
PART 1 GENERAL

1.1 REFERENCES

- .1 Aluminum Association (AA)
 - .1 Designation System for Aluminum Finishes.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-79.1-M9, Insect Screens.
- .3 CSA International
 - .1 CSA-A440-00/A440.1-00(R2005), A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-[00], Windows. CAN/CSA-A440.2-09, Fenestration Energy Performance.

1.2 ACTION AND INFORMATIONAL 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 windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, 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.
- .4 Test and Evaluation Reports:
 - .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
 - .1 Windows classifications.
 - .2 Air tightness.
 - .3 Water tightness.
 - .4 Wind load resistance.
 - .5 Condensation resistance.
 - .6 Sash strength and stiffness - projecting.
 - .7 Ease of operation - windows with operable lights.
 - .8 Sash pull-off - vinyl windows.
 - .9 Forced entry resistance.
 - .10 Mullian deflection - combination and composite windows.

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 windows for incorporation into manual.

1.4 QUALITY ASSURANCE

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 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 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect windows from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.6 WARRANTY

- .1 Manufacturer's warranty: Submit, for Departmental Representative acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Materials: to AAMA/WDMA/CSA 101/I.S.2/A440 supplemented as follows:
 - .2 All windows by same manufacturer.
 - .3 Sash: aluminum thermally broken.
 - .4 Main frame: aluminum thermally broken.
 - .1 Main frame: Aluminum thermally broken 118 mm deep frame. Alloy and temper as recommended by manufacturer to meet design requirements. 1.8 mm minimum wall thickness of frame members.
 - .5 Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
 - .6 Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B633; provide sufficient strength to withstand design pressure indicated.
 - .7 Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B456, or zinc-coated steel or iron complying with ASTM B633; provide sufficient strength to withstand design pressure indicated.
 - .8 Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric.

- .1 Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material.
- .9 Glass: in accordance with Section 08 80 50 - Glazing.
- .10 Screens: to CAN/CGSB-79.1.
 - .1 Insect screening mesh: count 18 x 16.
 - .2 Fasteners: tamper proof.
 - .3 Screen frames: aluminum colour to match window frames.
 - .4 Mount screen frames for interior replacement.
- .11 Isolation coating: alkali resistant bituminous paint.
- .12 Sealants: See section 07 92 00 – Joint Sealants.

2.2 WINDOW TYPE AND CLASSIFICATION

- .1 Types:
 - .1 Double hung: with removable double glazing insulating glass.
 - .2 Fixed: with removable double glazing insulating glass.
 - .3 Screens: on ventilating portion of windows.
- .2 Classification rating: to CSA-A440/A440.1.
 - .1 Air tightness: A3.
 - .2 Water tightness: B6.
 - .3 Wind load resistance: C4.
 - .4 Condensation resistance: Temperature Index, I 40.
 - .5 Forced Entry: F1.
 - .6 Insect Screens: S1.

2.3 FABRICATION

- .1 Fabricate in accordance with AAMA/WDMA/CSA 101/LS.2/A440 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.
- .5 Finish steel clips and reinforcement with shop coat primer to 380 g/m² zinc coating to ASTM A123/A123M.
- .6 Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - .1 Profiles that are sharp, straight, and free of defects or deformations.
 - .2 Accurately fit joints; make joints flush, hairline and weatherproof.

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- .3 Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - .4 Physical and thermal isolation of glazing from framing members.
 - .5 Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - .6 Provisions for field replacement of glazing.
 - .7 Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
 - .7 Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
 - .8 Fabricate aluminum windows that are re-glazable without dismantling sash or framing.
 - .9 Thermally Improved Construction: Fabricate aluminum windows with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
 - .1 Frame thermal barrier shall be polyamide with a minimum of 25.4 mm separation, installed continuously and mechanically bonded to the aluminum.
 - .2 Sash thermal barrier shall be polyamide with a minimum of 12 mm separation, installed continuously and mechanically bonded to the aluminum.
 - .10 Weather Stripping: Provide full-perimeter weather stripping for each operable sash.
 - .11 Weep Holes: Provide weep holes and internal passages in window frames to conduct infiltrating water to exterior.
 - .12 Provide water-shed members as required above lines of natural water penetration.
 - .13 Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.
 - .14 Sub frames: Provide sub frames with anchors for window units as shown, of profile and dimensions indicated but not less than 0.093-inch (2.4-mm) thick extruded aluminum. Miter or cope corners, and join with concealed mechanical joint fasteners. Finish to match window units. Provide sub frames capable of withstanding design loads of window units.
 - .15 Factory-Glazed Fabrication: Glaze aluminum windows in the factory where practical and possible for applications indicated. Comply with requirements in Section 08 80 50 - Glazing.
 - .16 Glazing Stops: Provide snap-on glazing stops coordinated with Section 08 80 50 - Glazing and glazing system indicated. Provide glazing stops to match sash.

2.4 ALUMINUM FINISHES

- .1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
 - .1 Clear anodic finish: designation AA- M32, C12, C22, A42.

2.5 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of isolation coating:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.6 GLAZING

- .1 Glaze windows in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.

2.7 HARDWARE

- .1 Double Hung Windows: Provide the following operating hardware:
 - .1 Sash Balances: adjustable spiral balance with stainless steel or other corrosion-resistant components. Two per sash.
 - .2 Handle: Continuous, integral, bottom and top sash lift handle.
 - .3 Sash Lock: White bronze sweep lock and keeper on meeting rails. One or two per sash as required by size. Brushed nickel finish.
 - .4 Aluminum autolock at top sash lift handle.
- .2 Screens: to CAN/CGSB-79.1:
 - .1 Heavy duty rated mesh 18 x 14 count.
 - .2 Tamper proof fasteners.
 - .3 Frames: aluminum colour to match adjacent window frames.
 - .4 Mount frames for interior replacement.

2.8 AIR BARRIER AND VAPOUR RETARDER

- .1 Provide low expanding, single component polyurethane foam sealant installed at head, jamb and sill perimeter of window for sealing to building air barrier, vapour retarder and window frame. Foam sealant width to be adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder foam interior. Refer to Section 07 21 29.03 – Low Expanding Foam Sealant.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
 - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Window installation:
 - .1 Install in accordance with CSA-A440/A440.1.
 - .2 Arrange components to prevent abrupt variation in colour.
- .2 Sill installation:
 - .1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location.
 - .2 Cut sills to fit window opening.
 - .3 Secure sills in place with anchoring devices located at ends and evenly spaced 600 mm on centre in between.
 - .4 Fasten expansion joint cover plates and drip deflectors with self tapping stainless steel screws.
 - .5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.
- .3 Caulking:
 - .1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. 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.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 PROTECTION

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

END OF SECTION