

## **PART I GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 00010 - Door Hardware Schedule
- .2 Section 08700 - Door Hardware: Hardware, silencers, and weather-stripping.
- .3 Section 08800 - Glazing.
- .4 Section 09900 - Painting: Field painting of frames.
- .5 Division 16 - Electrical

### **1.2 REFERENCES**

- .1 ANSI A1 17.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- .2 ASTM A653JA653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM EI 52 - Methods of Fire Tests of Door Assemblies.
- .4 CSDFMA (Canadian Steel Door and Frame Manufacturers Association).
- .5 DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- .6 NFPA 80 - Fire Doors and Windows.
- .7 NFPA 252 - Fire Tests for Door Assemblies.
- .8 SDI-100 - Standard Steel Doors and Frames.
- .9 UL 10B - Fire Tests of Door Assemblies.

### **1.3 SUBMITTALS**

- .1 Shop Drawings: Submit shop drawings indicating each type of door, frame, steel, core and material thickness, mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, paneled or louvered) and arrangement of standard hardware. Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

### **1.4 QUALITY ASSURANCE**

- .1 Conform to requirements of CSDFMA SDI-100 and ANSI A117.1.

## **1.5 REGULATORY REQUIREMENTS**

- .1 Install fire labeled steel doors and frame products in accordance with NFPA-80, current edition, except where specified otherwise.

## **1.6 PROJECT CONDITIONS**

- .1 Coordinate the work with frame opening construction, door, and hardware installation.
- .2 Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

## **PART 2 PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- .1 Gensteel Doors or approved equal in accordance with B6.

### **2.2 FRAMES**

- .1 Frames: 1.5 mm thick material, base metal thickness with ZF75 Colourbond coating.
- .2 Removable Stops: Rolled steel shape, mitered corners; prepared for countersink style tamper proof screws.
- .3 Anchors: purpose made to rigidly secure frames, 3 per jamb.
- .4 Mortar Guard Boxes: 0.76 mm welded in place.
- .6 Primer: Zinc chromate type.
- .7 Silencers: Resilient rubber set in steel fitted into drilled hole.
- .8 Insulation: Fibreglass.

### **2.3 DOORS**

- .1 Insulated Core Doors: minimum, 1.2 mm surface sheets, and top and bottom end channels; cores filled with insulation.
- .2 Honeycomb Core Doors: minimum, 1.2 mm surface sheets and, top and bottom end channels; cores filled with honeycomb material laminated under pressure to surface sheets.

- .3 Fire Rated Doors: Minimum, 1.2 mm surface sheets and, top and bottom end channels, of ULC label requirements indicated on drawings.
- .4 Reinforcement for hardware:
  - .1 Locks: minimum 1.5 mm. steel.
  - .2 Butts: minimum 3.42 mm steel.
  - .3 Flush Bolts: minimum 3.42 mm steel.
  - .4 Door Closures: minimum 1.9 mm steel.
  - .5 Glazing Stops: 0.76 mm rolled steel channel shape, butted comers; 5-1/8" high profile; prepared for countersink screws.

## **2.4 FABRICATION FRAMES**

- .1 Fabricate frames as welded unit.
- .2 Mullions for Double Doors: Fixed type, of same profiles as jambs.
- .3 Transom Bars for Glazed Lights: Fixed type, of same profiles as jamb and head.
- .4 Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.
- .5 Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
- .6 Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.
- .7 Attach fire rated label to each fire rated door unit.
- .8 Provide drywall returns on all frames.
- .9 Attach channel spreaders at bottom of frames for shipping.

## **2.5 FABRICATION – DOORS**

- .1 Fabricate hollow metal doors and panels in accordance with requirements of "Canadian Manufacturing Standards for Steel Doors and Frames" produced by the Canadian Steel Door and Frame Manufacturer's Association and as indicated on Drawings. Fabricate doors with hardware reinforcement welded in place.
- .2 Fabricate fire rated hollow metal doors in accordance with requirements of Underwriters Laboratories of Canada (ULC). Place ULC labels where visible when in installed position.

