

*Model 2100 Horizontal Slider AW-PG60 2515 x 2007***PART 1 - GENERAL****1.01 GENERAL PROVISIONS:**

- A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.
- B. Coordinate work with that of all construction contractors affecting or affected by work of this Contract. Cooperate with such contractors to assure the steady progress of the Work.
- C. Pre-Bid Qualifications: All bids must be based on pre-qualified products; to qualify, the bidder must furnish one complete window unit and additional information as shown below ten (10) days prior to bid date.
 - 1. This sample must be identical to the model of the window the bid is based on, with the finish being the only exception.
 - 2. The prospective bidder shall also include in his pre-bid qualification package, copies of the *independent laboratory* tests which certify that the proposed product meets or exceeds an AW PG60 2515 x 2007 classification as specified herein and shall show continuing compliance by furnishing a Notice of Product Certification from an Administrator of a Certification Program. Test reports from an independent laboratory showing that the insulated glass, if any, has been tested to the CBA Level, will also be required.

1.02 RELATED WORK:

- A. Provide labor, materials and equipment necessary to complete the work of the window portion of the contract, and without limiting the generality thereof shall include: **(edit following for either retro-fit or new construction)**
 - 1. Removal of existing sash, parting beads, stops and other accessories as required by the proposed replacement system.
 - 2. Removal of other existing construction work as required for the proper installation and operation of the new window system.
 - 3. Removal from site and disposal of all materials, debris packaging, banding and all other materials and equipment.
 - 4. Provide new factory-glazed, thermally broken, aluminum windows, types as specified herein, together with necessary mullions, panning, trim, extenders, operating hardware, all installation hardware and all other accessories as may be required or called for herein.
 - 5. Treated wood blocking, shims, fillers and nailers as required for a secure installation.
 - 6. Field observations and securing measurements of existing openings and conditions.
 - 7. Bidders shall survey conditions of existing sills and jambs prior to bidding. Contractor shall be responsible for the replacement of portions of same that are deteriorated.
 - 8. Provide and chink fiberglass insulation between window frames and adjacent construction.
 - 9. Proper sealing of all panning or receptor system joinery within each window assembly, per AAMA 851-09, and chink fiberglass insulation between window frames & accessories.
 - 10. Sealing of entire exterior perimeter of window units after installation, per ASTM E2112.
 - 11. Furnishing of any extra materials as specified herein.

1.03 ITEMS FURNISHED BUT NOT INSTALLED:

- A. **Architect and/or Specifier: Please add any applicable items to this section as deemed necessary.**

1.04 ITEMS INSTALLED BUT NOT FURNISHED:

- A. **Architect and/or Specifier: Please add any applicable items to this section as deemed necessary.**

*Model 2100 Horizontal Slider AW-PG60 2515 x 2007***1.05 TESTING AND PERFORMANCE REQUIREMENTS:**

- A. Standards: Except as otherwise indicated, requirements for all aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA/NWWDA I.S.2-A440-08 and applicable general recommendations published by AAMA, ASTM and the AA.
- B. Performance and Testing: Except as otherwise indicated, comply with air infiltration tests, water resistance tests and applicable load tests specified in AAMA/NWWDA I.S.2-A440-08 for type, rating and classification of the window units required herein.
- C. Testing: Where manufacturer's standard window units comply with requirements and have been tested, in AAMA Gateway size required, and in accordance with specified test's procedures, provide independent certification of such testing.
1. Test reports shall be no more than four years old.
 2. Sample submitted for tests shall be of manufacturer's standard construction and 2515mm (99 inches) wide by 2007mm (79 inches) high. The sequence of tests shall be optional between manufacturer and testing laboratory except that in all cases, the air infiltration test shall be performed before the water resistance test.
- D. Specific Requirements: Windows shall conform to specified standards or those specified herein, whichever are the more stringent:
1. Air Infiltration Test: With the sash in a closed and locked position, the window shall be subjected to an air infiltration test in accordance with ASTM E 283. Air infiltration shall not exceed 0.6 L/s/m² (0.17 ft³/min/ft²) when tested at 300Pa (6.24 psf), *for second half of test*.
 2. Water Resistance Test: The glazed unit shall be mounted in a vertical position, continuously supported around perimeter and with sash in the fully closed and locked position. The window unit shall be subjected to a water resistance test in accordance with ASTM E547 and E331.
 - a) Using a static pressure of 580 Pa (12.11 psf) per square foot, a water flow rate equal to five gallons of water per hour, per square foot of window area, no water shall pass the interior plane of the window frame and there shall be no uncontrolled leakage. Water may be visible in sill.
 3. Uniform Load Deflection: Pursuant with ASTM E 330, a minimum exterior and interior uniform load of 2880 Pa (60.15 psf) shall be applied to the entire surface of the test unit. Any deflection at corners and center span shall be reported, no members shall deflect 1/175 of its span.
 4. Uniform Structural Load Test: A minimum exterior and interior uniform load of 4320 Pa (90.23 psf) shall be applied to the entire surface of the test unit. At the conclusion of tests, there shall be no glass breakage, permanent damage of fasteners, hardware, or any other damage causing the window to be inoperable.
 5. Condensation Resistance Factor: The window shall be tested in accordance with NFRC 100, 200 & 500 standards and tests of thermal performance and shall yield a condensation resistance factor (CR) of no less than 37.
 6. Coefficient of Heat Transfer, or "U-Value" Test: Thermal Transmittance (U-Value) shall be tested to be 0.62 and satisfy the performance criteria of NFRC 100, 200 & 500 testing.
 7. Solar Heat Gain Coefficient: The SHGc shall be 0.54, per NFRC 100, 200 & 500 testing
 8. Operating Force: The panel / sash shall have been adjusted to operate, in either direction, with a force not exceeding 115 N (25 lbf) after the panel / sash is in motion.
 9. Forced Entry Resistance: Window shall have successfully attained a Grade 40 pursuant with ASTM F-588.

