

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA)
  - .1 CAN/CSA O132.2 Series-90 (R1998), Wood Flush Doors.

**1.2 SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications, data sheets and installation instructions. Include door core materials, thickness, construction, and veneer species.
  - .2 Submit WHMIS Safety Data Sheets. Indicate VOC content for door materials and adhesives.
- .3 Shop Drawings:
  - .1 Indicate door types and cut-outs for lights, sizes, core construction, locations, swings, undercuts, hardware locations and preparation requirements, blocking for hardware, finishes, glass, and other pertinent data.

**1.3 QUALITY ASSURANCE**

- .1 Perform work to custom grade in accordance with requirements of AWMAC Architectural Woodwork Standards.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, protect, and handle products in compliance with manufacturer's recommendations.
- .2 Arrange for delivery after work causing abnormal humidity has been completed.
- .3 Accept doors on site in manufacturer's packaging. Inspect for damage.
- .4 Storage and Protection:
  - .1 Protect doors from dampness.
  - .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
  - .3 Protect doors from scratches, handling marks, and other damage.
  - .4 Store doors away from direct sunlight.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove waste material in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **Part 2 Products**

### **2.1 INTERIOR DOORS**

- .1 Three-ply, rail and stile construction. Provide pre-fabricated, pre-hung units.
  - .1 Rails and stiles: Wood or MDF, manufacturer's standard.
  - .2 Faces: Moulded wood fibre.
  - .3 Core: Corrugated honeycomb or particleboard, as scheduled.
  - .4 Frame: Wood, flat jamb, with doorstop applied.
  - .5 Provide reinforcement and pre-drill door for installation of hardware.
  - .6 Provide minimum 3 hinges per door.
- .2 Finish: Paint interior Doors in accordance with Section 09 91 00 – Painting.

### **2.2 EXTERIOR DOORS**

- .1 Insulated steel door: Provide pre-fabricated, pre-hung units.
  - .1 0.5 mm thick galvanized steel door facings, high-definition raised panel.
    - .1 Baked-on white paint finish.
  - .2 Polyurethane foam-in-place core injected between faces. Foam density minimum 32 kg/m<sup>3</sup> (2 lbs/cu ft).
  - .3 Aluminum and vinyl, self-draining, thermally-broken sill.
  - .4 Adjustable, multi-finned self-draining bottom sweep.
  - .5 Weather stripping: Manufacturer's standard.
  - .6 Sill gaskets and jamb sills.
  - .7 Glazing: Double glazed window with Low-E glass and argon gas fill.
  - .8 Pre-drill door for installation of lockset, deadbolt and peephole.
    - .1 Reinforce doors at areas of hardware mounting.

## **Part 3 Execution**

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

- .1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

### **3.2 INSTALLATION**

- .1 Unwrap and protect doors in accordance with CAN/CSA O132.2 Series.
- .2 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA O132.2 Series.
- .3 Adjust hardware for correct function.
- .4 Install stops.

- .5 Install attic hatch in accordance with manufacturer's instructions.

**3.3 ADJUSTMENT**

- .1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

**3.4 CLEANING**

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer and caulking; clean doors and frames.
- .3 Clean glass and glazing materials with approved non-abrasive cleaner.
- .4 On completion of installation, remove surplus materials, rubbish, tools, and equipment barriers.

**END OF SECTION**

**Part 1        General**

**1.1            REFERENCES**

- .1        AAMA/WDMA/CSA/101/I.S. 2/A440-11 – NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.
- .2        AAMA/WDMA/CSA/101/I.S.2/A440S1-09 - Canadian Supplement to North American Fenestration Standard/Specification for Windows, Doors, and Skylights.
- .3        ASTM E283-04 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .4        ASTM E330-02/E330M-02 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- .5        ASTM E331-00 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- .6        CAN/CGSB 79.1-M91 - Insect Screens.
- .7        CSA A440.2-14/A440.3-14 – Fenestration Energy Performance / User Guide to CSA A440.2-14, Energy Performance of Windows and Other Fenestration Systems.
- .8        CAN/CSA A440.4-07 - Window, Door, and Skylight Installation.