- .3 Mechanically interlock longitudinal seams of honeycomb core type doors weld seams and sand flush. Top and bottom of doors closed with end channels recessed and spot welded in place.
- .4 Reinforce and prepare doors to receive hardware. Refer to Section 08700 for hardware requirements.
- .5 Each exterior hollow metal door to be supplied complete with a full minimum 3.42 mm anti-intrusion plate welded to latch side of door.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verify that opening sizes and tolerances are acceptable.

#### **3.2 INSTALLATION**

- .1 Install frames in accordance with CSDFMA.
- .2 Coordinate with masonry, gypsum board, concrete wall construction for anchor placement.
- .3 Coordinate installation of glass and glazing.
- .4 Coordinate installation of doors and frames with installation of hardware specified in Section 08700.
- .5 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- .6 After installation, touch up all scratched or damaged surface and prime.
- .7 Insulate all frames exposed to the exterior.
- .8 Install door louvers, plumb and level.

#### **3.3 ERECTION TOLERANCES**

- .1 Maximum Diagonal Distortion: 1/16" measured with straight edges, crossed corner to corner.
- .2 Clearance on steel doors at head and jambs shall be 1/8" maximum, and 1/8" maximum between pairs of doors.

#### **3.4 ADJUSTING**

- .1 Adjust door for smooth and balanced door movement.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 SUMMARY**

- A. Section Includes:
1. Entrance and storefront systems, complete with reinforcing, fasteners, anchors and attachment devices.
  2. Aluminum doors complete with hardware.
  3. Accessories necessary to complete work.
- C. Related Sections:
1. Section 00010 – Door Hardware Schedule
  2. Section 01450 - Quality Control.
  3. Section 05500 - Metal Fabrications.
  4. Section 06114 - Rough Carpentry.
  5. Section 07900 - Joint Sealers.
  6. Section 08700 - Door Hardware.
  7. Section 08800 - Glazing.

### **1.2 REFERENCES**

- A. Aluminum Association (AA):
1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
1. 503.1 Test Method for Condensation Resistance of Windows, Doors and Glazed Wall Systems.
  2. 605.2-92 Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
  3. 607.1 Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
  4. 701.2 Specifications for Pile Weatherstripping.
  5. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.
  7. SFM-1 Aluminum Storefront and Entrance Manual.
- C. American National Standards Institute (ANSI):
1. A117.1 Safety Standards for the Handicapped.
- D. American Society for Testing and Materials (ASTM):
1. A36 Structural Steel.
  2. B209 Aluminum and Aluminum - Alloy Sheet and Plate.
  3. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
  4. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
  5. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
  6. C864 Dense Elastomeric Compression Seal Gaskets, Setting Blocks and Spacers.
  7. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
  8. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  9. E331 Test Method for Water Penetration of Exterior Windows, Curtain

Walls and Doors by Uniform Static Air Pressure Difference.

- E. Federal Specifications (FS):
  - 1. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.
- F. Steel Structures Painting Council (SSPC):
  - 1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

### 1.3 SUBMITTALS

- A. General: Submit in accordance with Section 01330.
- B. Product Data:
  - 1. Submit manufacturer's descriptive literature and product specifications.
  - 2. Include information for factory finishes, hardware, accessories and other required components.
- C. Shop Drawings:
  - 1. Submit shop drawings covering fabrication, installation and finish of specified systems.
  - 2. Include following:
    - a. Fully dimensioned plans and elevations with detail coordination keys.
    - b. Locations of exposed fasteners and joints.
  - 3. Provide detailed drawings of:
    - a. Composite members.
    - b. Joint connections for framing systems and for entrance doors.
    - c. Anchorage.
    - d. System reinforcements.
    - e. Expansion and contraction provisions.
    - f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.
    - g. Glazing methods and accessories.
    - h. Internal sealant requirements as recommended by sealant manufacturer.
  - 4. Schedule of finishes.
- D. Samples:
  - 1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as standard with manufacturer.
  - 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
- E. Test Reports:
  - 1. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.
- F. Certificates:
  - 1. Submit manufacturer's certification stating that systems are in compliance with specified requirements.
- G. Qualification Data:
  - 1. Submit installer qualifications verifying years of experience.
  - 2. Include list of projects having similar scope of work identified by name, location, date, reference name and phone number.
- H. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