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- A. Provide test reports from an independent laboratory certifying that the performance for air infiltration, water resistance, uniform structural load, and condensation resistance, has been met or exceeds the criterion as set forth herein.

1.07 REFERENCES:

- A. American Architectural Manufacturers Association (AAMA), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), Aluminum Association (AA), National Window & Door Association (NWDA).

1.08 SUBMITTAL REQUIREMENTS:

- A. General: Provide submittals pursuant with the following:
1. Product Data: Submit manufacturer's specifications, any recommendations and standard Product details for aluminum window units, including independent laboratory certified test report as necessary to show compliance with requirements.
 2. Shop Drawings: Submit shop drawings, including typical unit elevations and showing half scale details of Product's head, jamb and sill being supplied and typical installation detail. Show anchor locations and other components not included in manufacturer's standard literature. Call out type of glass/glazing, screening, and window finish that will be supplied.
 3. Samples: Submit samples as follows:
 - a) Three samples of each required finish, on a 3 inch long section of an extruded shape or flat aluminum stock.
 - b) Additional samples as may be requested by Architect, to show fabrication techniques, workmanship, type of component parts and the type, design or finish of hardware proposed.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Store and handle windows, hardware and all related items in strict compliance with the manufacturer's instructions.
- B. Protect and insure windows and all accessory and related materials adequately against damage from the elements, construction activities and other hazards before, during and after installation.

1.10 PROJECT WARRANTIES:

- A. Manufacturer's Warranties: Submit written warranties from window manufacturer for the following:
1. Windows: Windows furnished shall be certified as fully warranted against any defects in material or workmanship, under normal use and service, for a period of one year from date of fabrication.
 2. Finish: The pigmented organic finishes on windows and component parts shall comply fully with requirements of AAMA 2603, for pigmented organic coating and fully warranted against chipping, peeling, cracking and blistering for a period of one year.
 3. Glass: Any insulated glass shall be warranted from visual obstruction, due to internal moisture, for a period of one year.

1.11 EXTRA MATERIAL or ATTIC STOCK:

- A. Furnish and deliver to Owner, at the project location, extra material, for future maintenance or replacement, as required.

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1. Per every 100 windows of one size, supply the following items, in cartons, and clearly marked as to carton's contents;
2. Provide five each of each type lock, pull handle, screen (if any) and five sets of any exterior pan and/or interior trim system, all finished to match the original finish as specified herein and for this Project.

PART 2 – PRODUCTS**2.01 GENERAL:**

- A. Manufacturer: Subject to compliance with Contract Documents and specifications, provide one of the following:
 1. Model 2100 Sliding, AW PG60 2515 x 2007 windows as manufactured by SEAL CRAFT.
 - 2.
 - 3.
- B. Thermal Break Construction: Fabricate aluminum window units with an integral low-conductance polyurethane thermal barrier, located mid-frame between exterior and interior of the window, and in a manner, which eliminates direct metal-to-metal contact.
- C. Window Construction: Provide manufacturer's standard construction, which has been in use on similar window units for a period of not less than ten years, and has been tested to demonstrate resistance to thermal conductance and condensation and has been tested to show adequate strength for this purpose.

