

**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 74 19 – Construction/Demolition Waste Management And Disposal
- .3 Section 01 78 00 – Closeout Submittals
- .4 Section 07 27 10 – Air Barrier: sealing windows to exterior wall construction
- .5 Section 07 46 13 – Preformed Metal Siding: metal sill flashings for windows as part of siding work
- .6 Section 07 92 10 – Joint Sealing: caulking of joints between frames and other building components.
- .7 Section 08 80 50 – Glazing: general glass and glazing requirements
- .8 Division 28 – Electronic Safety and Security: security wiring to windows and connection of wiring in insect screens to security wiring; security wiring and installation of break-glass devices on window glass.

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA):
  - .1 CAN/CSA A440-00/A440.1-00(R2005) – A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows. Includes Update NO. 1 (2000), Update No. 2 (2006), Update No. 3 (2006)

**1.3 SUBMITTALS**

- .1 Submit shop drawings and product data in accordance with Section 01 33 00.
- .2 Shop drawings:
  - .1 Indicate pertinent dimensions, general construction, component connections and details, anchorage methods, hardware locations and installations details.
- .3 Product data:
  - .1 Submit manufacturer's product data, including construction details, materials descriptions, profiles, and finishes.

**1.4 CLOSEOUT SUBMITTALS**

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

## **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Storage and protection:
  - .1 Crate windows at factory in a manner to prevent damage to surfaces and finishes. Individually wrap finished materials to protect surfaces and finishes from damage.
  - .2 Store windows off ground, braced or blocked to prevent racking, twisting, bending or sagging.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 19.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and other packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

## **Part 2 Products**

### **2.1 WINDOWS**

- .1 Type: pressure equalized curtain wall assemblies; thermally broken; exterior glazed; fixed units with operable sash where indicated.
- .2 Components:
  - .1 Frames: sections extruded from AA6063-T6 aluminum alloy; with thermal breaks at glazing stops; rain screen pressure equalized system; complete air seals within grid; component sizes and arrangements detailed.
  - .2 Operable sash frames: compatible with curtainwall framing system; thermally broken; 6063-T5 aluminum extrusions; with glass stops to accommodate double glazed infill panel.
  - .3 Glass: hermetically sealed double glazed units specified in Section 08 80 50.
  - .4 Opaque glazing panels for operable sash: 12 mm thick plywood with sheet aluminum both sides.
  - .5 Glazing gaskets: high quality neoprene and EPDM type recommended by manufacturer to suit application
  - .6 Sheet aluminum: anodizing quality; to match windows; 1.2 mm minimum thickness.
  - .7 Internal reinforcements and anchorages: corrosion resistant and compatible with aluminum frame sections.
  - .8 Hardware: manufacturer's heavy-duty type for each operable sash:
    - .1 Stainless steel hinges.
    - .2 Heavy duty stainless steel crank operator.
    - .3 Cast white bronze cam locks with keepers.

- .9 Insect screens: roll-formed sheet aluminum frames with metal 18 x 16 charcoal colored mesh; friction fit to withstand 40 km/hr. winds; with integral/woven-in sensing wiring with pig-tale for connection to security wiring system of the building.
- .10 Weather seals for operable sash: extruded elastomeric type.
- .11 Fasteners, spacer channels and accessories: as required for installation of frames and glass units; corrosion resistant and compatible with aluminum frame sections; spacer channels to be continuous lengths pieces extending from corner to corner of framing members.
- .12 Sealant: specified in Section 07 92 10.
- .3 Finishes:
  - .1 All exposed exterior and interior surfaces, including flashings and brake-shapes: Duranar fluoropolymer or similar coating acceptable to Departmental Representative in white color to match existing windows, with final color selected by Departmental Representative.
  - .2 Concealed surfaces: manufacturer's standard.