### 1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
    - 1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.
  - B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.
  - C. Perform Work in accordance with AAMA SFM-1 and manufacturer's written instructions.
  - D. Conform to requirements of ANSI A117.1 and local amendments.
- 1.6 DELIVERY, STORAGE AND HANDLING
- A. Protect finished surfaces as necessary to prevent damage.
  - B. Do not use adhesive papers or sprayed coatings which become firmly bonded when exposed to sun.
  - C. Do not leave coating residue on any surfaces.
  - D. Replace damaged units.
- 1.7 WARRANTY
- A. Provide the following warranties in conjunction with Contractor's statutory one-year warranty and any applicable manufacturer's warranties:
    - 1. Provide a written thermal integrity warranty for 2 years from ship date against thermal barrier system failure resulting from the following:
      - .1 Longitudinal and transverse thermal barrier shrinkage.
      - .2 Thermal barrier cracking.
      - .3 Structural failure of the thermal barrier material.
      - .4 Loss of adhesion or loss of prescribed edge pressure on glazing material resulting in excessive air and water infiltration.

## PART 2 - PRODUCTS

- 2.1 MANUFACTURERS AND PRODUCTS
- A. Approved Manufacturer:  
United States Aluminum, 200 Singleton Drive, Waxahachie, Texas 75165; (972) 937-9651 (voice); (972) 937-0405 (data).
  - B. Substitutions: Submit full product data for Contract Administrator approval a minimum of 10 days prior to bid date.
  - C. Acceptable Entrance Doors: 1
    - 1. Interior Doors: Series 450, with Mid-panel panic device system.
    - 2. Exterior Doors: Series 400t, thermally sealed, with Mid-panel panic device system.
  - D. Acceptable Framing Systems:
    - 1. Interior Frames: Series 450.
    - 2. Exterior Frames: Series FT451, c/w thermal break and 10 year manufacturer warranty.



## 2.2 FRAMING MATERIALS AND ACCESSORIES

- A. Aluminum:
  - 1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.
- B. Anchorage Devices:
  - 1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
- C. Fasteners:
  - 1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.
  - 2. Do not use exposed fasteners, except where unavoidable for application of hardware.
  - 3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.
  - 4. For concealed locations, provide manufacturer's standard fasteners.
  - 5. Provide nuts or washers of design having means to prevent disengagement; deforming of fastener threads is unacceptable.
- D. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.
- E. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.
- F. Glazing Gaskets:
  - 1. Compression type design, replaceable, molded or extruded, of neoprene, or ethylene propylene diene monomer (EPDM).
  - 2. Conform to ASTM C509 or C864.
  - 3. Profile and hardness as required to maintain uniform pressure for watertight seal.
  - 4. Provide in manufacturer's standard black color.
- G. Weatherstripping:
  - 1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
  - 2. Provide EPDM or vinyl-blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.
- H. Internal Sealants: Types recommended by sealant manufacturer.
- I. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.
- J. Baffles (at weep holes): Type as recommended by system manufacturer and shown in published installation instructions.

## 2.3 FABRICATION

- A. Coordination of Fabrication:
  - 1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
  - 2. Fabricate units to withstand loads which will be applied when system is in place.

