

SECTION 08 51 13 – ALUMINUM WINDOWS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Aluminum windows for new construction

1.2 REFERENCES

- A. American Architectural Manufacturers Associations (AAMA):
 1. AAMA/WDMA/CSA 101/I.S.2/A440 17 Windows, Doors, and Skylights.
 2. AAMA 505 17 Dry Shrinkage and Composite Performance Thermal Cycle Test Procedures.
 3. AAMA 2605 20 Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
 4. AAMA TIR A8 16 Structural Performance of Composite Thermal Barrier Framing System.
- B. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):
 1. (ASCE/SEI): 7 16 Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM):
 1. B209 14 Aluminum and Aluminum Alloy Sheet and Plate.
 2. B209M 14 Aluminum and Aluminum Alloy Sheet and Plate (Metric).
 3. B221 14 Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 4. B221M 13 Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
 5. E283 19 Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 6. E331 00(2016) Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

1.3 SUBMITTALS

- A. Comply with requirements of City of Lacey Section D: Special Provisions.
- B. Submittal Drawings:
 1. Indicate window types required for project.
 2. Identify window unit components by name and type 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. Description of each product.
 2. Installation instructions.
 3. Warranty.
- D. Certificates: Indicate each product complies with requirements (window characteristics may be on window schedule or other drawings).

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
1. Regularly manufactures specified products.
 2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.
- B. Provide contact names and addresses for completed projects when requested by Contracting Officer's Representative.
- C. Quality Certified Labels or Certificates:
1. AAMA Label affixed to each window indicating compliance with specification.
 2. Certificates in lieu of label with copy of test report maximum 4 years old from independent testing laboratory and certificate signed by window manufacturer stating that windows provided comply with specified requirements and AAMA/WDMA/CSA 101/I.S.2/A440 for type of window specified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in a cool dry location protected from the weather and in the Manufacturer's original unopened containers until ready for installation.
- B. Store products in Manufacturer's unopened packaging until ready for installation.
- C. Do not stack windows flat.
- D. Do not lay building materials or equipment on windows.

1.6 WARRANTY

- A. Manufacturer's standard warranty for 10 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:

1. Kawneer;
2. Or Equal.

2.2 WINDOW SYSTEM

- A. Fixed Window.
- B. Thermal Break Window Construction:
 1. Manufacturer's Standard.
 2. Low conductance thermal barrier.
 3. Capable of structurally holding sash in position and together.
- C. Thermal Break Assemblies: Tested according to AAMA TIR A8 and AAMA 505.
 1. Design location of thermal break so that, in closed position, outside air does not come in direct contact with interior frame of window.
- D. Mullions: Provide mullions and cover plates as required, 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. Provide mullions and cover plates capable of withstanding design loads of window units.
- E. Provide anchors and other related accessories required for installation in concrete masonry unit walls.

2.3 SYSTEM PERFORMANCE

- A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Window System Performance Requirements:
 1. Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS)
 2. Performance Class and Grade: AW-PG100 - 60" x 99" (1524 mm x 2515 mm) -FW.
- C. Component Testing: Window components shall be tested in accordance with procedures described in AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).

2.4 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.78 mm) wall thickness at any location for the main frame and sash members.

- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- E. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

2.5 GLAZING

- A. Glass: Tempered.
- B. Glazing System: Glazing method shall be a wet/dry type in accordance with manufacturer's standards. Exterior glazing shall be silicone back bedding sealant. Interior glazing shall be snap-in type glazing beads with an interior gasket in accordance with AAMA 702 or ASTM C864.

2.6 FINISHES

- A. Finish window units according to NAAMM AMP 500 series.
- B. Anodized Aluminum:
 - 1. Clear Anodized Finish: AA C22A41; Class I Architectural, 0.018 mm (0.7 mil) thick.
- C. Hardware: Finish hardware exposed when window is in closed position to match window.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions.
- C. If substrate and rough opening preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the Manufacturer for achieving the best result for the substrate under the Project conditions.

3.3 INSTALLATION

- A. Install in accordance with Manufacturer's printed instructions.
- B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, provide 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 tensile and shear loads imposed.
 - 3. Do not install 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 avoid disturbing window thermal break.
- 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 both sides 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 maximum 600 mm (24 inches) on center.
 - 6. Where fin trim anchorage is indicated build into adjacent construction, anchoring at corners and maximum 600 mm (24 inches) on center.
- E. Sills and Stools:
 - 1. Set in bed of mortar or other compound to fully support, true to line shown.
 - 2. Do not extend sill to inside window surface or past thermal break.
- F. Leave space for sealants at ends and to window frame unless indicated otherwise.

3.4 MULLIONS CLOSURES, TRIM, AND PANNING

- A. Cut mullion full height of opening and anchor directly to window frame on both sides.
- B. Closures, Trim, and Panning: External corners mitered and internal corners coped, fitted with hairline, tightly closed joints.
 - 1. Secure to concrete and solid masonry with expansion bolts, expansion rivets, split shank drive bolts, or powder actuated drive pins.

2. Toggle bolt to hollow masonry units.
 3. Screw to wood and metal.
- C. Fasten except for strap anchors, near ends and corners and maximum 300 mm (12 inches) on center.
 - D. Seal units following installation to provide weathertight system.

3.5 CLEANING

- A. Clean exposed surfaces according to Manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

3.6 PROTECTION

- A. Protect installed products until completion of Project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION