

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 04 00 00 - Masonry.
- .3 Section 07 92 10 - Joint Sealing: Caulking of joints between frames and other building components.
- .4 Section 08 71 10 - Door Hardware including Draft Seal Astral and weather-stripping.
- .5 Section 09 91 23 - Interior Painting.

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM International)
  - .1 ASTM A 653/A653M-01a, 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-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3 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.
- .4 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.
- .5 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN4-S104-80(R1985), Fire Tests of Door Assemblies.
  - .2 CAN4-S105-85(R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

### **1.3 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate type of door, material, steel thicknesses, mortises, reinforcing, location of openings for glass, glazing stops, arrangement of hardware and fire rating and finishes.
- .3 Indicate type of frame material, thickness, reinforcements, location of anchors and exposed fastenings fire rating finishes.

### **1.4 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 1.5 hours fire labelled frame for entrance opening 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.

## **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling.
- .3 Divert unused paint and sealant materials from landfill to official hazardous material collections site.
- .4 Do not dispose of unused paint and sealant materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.
- .5 Damaged or broken glazing materials are not recyclable. These materials must not be disposed of with materials destined for recycling.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.
- .3 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/m<sup>3</sup> minimum sanded to required thickness.
- .2 Stiffened: face sheets, honeycomb or insulated core as indicated.
  - .1 Expanded polystyrene: CAN/ULC-S701, density 16 to 32 kg/m<sup>3</sup>.
- .3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250° C at [30] [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 having factory inspection service.
- .4 Thermal insulation material must:
  - .1 not require being labeled 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 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.
- .3 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 Sections 09 91 23 - Interior Painting and 09 91 13 - Exterior 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].
- .3 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.
- .4 Door bottom seal: as per Section 08 71 10 - Door Hardware - General.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Sealant: as per Section 07 92 10 - Joint Sealing.
- .7 Glazing: 152mm x 406mm GPW/Temp S/U lite. Wire Mesh, rectangular style. Tempered hermetically sealed.
- .8 Make provisions for glazing as indicated and provide necessary glazing stops.
  - .1 Provide removable stainless steel glazing beads.
  - .2 Design exterior glazing stops to be tamperproof.

## **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, construction as indicated.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Prepare frame for door silencers, 3 for single door.
- .6 Conceal fastenings except where exposed fastenings are indicated.
- .7 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .8 Insulate 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.

## **2.9 FRAMES: KNOCKED-DOWN TYPE**

- .1 Ship knocked-down type frames unassembled.
- .2 Provide frames with mechanical joints which inter-lock securely and provide functionally satisfactory performance when assembled and installed in accordance with CSDMA Recommended Installation Guide for Steel Doors and Frames.
- .3 Securely attach floor anchors to inside of each jamb profile.

## **2.10 DOOR FABRICATION GENERAL**

- .1 Doors: swing type, flush, with provision for glass opening as indicated.
- .2 Exterior doors: insulated construction.
- .3 Fabricate doors with longitudinal edges locked seam. Seams: visible.
- .4 Blank, reinforce, drill doors and tap for mortised or templated 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 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.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Provide 1.5 hours fire labelled door for entrance opening, 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.
- .9 Manufacturer's nameplates on visible faces of doors are not permitted.

## **2.11 DOORS: HONEYCOMB CORE CONSTRUCTION**

- .1 Form each face sheet for exterior doors from 1.6 mm sheet steel with polystyrene core laminated under pressure to face sheets.
- .2 Form each face sheet for interior doors from 1.6 mm sheet steel with honeycomb core laminated under pressure to face sheets.

## **2.12 HOLLOW STEEL CONSTRUCTION**

- .1 Form each face sheet for interior doors from 1.6 mm sheet steel.
- .2 Reinforce doors with vertical stiffeners, securely fastened to each face sheet at 150 mm on centre maximum.
- .3 Fill voids between stiffeners of interior doors with fiberglass core.

# **PART 3 - EXECUTION**

## **3.1 INSTALLATION GENERAL**

- .1 Install 1.5 hours labelled steel fire rated doors and frames to NFPA 80.
- .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.
- .6 Maintain continuity of vapour retarder.

### **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.
- .2 Provide even margins between doors and jambs and doors and finished floor as follows.
  - .1 Hinge side: 1.0 mm.
  - .2 Latchside and head: 1.5 mm.
  - .3 Finished floor, top of carpet and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.
- .4 Install louvers as indicated.

### **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 in accordance with FGMA Glazing Manual.
  - .1 Verify that openings for glazing are correctly sized and within tolerance.
  - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 61 00 - Common Product Requirements.
- .2 Section 01 78 00 - Closeout Submittals.

### **1.2 REFERENCES**

- .1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
  - .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

### **1.3 SUBMITTALS**

- .1 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.
- .2 Closeout Submittals
  - .1 Provide operation and maintenance data for door closers, locksets, door holders and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
  - .1 Store finishing hardware in locked, clean and dry area.

### **1.5 WASTE DISPOSAL AND MANAGEMENT**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

### **1.6 MAINTENANCE**

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 – Closeout Submittals.
  - .2 Supply two sets of wrenches for door closers and fire exit hardware.

## **PART 2 - PRODUCTS**

### **2.1 HARDWARE ITEMS**

- .1 Use one manufacturer's products only for similar items.

### **2.2 DOOR HARDWARE**

- .1 As per Hardware Schedule

### **2.3 FASTENINGS**

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Use fasteners compatible with material through which they pass.

### **2.4 KEYING**

- .1 Doors to be keyed as directed with Departmental Representative.
- .2 Door D100 should be open with the same key as existing doors.
- .3 Provide 3 keys for Door D100.
- .4 Provide construction cores.
- .5 Provide all permanent cores and keys to Departmental Representative.

## **PART 3 - EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.

### **3.2 INSTALLATION**

- .1 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.
- .2 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .3 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .4 Remove construction cores when directed by Consultant; install permanent cores and check operation of locks.

### **3.3 ADJUSTING**

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to provide tight fit at contact points with frames.

### **3.4 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

### **3.5 DEMONSTRATION**

- .1 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

### **3.6 HARDWARE MANUFACTURERS**

Panic Device	Von Duprin
Surface Closer	LCN
Hinge	McKinney
Kick Plate	Standard Manufacturer
Weather-strip	K. N. Crowder Mfg., Inc.
Door Sweep	K. N. Crowder Mfg., Inc.
Threshold	K. N. Crowder Mfg., Inc.
Rim Cylinder	Schlage Lock Company

### **3.7 SCHEDULE**

	HW SET: 01				
	Pair: D100				
3	EA	HINGE	TA2314 4.5" X 4" 32 D NRP	630	MCK
1	EA	PANIC DEVICE	98LF 26D EXIT DEVICE	630	VD
1	EA	RIM CYLINDER	20-021 X C123 X MK X GMK	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
2	EA	KICK PLATE	10" X 34" 32D	630	SM
1	SET	WEATHERSTRIP	W18-17', 2/7', 1/3'	628	KNC
1	EA	DOOR SWEEP	W-13S 36"	628	KNC
1	EA	THRESHOLD	CT32 8" X 36" ALUMINUM	627	KNC
1	EA	ASTRAGAL	DRAFT SEAL ASTRAGAL BY DOOR SUPPLIER	689	LCN

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.
- .3 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.
- .4 Section 08 80 50 - Glazing

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM International)
  - .1 ASTM D 1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).
  - .2 ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
  - .3 ASTM G 26 - Standard Practice for Performing Accelerated Outdoor Weatherizing for Non-metallic Materials Using Concentrated Natural Sunlight
- .2 Canadian Standards Association (CSA) International
  - .1 CSA-A440-00/A440.1-00, A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.

### **1.3 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate materials for each application along with preparation instructions and recommendations, storage and handling requirements and installation methods.

### **1.4 CLOSEOUT SUBMITTALS**

- .1 Provide operation and maintenance data for film for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Security Film: Clear: Optically clear micro-layered polyester film, laminated to additional clear micro-layered polyester film (Multi Layered), with a durable acrylic abrasion resistant coating over the surface. The film is clear and will not contain dyed polyester.

- .2 Performance Requirements:
  1. Film Color: Clear.
  2. Thickness: Nominal 6.0 mils (0.3mm).
  3. Emissivity: 0.87 when measured using a Devices & Services Emissometer Model AE at or near room temperature.
  4. U-Factor: 1.09.
  5. Visible Light Transmission (ASTM E 84): 86 percent.
  6. Visible Reflection (ASTM E 903): Not more than 11 percent.
  7. Ultraviolet Transmission (ASTM E 903): Less than 2 percent.
  8. Shading Coefficient at 90 Degrees (Normal Incidence) (ASTM E 903): Not less than 0.91.
  9. Tear Resistance (ASTM D 1004): Greater than 780 lbs.
  10. Safety Rating: Category II (400 ft.-lbs).
  11. Tensile Strength (ASTM D 882-95a): 30,000 psi.
  12. Breaking Strength (Per Inch Width): 120 lbs.
  13. Puncture Propagation Tear (ASTM D 2582-93): 7.5 lbs.
  14. Young Modulus (ASTM D 882-95a): 500 kpsi nominal.
- .3 Standard of Acceptance: Ultra 600 Series, Scotchshield Safety and Security Window Films as manufactured by 3M.
- .4 Perimeter Seal: Silicone Structural Adhesive system. Standard of Acceptance: 995 Silicone Structural Adhesive System as manufactured by Dow Corning.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- .1 Do not begin installation until substrates have been properly prepared.
- .2 If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.

### **3.2 PREPARATION**

- .1 Clean surfaces thoroughly prior to installation.
- .2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.3 INSTALLATION**

- .1 Install in accordance with manufacturer's instructions.
- .2 All exterior window glazing and door glazing is to receive Security Window film and perimeter structural adhesive to frames.
- .3 Cut film edges neatly and square at a uniform distance of 3 mm to 1.5 mm of window sealant. Use new blade tips after 3 to 4 cuts.
- .4 Spray the slip solution, composed of one capful of baby shampoo or dishwashing liquid to 4 litres of water, on window glass and adhesive to facilitate proper positioning of film.
- .5 Apply film to glass and lightly spray film with slip solution.
- .6 Squeegee from top to bottom of window. Spray slip solution to film and squeegee a second time.

- .7 Bump film edge with lint-free towel wrapped around edge of a 5-way tool.
- .8 After film has been installed, secure perimeter of film to window frame by applying a bead of silicone structural adhesive.
- .9 Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

#### **3.4 CLEANING AND PROTECTION**

- .1 Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.
- .2 Touch-up, repair or replace damaged products before Substantial Completion.
- .3 After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.

**End of Section**