- B. General:
1. Conceal fasteners wherever possible.
  2. Reinforce work as necessary for performance requirements and for support to structure.
  3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.
  4. Comply with Section 08800 for glazing requirements.
- C. Aluminum Framing:
1. Provide members of size, shape and profile indicated, designed to provide for glazing from interior.
  2. Fabricate frame assemblies with joints straight and tight fitting.
  3. Reinforce internally with structural members as necessary to support design loads.
  4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
  5. Seal horizontals and direct moisture accumulation to exterior.
  6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.
  7. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without being detrimental to appearance or performance.
  8. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or infill used in accordance with recommendations of manufacturer and FGMA Glazing Manual.
  9. Provide tight fitting, injection molded, plastic water deflectors at all intermediate horizontals.
- D. Entrance Doors:
1. Fabricate with mechanical joints using internal reinforcing plates and shear blocks attached with fasteners and by welding.
  2. Provide extruded aluminum glazing stops of square design.
- E. Hardware:
1. Receive hardware supplied in accordance with Section 08700 and install in accordance with requirements of this Section.
  2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
  3. Comply with hardware manufacturer's templates and instructions.
  4. Use concealed fasteners wherever possible.
- F. Welding:
1. Comply with recommendations of the American Welding Society.
  2. Use recommended electrodes and methods to avoid distortion and discoloration.
  3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

- G. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

## 2.6 FINISH

- A. Exterior Doors to be Organic Coating (high performance fluoropolymer):
  - 1. Comply with requirements of AAMA 605.2-92.
  - 2. Surfaces cleaned and given conversion coating pre-treatment prior to application of 0.3 mil dry film thickness of epoxy or acrylic primer following recommendations of finish coat manufacturer.
  - 3. Acceptable coating manufacturer's: PPG Industries Inc. and The Valspar Corporation.
- B. Interior Doors to be Clear Anodized:
  - 1. Conforming to AA-M12C22A31 and AAMA 607.1.
  - 2. Architectural Class II, etched, medium matte, clear anodic coating, 0.4 mil (0.010 mm) minimum thickness.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01450.
- B. Verify dimensions, tolerances and method of attachment with other Work.

### 3.2 INSTALLATION

- A. Erection Tolerances:
  - 1. Limit variations from plumb and level:
    - a. 1/8 inch (3 mm) in 10 feet (3 M) vertically.
    - b. 1/8 inch (3 mm) in 20 feet (6 M) horizontally.
  - 2. Limit variations from theoretical locations: 1/4 inch (6 mm) for any member at any location.
  - 3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch (2 mm) from flush surfaces not more than 2 inches (51 mm) apart or out-of-flush by more than 1/4 inch (6 mm).
- B. Install doors and hardware in accordance with manufacturer's printed instructions.
- C. Set units plumb, level and true to line, without warp or rack of frame.
- D. Anchor securely in place, allowing for required movement, including expansion and contraction.
- E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.
- F. Seal perimeter members as shown on manufacturer's installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer's installation instructions. Use sealants as recommended by sealant manufacturer.
- G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07900.

- H. Glazing: Refer to requirements of Section 08800. Utilize "anti-walk" edge blocking on all vertical edges of glazing.
  
- 3.3 ADJUSTING
  - A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.
  
- 3.4 CLEANING
  - A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
  - B. Clean metal surfaces exercising care to avoid damage.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-79.1-M91, Insect Screens.
- .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.
  - .2 CAN/CSA-Z91-M90(R2000), Safety Code for Window Cleaning Operations.

**1.2 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
- .2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units elevations of unit, anchorage details, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.

**1.3 SAMPLES**

- .1 Submit samples in accordance with Section 01330 - Submittal Procedures.
- .2 Submit one representative model of each type window.
- .3 Include frame, sash, sill, glazing and weatherproofing method, insect screens, surface finish and hardware. Show location of manufacturer's nameplates.
- .4 Include 6" long samples of head, jamb, sill, meeting rail, mullions to indicate profile.

**1.4 CLOSEOUT SUBMITTALS**

- .1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01780 - Closeout Submittals.