**1.2            SUBMITTALS**

- .1        Section 01 33 00: Submittal Procedures.
- .2        Product data: Submit manufacturer's instructions, printed product literature and data sheets for windows; include product characteristics, performance criteria, physical size, finishes, and limitations.
- .3        Shop Drawings:
  - .1        Indicate materials and details in full size scale, showing window dimensions, elevations, sections, details, attachments to other work, and installation details.
  - .2        Interior trim and exterior junctions with adjacent construction.
  - .3        Core thicknesses of components.
  - .4        Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.
  - .5        Arrangement of reinforcing for hardware and joints.
  - .6        Arrangement of hardware and required clearances.

- .7 Location of caulking.
- .4 Samples: Submit duplicate samples of vertical-to-horizontal intersection of frame system, minimum size 200 x 200 mm, showing:
  - .1 Profiles, colour, glazing stop, finish.
  - .2 Joinery, including concealed welds.
  - .3 Anchorage.
  - .4 Expansion provisions.
  - .5 Flashing and drainage.
- .5 Test and Evaluation Reports: Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
  - .1 Air tightness.
  - .2 Water tightness.
  - .3 Wind load resistance.
  - .4 Condensation resistance.
- .6 Certifications: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .7 Operation and Maintenance Data: submit operation and maintenance data for cleaning and maintenance of frame finishes, for incorporation into O&M manual.

### **1.3 QUALITY ASSURANCE**

- .1 Perform Work in accordance with AAMA/WDMA/CSA-101/I.S.2/A440.
- .2 Single source supplier: All windows by same manufacturer.

### **1.4 DELIVERY, STORAGE, AND PROTECTION**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Use coatings that are easily removed and residue free.
  - .2 Jig, brace, and box the window frame assemblies for transport to minimize flexing of members or joints.
  - .3 Leave protective covering in place until final cleaning of building.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect doors and frames from nicks, scratches, and blemishes.

- .3 Replace defective or damaged materials with new.

## **1.5 ENVIRONMENTAL REQUIREMENTS**

- .1 Do not install sealants when ambient temperature is less than 5°C (40°F).
- .2 Maintain this minimum temperature during and after installation of sealants.

## **Part 2 Products**

### **2.1 WINDOWS**

- .1 Windows: Extruded tubular plastic sections, factory fabricated, vision glass, related flashings, anchorage and attachment devices.
- .2 Configurations: As indicated.

### **2.2 PERFORMANCE REQUIREMENTS**

- .1 Window System: To AAMA/WDMA/CSA 101/I.S.2/A440, supplemented as follows:
  - .1 Design windows to provide overall thermal resistance  $U \text{ value} \leq 1.6 \text{ W}/(\text{m}^2 \cdot \text{K})$ .
  - .2 Deflection limit of framing members;  $L/175$ .
  - .3 Performance Class: LC.
  - .4 Performance Grade: Minimum 40.
- .2 Provide anchorage capable of withstanding wind load design in accordance with National Building Code.
- .3 Design to accommodate expansion and contraction within service temperature range of -35°C to 35°C.
- .4 Allow for movement between system and perimeter framing components or substrate.
- .5 Glazing: Size glass thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20.

### **2.3 MATERIALS**

- .1 Materials to CSA A440/A440.1, supplemented as follows:
  - .1 All vinyl windows by same manufacturer.
  - .2 Main frame and sash: Vinyl, thermally broken, hollow tubular sections of polyvinyl chloride (PVC).

## **2.4 COMPONENTS**

- .1 Sills: Extruded aluminum, sloped for positive wash; fit under sash to project 12 mm (1/2 inch) beyond wall face; one piece full width of opening.
- .2 Stools: Wood, fit under sash to project 12 mm (1/2 inch) beyond interior wall face; one piece full width of opening.
- .3 Insect Screen Frame: Rolled aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
- .4 Insect Screens: CAN/CGSB 79.1, woven aluminum or glass fibre mesh; 14/18 mesh size.
- .5 Operable Sash Weather Stripping: Wool or nylon pile; permanently resilient, profiled to effect weather seal.
- .6 Fasteners: Stainless steel.