2.02 FABRICATION:

- A. Aluminum Extrusions: All extruded sections shall be of 6063-T5 aluminum alloy and temper recommended by window manufacturer for strength, corrosion resistance, and application of required finish. Shall meet 22,000 psi ultimate tensile strength, yield of 16,000 psi.
- B. Fasteners: Aluminum, stainless steel, or other materials warranted by fastener manufacturer to be non-corrosive and compatible with aluminum window members, and related components of window units.
 1. Do not use exposed fasteners, except where unavoidable.
 2. Provide stainless steel Phillips flathead screws for any exposed fasteners, where required, or tamperproof fasteners.
 3. Locate all fasteners so as not to bridge the thermal break.
- C. Anchors, clips and window accessories, depending on strength and corrosion-inhibiting requirements, fabricate such items of aluminum, stainless steel or hot-dip zinc coated steel or iron, complying with ASTM A 123-89a or ASTM B 633-85.
- D. Glazing with cured rubber tape, expanded cellular glazing tape or units may be wet glazed with a high quality silicone based. All units shall be glazed using re-useable glazing beads.
- E. Provide weather-stripping using silicone coated woven pile with polypropylene fin center complying with AAMA 702-11.
- F. Sealant: Unless otherwise indicated for sealants required within fabricated window units, provide elastomeric type as recommended by window manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating. Provide product complying with AAMA 851-09.

*Model 2100 Horizontal Slider AW-PG60 2515 x 2007***2.03 WINDOW CONFIGURATION:**

- A. General: The following defines operating arrangements for types of rolling panels required in window units and specifies the minimum provisions for each type.
- B. AW PG60 2515 x 2007 Horizontal Sliding aluminum windows, with one horizontal (OX or XO) sliding panel.
 - 1. Provide rolling panels, which may be removed and serviced from the interior of the building.

2.04 FABRICATION AND ACCESSORIES:

- A. General: Provide manufacturer's standard fabrication and accessories that comply with specifications indicated. Include complete system for assembly of components and anchorage of window units prepared completely and pre-glazed from factory pursuant with AAMA AW PG60 2515 x 2007.
- B. Window Members including any muntin bars called for shall be of aluminum. Secondary members such as, weather-stripping, rolling panel's guides, etc. shall also be of aluminum or a compatible material.
 - 1. Mainframe and rolling panel members shall have aluminum thickness as allowed by AAMA/NWWDA I.S.2A440-08. Wall thickness tolerance as defined by the Aluminum Association shall apply.
 - 2. The master frame shall be no less than 82.6mm (3-1/4 inches) in depth.
- C. Thermal Break: The thermal barrier shall provide a continuous uninterrupted thermal break around the entire perimeter of the frame and all rolling panels, and shall not be bridged by conductors.
- D. Hardware having component parts, which are exposed, shall be of aluminum, stainless steel or other non-corrosive materials and compatible with aluminum. Cadmium or zinc-plated steel, if used, must be in accordance with ASTM Specification A-164 or A-165.
 - 1. Primary rolling panel locks shall be auto-snap lock at jamb, no plastic cam locks will be permitted.
- E. Frame and rolling panels shall be assembled in a secure and workmanlike manner to perform as specified herein. All joints of mainframe and rolling panels shall be of butt type, coped and neatly joined by means of cadmium plated or stainless steel screws anchored in an integral boss. All joinery of mainframe and rolling panels shall be sealed with joint sealant per AAMA 851-09.
- F. Structural Members: When mullions occur, whether they are joined by integral mullions, or independent mullions, or by a combination of frame members, the resulting members must be capable of withstanding the specified design pressures herein.
- G. Rolling Panels: Shall be joined at the corners with screws in integral screw ports, factory assembled and glazed.
 - 1. The rolling panels must be easily removed from the frame for either cleaning or repair. Reglazing shall be easily accomplished from the interior without the aid of unique tools.
- H. Glazing:
 - 1. All glazing and insulated panels shall be factory glazed as follows:
 - a) All units shall be constructed to an overall minimum thickness of 25.4mm (1 inch) with two lights of 3mm (1/8), or as size, loading and/or local codes may require.
 - b) Exterior light shall be clear annealed
 - c) Between glass cavity shall be dehydrated air
 - d) Interior light shall be clear annealed
 - e) Insulated glass units shall be tested, certified and carry the respective CBA level certification.
 - f) Test reports supporting CBA certification shall be submitted upon request.