**1.5 WARRANTY**

- .1 Provide minimum ten (10) year warranty on labour and materials to replace defective parts of window, insulated glass and hardware.
- .2 All warranties to conform to requirements of General Conditions.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Materials: to CSA-A440/A440.1 supplemented as follows:
- .2 All fibreglass windows by same manufacturer.
- .3 Main frame: fibreglass.
- .4 Glass:
  - .1 Float glass: to CAN/CGSB-12.3-M91, glazing quality.
  - .2 Insulating glass units: to CAN/CGSB-12.8-M90, dual unit non-reflecting glass, 22 mm overall thickness, with outer, and inner pane of 5 mm clear tempered float glass. AFG Clear Comfort Ti-AC40 e (surface #2)/Argon (12 mm air space)Edgetech S-Class Super Spacer.
- .5 Screens: to CAN/CGSB-79.1.
  - .1 Insect screening mesh: count 18 x 16.
  - .2 Fasteners: tamper proof.
  - .3 Screen frames: colour to match window frames.
  - .4 Mount screen frames for interior replacement.
- .6 Interior, Exterior sills and jambs of type and size to suit job conditions; complete with joint covers, jamb drip deflectors, chairs, anchors and anchoring devices.

**2.2 WINDOW TYPE AND CLASSIFICATION**

- .1 Fixed units: medium duty units with minimum classifications of A3 (air infiltration), B7 (water leakage) and C4 (wind load resistance) to A440 Series-00. Duxton Windows and Doors 325 Series Lo Profile.
- .2 Classification rating: CSA PKG A440-00, Energy Rating ER=14.

Acceptable Material:

- .1 Manufacturer: Duxton Windows and Doors, or approved equal in accordance with B6.
- .2 Colour of frame: Interior/Exterior to be Metallic Silver.

- .3 Colour of exterior fibreglass brickmould and exterior sill jamb extension:  
Metallic Silver.

## **2.3 FABRICATION**

- .1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:
- .2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.
- .3 Face dimensions detailed are maximum permissible sizes.
- .4 Brace frames to maintain squareness and rigidity during shipment and installation.

## **2.4 GLAZING**

- .1 Glaze windows in accordance with CSA-A440/A440.1.

## **2.5 HARDWARE**

- .1 Operators: provide prefinished foldback operator for all awning units. Operators to provide security and permit easy operation of units

## **2.6 AIR BARRIER AND VAPOUR RETARDER**

- .1 Equip window frames with factory / site installed air barrier and vapour retarder material for sealing to building air barrier and vapour retarder as follows:
  - .1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
  - .2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

## **Part 3 Execution**

### **3.1 WINDOW INSTALLATION**

- .1 Install in accordance with CSA-A440/A440.1.

**3.2 CAULKING**

- .1 Seal joints between windows and building with sealant. Apply sealant in accordance with Section 07900 - Joint Sealers. Conceal sealant within window units except where exposed use is permitted by Contract Administrator.

**3.3 CLEANING**

- .1 Leave work area free of all surplus materials, packing, and debris.

**END OF SECTION**



## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 Hardware for hollow steel and aluminum doors
- .2 Thresholds
- .3 Weather-stripping, seals, and door gaskets.

### **1.2 RELATED SECTIONS**

- .1 Section 08100 – Steel Doors and Frames.
- .2 Section 08411 – Aluminum Doors and Frames.
- .3 Division 16 – Power supply to electric hardware devices.

### **1.3 REFERENCES**

- .1 BHMA (Builders Hardware Manufacturers Association) – A156 series.
- .2 DHI (Door and Hardware Institute) – A115 series.
- .3 ULC – List of Equipment and Materials
- .4 NFPA 80 – Fire Doors and Windows
- .5 NFPA 252 – Fire Tests of Door Assemblies.

### **1.4 SUBMITTALS**

- .1 Submit shop drawings in vertical format to requirements of Section 01330.
- .2 Indicate on shop drawings, locations and mounting height of each type of hardware.
- .3 Hardware list shall list each door individually and shall list hardware for each door as a described item, not by a code as is done in the specification. Hardware list shall be in terminology understandable by a layperson.
- .4 Supply templates to door and frame manufacturer to enable accurate sizes, location of cut outs, and reinforcement for hardware.
- .5 Provide product data on specified hardware as requested.