## **2.5 GLASS AND GLAZING MATERIALS**

- .1 Glass and Glazing Materials:
  - .1 Triple-glazed insulated glazing unit: Manufacturer's standard, to attain specified performance.

## **2.6 SEALANT MATERIALS**

- .1 Sealant and Backing Materials: As specified in Section 07 92 00.
  - .1 Perimeter Sealant: Elastomeric polyurethane type.
  - .2 Rough opening/window frame sealer/insulator: Low-expanding polyurethane foam.

## **2.7 HARDWARE**

- .1 Operator: Geared rotary handle fitted to projecting sash arms with limit stops.
- .2 Projecting Sash Arms: Cadmium or zinc plated steel, friction pivot joints with nylon bearings, removable pivot clips for cleaning.
- .3 Window opening control device: Restrict window opening to 100 mm (4 inches).
  - .1 Exclude window opening control devices from basement windows.
- .4 Egress hinges: Provide manufacturer's standard egress hinges for basement window.

## **2.8 FABRICATION**

- .1 Fabricate framing, mullions and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.

- .2 Form sills and stools in one piece. Slope sills for wash.
- .3 Form snap-in glass stops, closure moulds, weather stops, and flashings of extruded PVC for tight fit into window frame section.
- .4 Form weather stop flange to perimeter of unit.
- .5 Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .6 Arrange fasteners to be concealed from view.
- .7 Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.
- .8 Assemble insect screen frame, mitre and reinforced frame corners. Fit mesh taut into frame, and secure.
- .9 Weatherstrip operable units.
- .10 Factory glaze window units.

## **2.9 FINISHES**

- .1 Exterior Surfaces: Colour White.
- .2 Interior Surfaces: Colour White.
- .3 Screens: Colour Black.
- .4 Operators and Exposed Hardware: White baked enamel.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Verify wall openings and adjoining air and vapour seal materials are ready to receive work of this Section.

### **3.2 INSTALLATION**

- .1 Install window assembly in accordance with CAN/CSA A440.4.
- .2 Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

- .3 Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- .4 Install shims between windows and building frame at each installation screw location. Shim and fasten windows in accordance with manufacturer's recommendations and CAN/CSA A440.4.
- .5 Install sills and stools.
- .6 Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .7 Coordinate attachment and seal of perimeter air and vapour barrier materials.
- .8 Install operating hardware.
- .9 Install glass to Section 08 80 50, with silicone glazing compound or glazing tape.
- .10 Install perimeter sealant and backing materials, in accordance with Section 07 92 00.
- .11 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 3.0 mm for units with a diagonal measurement over 1800 mm.

### **3.3 SEALANTS**

- .1 Seal joints between windows and window sills with sealant. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.
- .3 Install low expanding polyurethane foam sealant installed at head, jamb and sill perimeter of window for sealing to building air barrier, vapour retarder, and window frame. Ensure sealant width is adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder foam interior.

### **3.4 ERECTION TOLERANCES**

- .1 Maximum Variation from Level or Plumb: 1.5 mm/m (0.06 inches per 3 feet).

### **3.5 ADJUSTING**

- .1 Adjust hardware for smooth operation and secure weathertight closure.

**3.6 CLEANING**

- .1 Section 01 74 00: Cleaning installed work.
- .2 Remove protective material from pre-finished surfaces.
- .3 Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
- .4 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

**END OF SECTION**

**Part 1      General**

**1.1          REFERENCES**

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
  - .1 ANSI A117.1-2009, Standard for Accessible and Usable Buildings.
  - .2 ANSI/BHMA A156.2-2011, Bored and Preassembled Locks and Latches.
  - .3 ANSI/BHMA A156.5-2014, Auxiliary Locks and Associated Products.
  - .4 ANSI/BHMA A156.14-2013, Sliding and Folding Hardware.
  - .5 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
  - .6 ANSI/BHMA A156.36-2016, Auxiliary Locks.
- .2 Canadian Standards Association (CSA)
  - .1 CSA B651-12 – Accessible Design for the Built Environment.
- .3 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
  - .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

**1.2          SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
  - .4 After approval samples will be returned for incorporation in Work.
- .4 Hardware List:
  - .1 Submit contract hardware list.
  - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .5 Manufacturer's Instructions: Submit manufacturer's installation instructions.
- .6 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for door hardware for incorporation into manual.