## 2.2 FABRICATION

- .1 Fabricate and assemble windows to meet following performance requirements when tested to CSA A440-00/A440.1
  - .1 Air tightness (at fixed sash): Fixed – less than  $0.25 \text{ (m}^3/\text{h) m}^{-1}$  at 75 Pa.
  - .2 Air tightness (at operable sash): A3 – less than  $0.55 \text{ (m}^3/\text{h) m}^{-1}$  at 75 Pa.
  - .3 Water tightness: B7 – no water leakage at 700 Pa.
  - .4 Wind load resistance: C5.
  - .5 Condensation temperature index of frame ( $I_f$ ) (at fixed sash): approximately 67.
  - .6 Condensation temperature index of glass ( $I_g$ ) (at fixed sash): approximately 67.
  - .7 Condensation temperature index of frame ( $I_f$ ) (at operable sash): approximately 60.
- .2 Make provision to drain to the exterior water that enters window assemblies at glazing gaskets and frame joints.
- .3 Maintain the following tolerances:
  - .1 Maximum variation from plane or location shown on drawings: 2 mm/m of length.
  - .2 Maximum offset from true plane between 2 adjacent members butting end to end, in line: 1 mm.
- .4 Fabricate windows to maintain continuity of air seal at frame corner joints, to sealed glass units, and to adjacent wall construction.
- .5 Allow for adequate clearance and shim spacing to enable proper installation. Shim spaces are not to exceed 13 mm in width once windows are installed.
- .6 Accurately and rigidly fit together all joints and corners. Match components carefully ensuring continuity of line and design. Ensure all joints and connections are flush, hair line and weather tight, with provisions for required thermal movement.

- .7 Incorporate provisions, at glazing pockets, to vent and pressure equalize, exterior window assemblies, and to drain to the exterior any water that may enter windows when installed.
- .8 Fabricate opaque glazing panels for operable sash using 12 mm thick plywood core with sheet aluminum both sides. Pressure bond/adhere sheet aluminum to plywood core and seal all perimeter edges.
- .9 Fabricate head and jamb closure pieces as follows:
  - .1 Form free of warp or twist.
  - .2 Form each piece continuous, without joints.
  - .3 De-burr and file smooth all sharp edges and corners.
- .10 Apply readily removable protective coverings over finished surfaces to protect them from damage that may be caused during handling and installation operations.

### **Part 3 Execution**

#### **3.1 WINDOW INSTALLATION**

- .1 Install in accordance with CSA-A440/A440.1. Install level and free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work. Install to achieve weather tight and airtight installations.
- .2 Place and secure air barrier in a manner to maintain continuity of air seal of exterior wall construction. Use continuous length spacer channels to mechanically secure air seal to aluminum frames.
- .3 Install hermetically sealed units to requirements specified in Section 08 80 50, and as follows:
  - .1 Install using gaskets and other glazing materials per manufacturer's directions.
  - .2 Install gaskets uniformly in place, with accurately formed corners and bevels, and with adequate contact with glass and rabbet interface.
  - .3 Continuously and uniformly compress gaskets 38 - 50 mm per 1200 mm.
- .4 Install opaque glazing panels in operable sash using same technique specified for windows.
- .5 Install closures continuous along heads and jambs of windows to conceal and weather protect junctions with adjacent construction.
  - .1 Shape closure pieces to conform to profile of sill flashings.
  - .2 Shape jamb closure pieces to conform to profile head closure pieces.
  - .3 Butt jamb closure pieces in moderate contact with head closure pieces.
- .6 Coordinate installation of security wiring connection to insect screens (pig tale). Coordinate installation of security wiring for break-glass devices on window glass. Make all cut-out required and install all required seals at openings for wiring.

### **3.2 CAULKING**

- .1 Apply sealant in joints between windows, and interior wood sills and gypsum board finish.
- .2 Apply sealant in accordance with Section 07 92 10 - Joint Sealing.
- .3 Conceal sealant within window units except where exposed use is permitted by Departmental Representative.
- .4 If necessary, mask surfaces prior to priming and sealing, to prevent staining and contamination.

### **3.3 ADJUSTING AND CLEANING**

- .1 Adjust operating sash to work freely with all hardware functioning properly.
- .2 Remove and dispose of all protective wrappings from aluminum surfaces.
- .3 Clean interior and exterior surfaces as soon as adjacent construction work, that might soil surfaces, is completed.
- .4 Wash down surfaces with a mild domestic detergent in warm water, applied with soft clean wiping cloths after complete installation. If mild domestic detergent in warm water does not adequately clean surfaces, consult window manufacturer for recommended cleaning agent. Use cleaning agents as directed by manufacturer.

### **3.4 PROTECTION**

- .1 During installation:
  - .1 Adequately protect building components, finishes surfaces from damage. Make good all damage as a result of inadequate or unsuitable protection.
- .2 After installation:
  - .1 Protect aluminum finishes and glazing during installation against disfiguration, contamination or damage by abuse of harmful materials. Install temporary protective covers where exposure to damage is inevitable.

**END OF SECTION**