- .6 Submit one copy of manufacturers' catalogue cuts of each item, with hardware list.
- .7 Put parts lists, manufacturers instruction, and catalogue cuts into maintenance manual as per Section 01330.

**1.5 QUALITY ASSURANCE**

- .1 Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with 5 years documented experience, approved by manufacturer.

**1.6 REGULATORY REQUIREMENTS**

- .1 Products requiring electrical connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for the purpose specified and indicated.
- .2 Conform to applicable code and ULC for requirements applicable to fire rated doors, frames, and hardware.

**1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Transport, handle, store, and protect products.
- .2 Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

**1.8 PROJECT CONDITIONS**

- .1 Coordinate the Work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- .2 Supply templates to manufacturers of components affected by hardware.
- .3 Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- .4 Coordinate Cities' keying requirements during the course of the Work.

**1.9 MAINTENANCE PRODUCTS**

- .1 Provide special wrenches and tools applicable to each different or special hardware component.

- .2 Provide maintenance tools and accessories supplied by hardware component manufacturer.

## **Part 2 – Products**

### **2.1 MANUFACTURERS**

- .1 Refer to hardware Schedule in Section 00010.

### **2.2 KEYING**

- .1 Door Locks: grand master keyed.
- .2 Key to existing keying system.
- .3 Supply keys in the following quantities:
  - .1 5 master keys for each group.
  - .2 3 grand master keys for each group.

### **2.3 FINISHES**

- .1 Finishes: Identified in Schedule at end of Section.

## **Part 3 – Execution**

### **3.1 EXAMINATION**

- .1 Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- .2 Verify that electric power is available to power operated devices and is of the correct characteristics.

### **3.2 INSTALLATION**

- .1 Install hardware in accordance with manufacturers' instructions.
- .2 Use templates provided by hardware item manufacturer.
- .3 Include either of the following paragraphs if hardware item location vary from industry standard or as may be listed in the schedule. Supplement the listing as required for other hardware components scheduled.

.4 Mounting height for hardware from finished floor to center line of hardware item:

.1 Locksets: 40".

.2 Push/Pulls: 42".

.3 Dead Locks: 47".

.4 Exit Devices: 40".

**3.3 ADJUSTING**

.1 Adjust hardware for smooth operation.

**3.4 PROTECTION OF FINISHED WORK**

.1 Do not permit adjacent work to damage hardware or finish.

**END OF SECTION**

DOOR AND DOOR FRAME SCHEDULE																										
DOOR #	LOCATION	DOOR								DOOR FRAME				HARDWARE										REMARKS		
		DOOR TYPE	SIZE (WxHT)	THICK	MAT	FINISH	FIRE RATED	INSUL	GLAZE	FRAME TYPE	MAT	FINISH	FIRE RATED	AUTO LOCK	CLOSE	FLY HALL	FWC	FRAM LOCK	FRAM LOCK	DOOR LOCK	BOX HINGE	INSH-HOLD	WALL-HINGE		WALL-HINGE	
	100 LEVEL																									
D101	VESTIBULE	DT1	3'-0"x7'-0"	1 3/4"	AL	ANOD		✓	✓	FT1	AL	ANOD		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	CONTINUOUS HINGE
D102	W/C	DT2	3'-0"x7'-0"	1 3/4"	MTL	PTD				FT2	PSF	PTD		✓	✓			✓	✓	✓						WALL STOP
D103A	PAVILION	DT3	3'-0"x7'-0"	1 3/4"	AL	ANOD			✓	FT3	AL	ANOD		✓	✓	✓					✓	✓	✓			CONTINUOUS HINGE
D103B	PAVILION	DT3	3'-0"x7'-0"	1 3/4"	AL	ANOD			✓	FT3	AL	ANOD		✓	✓						✓	✓	✓			CONTINUOUS HINGE
D104	STORAGE	DT2	3'-0"x7'-0"	1 3/4"	MTL	PTD				FT2	PSF	PTD		✓				✓								WALL STOP
D105	VESTIBULE	DT1	3'-0"x7'-0"	1 3/4"	AL	ANOD		✓	✓	FT1	AL	ANOD				✓								✓		
D106	INDOOR EXHIBIT	DT4	2 - 4'-0"x8'-0"	1 3/4"	MTL	PTD		✓		FT4	PSF	PTD		✓				✓	✓	✓	✓	✓	✓			LOCKSET ON INTERIOR ONLY REFER TO SPEC
	BMT LEVEL																									
D001	ANIMAL ENTRANCE	DT5	2'-6"x2'-6"	2"	MTL	PTD				FT5	PSF	PTD								✓			✓			

