
 - .4 Construction Keying:
 - .1 Equip lock cylinders in construction system.
 - .2 The construction key system to be inoperative once the Owner's keys are inserted in the cylinders.

- .5 Push Plates and Kickplates:
 - .1 Length: 40 mm less than door width for single doors and 20 mm less than door width for doors in pairs.
 - .2 Thickness: 1.3 mm, free of rough or sharp edges. Corners and edges to be slightly radiused.
 - .3 Installation: 3M tape.
- .6 Surface Bolts:
 - .1 Stainless steel top and bottom bolts, chain pull for top bolt.
 - .2 Dust free strikes.
- .7 Door Stops:
 - .1 Surface mount, stainless steel retainer, half dome shaped neoprene stop.
 - .2 Install floor stops in manner so as not to create a tripping hazard and allows maximum opening of doors.
 - .3 Supply and Install door stops of height to engage doors.
- .8 Weatherstrippings: Surface mounted extruded aluminum housing with neoprene bulb having spring mounted adjustment, 770A by Zero International.
- .9 Door Bottoms: Surface mounted, extruded aluminum housing, pressure spring loaded neoprene bulb, 365A by Zero International.
- .10 Thresholds: Extruded aluminum, high seat, except flat saddle for barrier free application.

2.2 Keying System

- .1 Lay out keying system for building in consultation with the City. Prepare and submit keying chart and related explanatory data for approval. Do not order cylinders until written confirmation of keying arrangements is received from the City.
- .2 Stamp keys "DO NOT DUPLICATE".
- .3 Provide two (2) change keys for each lock.

Part 3 EXECUTION

3.1 Preparation

- .1 Thoroughly check design and provide required hardware for openings to required detail.
- .2 Trim undesignated openings with hardware of equal quality and design to that specified for similar opening.
- .3 Furnish door and frame Manufacturers with complete instructions and templates for preparation of their Work to receive hardware.

3.2 Installation

- .1 Install finish hardware to template in accordance with Manufacturer's written instructions. Do not modify finish hardware without Manufacturer's written approval.
- .2 Install finish hardware for fire rated doors in accordance with NFPA 80 requirements.
- .3 Install finish hardware secure, plumb, level, and true to line.

- .4 Cut and fit to substrates avoiding damage and weakening. Reinforce attachment substrate as necessary for proper installation and operation.
- .5 Size cutouts so that hardware item completely covers cut out.
- .6 Mortise work to correct location and size without gouging, splintering, and causing irregularities in exposed finish work.
- .7 Where cutting and fitting is required on substrates to be painted or similarly finished, install, fit, and adjust hardware prior to finishing.
- .8 Remove hardware and place in original packaging.
- .9 Re-install hardware after finishing operation is complete.
- .10 Install hardware items affixed to concrete and masonry with machine screws and threaded metal expansion shields.
- .11 Set, fit and adjust hardware according to Manufacturer's templates and instructions. Hardware shall operate freely. Protect installed hardware from damage and paint spotting.
- .12 Consult with the Manufacturer of security hardware items such as door monitoring equipment, card reader access equipment, electric strikes, and electric hinges operated by card access equipment and combination magnetic door holder releases/door closers and install in accordance with Manufacturer's recommendations under the Contractor's supervision Sections Fire Detection and Alarm System. Use templates as supplied by Manufacturer for pre-drilling doors and frames.
- .13 Pre-drill kickplates and doors before attachment of plates. Apply with water resistant adhesive and countersunk stainless steel screws.
- .14 Weatherstrip exterior doors. Install effectively to tightly seal entire perimeter of door. Secure in place with non-ferrous screws, in accurate alignment.
- .15 Maintain integrity of weather seal at head of doors fitted with closers. Adapt weatherstripping as required to achieve specified performance and provide any necessary accessories.
- .16 After installation of hardware under this Section, check opening units for correct fit and uniformity of space around perimeter of units, or between units. Provide smoothly operating opening units free from binding.

3.3 Field Quality Control

- .1 Have hardware Manufacturer's Representative visit Site and submit written report of each visit to Site, giving storage conditions and installation details, date and name of hardware Manufacturer's Representative.

3.4 Adjustments and Cleaning

- .1 Adjust and clean hardware according to Manufacturer's written instructions.
- .2 Turn over construction keys and extractor key to the Owner and provide any required adjustment or modifications prior to Substantial Performance of the Contract.
- .3 Hand over to the Owner Grand-master and master keys, Change Keys, Control Keys and Permanent Cylinders and core. The Owner will be responsible for interchanging temporary construction cores with permanent cylinder cores in locks. Temporary construction cores will be returned to Contractor.

3.5 Extended Warranty

- .1 Warrant work against defects in materials and quality of performance for a period of five (5) years for door closers and two (2) years for other hardware.

END OF SECTION