

**SECTION 08 51 13**  
**ALUMINUM WINDOWS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Aluminum windows of type and size shown, complete with hardware, related components and accessories.
- B. Types:
  - 1. Fixed

**1.2 DEFINITIONS**

- A. Accessories: Mullions, staff beads, casings, closures, trim, moldings, panning systems, sub-sills, clips anchors, fasteners and other necessary components required for fabrication and installation of window units.
- B. Uncontrolled Water: Water not drained to the exterior, or water appearing on the room side of the window.

**1.3 RELATED WORK**

- A. Steel subframes: Section 05 50 00, METAL FABRICATIONS.
- B. Storefront: Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.
- C. Glazing: Section 08 80 00, GLAZING.
- D. Lead lined windows: Section 13 49 00, RADIATION PROTECTION

**1.4 DELIVERY, STORAGE AND HANDLING**

- A. Protect windows from damage during handling and construction operations before, during and after installation.
- B. Store windows under cover, setting upright.
- C. Do not stack windows flat.
- D. Do not lay building materials or equipment on windows.

**1.5 QUALITY ASSURANCE**

- A. Approval by contracting officer is required of products or service of proposed manufacturers and installers.

- B. Approval will be based on submission of certification by Contractor that:
  - 1. Manufacturer regularly and presently manufactures the specified windows as one of its principal products.
  - 2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items.
- C. Provide each type of window produced from one source of manufacture.
- D. Quality Certified Labels or certificate:
  - 1. Architectural Aluminum Manufacturers Association, "AAMA label" affixed to each window indicating compliance with specification.
  - 2. Certificates in lieu of label with copy of recent test report (not more than 4 years old) from an independent testing laboratory and certificate signed by window manufacturer stating that windows provided comply with specified requirements and AAMA 101/I.S.2 for type of window specified.

#### **1.6 SUBMITTAL**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
  - 1. Minimum of 1/2 full scale types of windows on project.
  - 2. Identifying parts of window units by name and kind of metal or material, show construction, locking systems, mechanical operators, trim, installation and anchorages.
  - 3. Include glazing details and standards for factory glazed units.
- C. Manufacturer's Literature and Data:
  - 1. Windows.
- D. Certificates:
  - 1. Certificates as specified in paragraph QUALITY ASSURANCE.
  - 2. Indicating manufacturers and installers qualifications.
  - 3. Manufacturer's Certification that windows delivered to project are identical to windows tested.
- E. Test Reports:
  - 1. Copies of test reports as specified in paragraph QUALITY ASSURANCE.

## **1.7 WARRANTY**

- A. Warrant windows against malfunctions due to defects in thermal breaks, hardware, materials and workmanship. Provide 10 year warranty period.

## **1.8 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced.  
Publications are referenced in text by basic designation only.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)  
90.1.....Energy Standard of Buildings
- D. American Architectural Manufacturers Association (AAMA):  
101/I.S.2/A440-05.....Windows, Doors, and Unit Skylights  
505.....Dry Shrinkage and Composite Performance Thermal  
Cycling Test Procedures  
2605.....Superior Performing Organic Coatings on Architectural  
Aluminum Extrusions and Panels
- E. American Society for Testing and Materials (ASTM):  
A6537.....Steel Sheet, Zinc Coated (Galvanized), Zinc-Iron Alloy-  
Coated (Galvannealed) by the Hot-dip Process  
E 90 .....Test Method for Laboratory Measurement of Airborne  
Sound Transmission Loss of Building Partitions
- F. National Fenestration Rating Council (NFRC):  
NFRC 100 .....Determining Fenestration Product U-Factors  
NFRC 200 .....Determining Fenestration Product Solar Heat Gain  
Coefficient and Visible Transmittance at Normal Incidence
- G. National Association of Architectural Metal Manufacturers (NAAMM):  
AMP 500 Series .....Metal Finishes Manual

## **PART 2- PRODUCTS**

### **2.1 MATERIALS**

- A. Aluminum Extrusions; Sheet and Plate: AAMA 101/I.S.2.
- B. Sheet Steel, Galvanized: ASTM A653; G90 galvanized coating.

C. Fasteners: AAMA 101/I.S.2. Screws, bolts, nuts, rivets and other fastening devices to be non-magnetic stainless steel.

1. Fasteners to be concealed. Where wall thickness is less than 3 mm (0.125 inch) thick, provide backup plates or similar reinforcements for fasteners.