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

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
  - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, well-ventilated area.
  - .2 Store and protect door hardware from nicks, scratches, and blemishes.
  - .3 Protect prefinished surfaces with wrapping or strippable coating.
  - .4 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 HARDWARE ITEMS**

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

### **2.2 DOOR HARDWARE**

- .1 Cylindrical locksets: To BHMA A156.2, Series 4000, Grade 2.
  - .1 Latchbolt: Minimum 13 mm throw.
  - .2 Levers: Solid cast.
  - .3 Roses: Heavy wrought.
  - .4 Cylinders: Brass, 5-pin.
  - .5 Function: As scheduled.
- .2 Deadbolts: To BHMA A156.5, Grade 1, medium duty deadbolt, 25 mm throw.
  - .1 Key operated outside; thumbturn operated inside.
  - .2 Provide with removeable core.
- .3 Numeric keypad lock: To BHMA A156.36, Grade 2, deadbolt function, backlit push-button keypad, key bypass, programmable for minimum 25 PIN codes, weather-resistant. Provide with removeable core.

- .4 Flexi door stops: To BHMA A156.16, base-mounted, heavy spring construction, complete with rubber bumper. 25 mm diameter base, 75 mm projection, nickel finish.
- .5 Viewers: To BHMA A156.16, brass construction, 190° viewing field, dull chrome finish.
- .6 Sliding door hardware: System as required for full pocket frame installation. Capable of supporting door up to 80 kg (175 lb); operable with 2.3 kg (5 lbs) horizontal force. Include:
  - .1 Header track – aluminum or steel.
  - .2 Aluminum-cased wood studs.
  - .3 Header brackets.
  - .4 Hangers – chrome-plated steel.
  - .5 Floor cleats.
  - .6 Bumpers top.
  - .7 Bottom guide.
- .7 Pocket door latch: To BHMA A156.14, brass construction, satin chrome finish. Turn piece to lock to jamb-mounted strike, with emergency release on opposite side.

### **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 Provide construction cores for use until substantial completion.
- .2 Replace construction cores with permanent cores when directed by Departmental Representative.
- .3 Provide keys as follows:
  - .1 Master keys: 2.
  - .2 Suites: 2 keys per entrance, keyed alike.
- .4 Stamp keying code numbers on keys and cylinders.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.
- .4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction) and CSA B651.
- .5 Where doorstop contacts door pulls, mount stop to strike bottom of pull.
- .6 Use only manufacturer's supplied fasteners.
  - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .7 Remove construction cores when directed by Departmental Representative.
  - .1 Install permanent cores and ensure locks operate correctly.

**3.2 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 ensure tight fit at contact points with frames.

**3.3 CLEANING**

- .1 Progress Cleaning: in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .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 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .2 Waste Management: Remove waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

**3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by door hardware installation.

**3.5 SCHEDULE**

**Set: 1.0**

3 Hinges	By Door Supplier	
1 Deadbolt		626
1 Passage Latch		626
1 Core		626
1 Construction Core		
1 Flexi Door Stop		
1 Viewer		

Notes: Hinges, threshold, weatherstrip and sweep by pre-hung door supplier. Use hinge pin stop if flexi stop is not suitable.

**Set: 2.0**

All Hardware by Door Supplier

**Set: 3.0**

3 Hinges	By Door Supplier	
1 Passage Set		626
1 Flexi Door Stop		

**Set: 4.0**

3 Hinges	By Door Supplier	
1 Privacy Set		626
1 Flexi Door Stop		

Notes: Use hinge pin stop when door does not swing against a wall.

**Set: 5.0**

1 Sliding Door Hardware		
1 Pocket Door Latch		US26D

**Set: 6.0**

3 Hinges	By Door Supplier	
1 Passage Latch		626
1 Numeric Keypad Deadbolt lock		619
1 Core		626
1 Construction Core		
1 Flexi Door Stop		
1 Viewer		

Notes: Hinges, threshold, weatherstrip and sweep by pre-hung door supplier. Use hinge pin stop if flexi stop is not suitable.

**END OF SECTION**