END OF SECTION

## **PART I GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Glass and glazing for insulated aluminum doors, hollow steel doors, sidelights, windows.

### **1.2 RELATED SECTIONS**

- .1 Section 08100 - Steel Doors and Frames.
- .2 Section 08411 - Aluminum Doors and Frames.
- .2 Section 08500 - Fibreglass Windows

### **1.3 REFERENCES**

- .1 CANICGSB- 12.1M - "Glass, Safety, Tempered or Laminated"
- .2 CANJCGSB-12.3M - "Glass, Polished Plate or Float, Flat, Clear"
- .3 CANICGSB-12.11M - "Glass, Wired, Safety"
- .4 CANJCGSB-12.8M - "Insulating Glass Units".

### **1.4 PERFORMANCE REQUIREMENTS**

- .1 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code.
- .2 Limit glass deflection to flexure limit of glass with full recovery of glazing materials.

### **1.5 SUBMITTALS**

- .1 Samples: Submit two samples 12" x 12" in size, exemplifying each type of glass specified.

### **1.6 QUALITY ASSURANCE**

- .1 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience.

### **1.7 WARRANTY**

- .1 Provide a five (5) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

## **PART 2 PRODUCTS**

### **2.1 FLAT GLASS MATERIALS**

- .1 5 mm non-reflective clear tempered float glass to CAN/CGSB-12.3-M91, glazing quality.

### **2.2 SEALED INSULATING GLASS MATERIALS**

- .1 Insulating glass units: to CAN/CGSB-12.8-M90, dual unit non-reflecting glass, 22 mm overall thickness, with outer, and inner pane of 5 mm clear tempered float glass. AFG Clear Comfort Ti-AC40 e (surface #2)/Argon (12 mm air space)Edgetech S-Class Super Spacer.

### **2.3 GLAZING ACCESSORIES**

- .1 Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, length of 25 mm for each square metre of glazing or minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method and pane weight and area.
- .2 Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, minimum 75 mm long x one half the height of the glazing stop x thickness to suit.
- .3 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15Shore A durometer hardness; coiled on release paper; Tremco polyshim 11; black colour.
- .4 Glazing Splines, Gaskets: Window manufacturer's standard.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- .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 that may impede moisture movement, weeps are clear, and ready to receive glazing.

### **3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

- .3 Prime surfaces scheduled to receive sealant.
- .4 Select either or both of the following two paragraphs as appropriate.
- .5 Install sealant in accordance with manufacturer's instructions.

**3.3 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)**

- .1 Cut glazing tape to length and set against permanent stops, projecting 1/16" above sight line.
- .2 Place setting blocks at 114 points with edge block no more than 6" from corners.
- .3 Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- .4 Place glazing tape on free perimeter of glazing in same manner described above.
- .5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .6 Knife trim protruding tape.

**3.4 EXTERIOR GLAZING**

- .1 To be installed window manufacturer's recommendations.

**3.5 CLEANING**

- .1 Remove glazing materials from finish surfaces.
- .2 Remove labels after Work is complete.
- .3 Clean glass and adjacent surfaces.

**3.6 PROTECTION OF FINISHED WORK**

- .1 After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

**END OF SECTION**