## **2.2 THERMAL AND CONDENSATION PERFORMANCE**

A. Thermal Transmittance:

1. Maximum U value class for insulating glass windows: 50 ( $U=0.50$ ).

B. Solar Heat Gain Coefficient (SHGC): SHGC shall comply with State or local energy code requirement.

## **2.3 FABRICATION**

A. Fabrication to exceed or meet requirements of Physical Load Tests, Air Infiltration Test, and Water Resistance Test of AAMA 101/I.S.2.

B. Glazing:

1. Factory or field glazing optional.
2. Glaze in accordance with Section 08 80 00, GLAZING.
3. Windows reglazable without dismantling sash framing.
4. Design rabbet to suit glass thickness and glazing method specified.
5. Glaze from interior except where not accessible.  
Provide removable fin type glazing beads.

C. Trim:

1. Trim includes casings, closures, and panning.
2. Fabricate to shapes shown of aluminum not less than 1.6 mm (0.062 inch) thick
3. Extruded or formed sections, straight, true, and smooth on exposed surfaces.
4. Exposed external corners mitered and internal corners coped; fitted with hairline joints.
5. Reinforce 1.6 mm (0.062 inch) thick members with not less than 3 mm (1/8-inch) thick aluminum.
6. Except for strap anchors, provide reinforcing for fastening near ends and at intervals not more than 305 mm (12 inches) between ends.
7. Design to allow unrestricted expansion and contraction of members and window frames.

8. Secure to window frames with machine screws or expansion rivets.
9. Exposed screws, fasteners or pop rivets are not acceptable on exterior of the casing or trim cover system.

D. Thermal-Break Construction:

1. Manufacturer's Standard.
2. Low conductance thermal barrier.
3. Capable of structurally holding sash in position and together.
4. All Thermal Break Assemblies (Pour & Debridge, Insulbar or others) shall be tested as per AAMA TIR A8 and AAMA 505 for Dry Shrinkage and Composite Performance.
5. Location of thermal barrier and design of window shall be such that, in closed position, outside air shall not come in direct contact with interior frame of the window.

**2.4 FIXED WINDOWS**

- A. AAMA 101/I.S.2; Type: // C-H65 // C-AW65// HC25.
- B. AAMA certified product to the AAMA 101/I.S.2. - 97 standard.

**2.5 FINISH**

- A. In accordance with NAAMM AMP 500 series.
- B. Finish exposed aluminum surfaces as follows:
  1. Anodized Aluminum:
    - a. Finish in accordance with AMP 501 letters and numbers.
    - b. Clear anodized Finish: AA-C22A41 Medium matte, clear anodic coating, Class 1 Architectural, 0.7 mils thick.
- E. Hardware: Finish hardware exposed when window is in the closed position: Match window color.

**PART 3 - EXECUTION**

**3.1 PROTECTION (DISSIMILAR MATERIALS): AAMA 101/I.S.2.**

**3.2 INSTALLATION, GENERAL**

- A. Install window units in accordance with manufacturer's specifications and recommendations for installation of window units, hardware, operators and other components of work.

- B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, use expansion or toggle bolts or screws, as best suited to construction material.
  - 1. Provide bolts or screws minimum 6 mm (1/4-inch) in diameter.
  - 2. Sized and spaced to resist the tensile and shear loads imposed.
  - 3. Do not use exposed fasteners on exterior, except when unavoidable for application of hardware.
  - 4. Provide non-magnetic stainless steel Phillips flat-head machine screws for exposed fasteners, where required, or special tamper-proof fasteners.
  - 5. Locate fasteners to not disturb the thermal break construction of windows.
- C. Set windows plumb, level, true, and in alignment; without warp or rack of frames or sash.
- D. Anchor windows on four sides with anchor clips or fin trim.
  - 1. Do not allow anchor clips to bridge thermal breaks.
  - 2. Use separate clips for each side of thermal breaks.
  - 3. Make connections to allow for thermal and other movements.
  - 4. Do not allow building load to bear on windows.
  - 5. Use manufacturer's standard clips at corners and not over 600 mm (24 inches) on center.
  - 6. Where fin trim anchorage is shown build into adjacent construction, anchoring at corners and not over 600 mm (24 inches) on center.

### **3.3 ADJUST AND CLEAN**

- A. Adjust ventilating sash and hardware to provide tight fit at contact points, and at weather-stripping for smooth operation and weathertight closure.
- B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.
- C. Remove excess glazing and sealant compounds, dirt, and other substances.
- D. Lubricate hardware and moving parts.
- E. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.

- F. Except when a window is being adjusted or tested, keep locked in the closed position during the progress of work on the project.

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