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2. Insulated Panels: If required, shall be 25.4mm (1 inch) total thickness with acrylic baked enamel finish on exterior and interior aluminum skins with color to match window frame finish or as specified by Architect. Provide tempered hardboard substrate and polyisocyanurate core.
- J. Screens: If drawings indicate screens, supply half insect screens in accordance with manufacturer's standard product. Provide aluminum screen cloth.
- K. Accessories: If indicated on drawings, panning shall be of a receiver type, extruded and finished to match, and;
1. Panning extrusions shall be site assembled, secured at the corners with cadmium plated steel screws in integral screw boss with the joints back sealed per AAMA 803.3-92. Exposed installation fasteners are not acceptable on the exterior of pan system.
 2. Interior trims: Shall be as depicted on drawings and provided in extruded profiles only, sized to fit job specific requirements. No break form shapes are permissible without written prior approval.
 3. Exterior mullion covers, when required, shall be of extruded profiles, finished to match window system.
 4. Receptor Systems, if indicated on drawings and used in lieu of panning, shall be a two-piece snap together receptor system and shall serve to anchor windows in place. The receptor shall be extruded and finished to match window with polyurethane thermal break. The receptor system shall be at head and jamb or head only, as is indicated on the drawings. Installer shall chink fiberglass insulation between receptor and window's frame. An optional extruded aluminum sub-sill may be called for on the drawings and must also offer thermal break design.

2.05 ALUMINUM FINISHES:

- A. Provide organic coating of type and color indicated or selected by Architect. Comply with AAMA Standard 2603. Application of finish must be by window manufacturer for all components to ensure match.
1. Manufacturer's standard electrostatically applied baked enamel coating of manufacturer's standard color(s) as selected by the Architect and applied over manufacturer's standard substrate preparation including cleaning, degreasing, and appropriate pre-treatments.

High performance finish per AAMA 2604 and 2605 and/or anodic finishes are also available for architectural selection. Please contact Seal Craft or your Sales Representative with any questions concerning finish options.

PART 3 – EXECUTION**3.01 - PREPARATION**

- A. Prepare openings and chink with insulation, if necessary, to avoid excessive air infiltration from wall cavity. Insure head has proper flashing applied and opening is within tolerance, plumb, and level. Block as necessary to provide for secure anchoring in accordance with industry standards and the approved shop drawings.

3.02 - INSTALLATION

- A. Install windows in accordance ASTM E 2112, per approved shop drawings and using skilled craftspeople that have demonstrated a successful history of installing commercial window systems for at least five years. If units are to be installed in EIFS veneer, it shall be the General Contractor's responsibility to insure that openings are properly back-wrapped, prepared per EIMA guidelines and current procedures prior to window installation.
- B. Provide required blocking and support, securely fasten and set windows plumb, square, and level without twist or bow. For horizontal sliding windows, care must be taken to insure that jambs are not bowed or twisted. Block and anchor at jambs to insure they remain in tolerance, plumb and that locks function properly.

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- C. Apply sealant per ASTM E 2112 and pursuant with sealant manufacturer's recommendations, at all exterior joinery. Wipe off any excess sealant and tool all sealant leaving exposed surface clean and smooth.

3.03 - FIELD TESTING

- A. After 10% of the windows are installed, test installed units in conformance with AAMA 502-02 for air and water infiltration. Offer adequate notice to insure presence of window manufacturer, contractor, architect and/or owner's representative during testing.
- B. Select test units as directed by the owner's representative and use an independent laboratory, as provided by the owner or contractor.

3.04 - ADJUSTING AND CLEANING

- A. Installing contractor shall clean all aluminum surfaces promptly after installation, following either AAMA 609-93 and/or 610.1-79 standards. Comply with AAMA CW-10-82. Report any shipping damages to window manufacturer with 72 hours of delivery.
- B. Installing contractor shall make all final adjustments to rolling panels and/or hardware, insuring proper operation and weather-ability, and shall touch up any minor blemishes.
- C. Installing contractor shall clean glass, after installation, to remove any labels, excess glazing compound or other sealants and any other foreign substances. Initiate protection and precautions as required insuring that windows are not misused or abused by other Trades. Special care must be taken to insure that debris is removed and kept out of sill track of all sliding windows.

END OF SECTION