

*Model 8250 Fixed Light FW-HC60 1500 x 1800 (60" x 71")*

**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 FW-HC60 60 x 71 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:
  - 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.
  - 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 compensation channel joints within each window assembly, per AAMA 800-05, and chink fiberglass insulation between window frames & accessories.
  - 10. Sealing of entire exterior perimeter of window units after installation, per ASTM E 2112.
  - 11. Furnishing of any extra materials as specified herein.

**1.03 ITEMS FURNISHED BUT NOT INSTALLED:**

- A. *Architect and/or Specifier should add any applicable requirements to this section, as he/she deems necessary.*

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- A. *Architect and/or Specifier should add any applicable requirements to this section, as he/she deems necessary.*

*Model 8250 Fixed Light FW-HC60 1500 x 1800 (60" x 71")***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 101 I.S. 2-97 and applicable general recommendations published by AAMA 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 101 I.S. 2-97 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 full 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 60 inches wide by 71 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: The window shall be subjected to an air infiltration test in accordance with ASTM E 283. Air infiltration shall not exceed 0.01 ft<sup>3</sup>/min/ft<sup>2</sup> when tested at 6.24 psf.
  2. Water Resistance Test: The glazed unit shall be mounted in a vertical position, continuously supported around perimeter. The window unit shall be subjected to a water resistance test in accordance with ASTM E 331 & 547 and as outlined below.
    - a) Using a static pressure of 6.0 pounds per square foot, a water flow rate equal to five gallons of water per hour, per square foot of window area, should be cycled for five minutes of water on, then one minute off, for a total of four cycles. No water shall pass the interior plane of the window frame and there shall be no uncontrolled leakage.
    - b) On windows rated in the HC Class, in addition to the cycling test above, any HC unit shall also be subjected to a water resistance test in accordance with ASTM E 331 & 547. When a static pressure of 9.0 pounds per square foot has been stabilized, five gallons of water per hour, per square foot of window area shall be applied to the exterior face of the unit for a period of 15 minutes. No water shall pass the interior plane of the window frame and there shall be no uncontrolled leakage as defined in the test procedure.
  3. Uniform Structural Load Test: A minimum uniform structural test pressure, 150% of design pressure and given in pounds per sq. ft., shall be applied to the test unit. First, the exterior pressure (positive) then the interior (negative) pressure. Each maximum pressure shall be stabilized and held for 10 seconds. Testing shall be conducted pursuant to ASTM E 330 and the unit shall be evaluated after each load.
  4. Uniform Load Deflection Test: The unit shall be subjected to a uniform load at the design pressure specified, given in pounds per square foot (psf) and applied both positive & negative to the surface of the unit. No member shall deflect more than 1/175 of its span. Test shall be conducted pursuant with ASTM E 330.
  5. Condensation Resistance Factor: The window shall be tested in accordance with AAMA 1503.1-88 standards and tests of thermal performance and shall yield a condensation resistance factor of no less than 41, for a CRF Class C50 rating.
  6. Coefficient of Heat Transfer, or "U-Value" Test: Thermal Transmittance (U-Value) shall be tested to be 0.55 and satisfy the performance criteria of AAMA 1504, Class U40.

**1.06 QUALITY ASSURANCE:**

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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 Wood Window & Door Association (NWWDA).

**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.

**PART 2 – PRODUCTS**

**2.01 GENERAL:**

- A. Manufacturer: Subject to compliance with Contract Documents and specifications, provide one of the following:
  - 1. Model 8250 FW-HC60 60 x 71 Fixed Light windows as manufactured by SEAL CRAFT Corp.
    - a) Or;
    - b) Or;

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- 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 machine 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. Sash shall be glazed using aluminum glazing beads, finished to match frame.
- E. Sealant: Unless otherwise indicated for sealant 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 800-05.

**2.03 WINDOW CONFIGURATION:**

- A. General: The following defines types of fixed window required and specifies the minimum provisions for each type. Drawings will show where fixed are located in relationship to any operable, by an arrow on operable.
- B. FW-HC60 60 x 71 Fixed Light aluminum windows, with stationary sash. Provide unit which, may be reglazed 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 pre-glazed from factory.
- B. Window Members, including any muntin bars, shall be of aluminum.
  - 1. Mainframe and any sash members shall have aluminum thickness as allowed by AAMA/NWWDA 101 I.S. 2-97. The standard wall thickness tolerance as defined by the Aluminum Association shall apply.
  - 2. The products main or master frame shall be no less than 3 1/4 inches ( 83.5mm ) in depth.
- C. Thermal Break: The thermal barrier shall provide a continuous uninterrupted thermal break around the entire perimeter of the frame and shall not be bridged by conductors.

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- D. Fasteners or hardware as component parts, which are exposed, shall be of aluminum, cadmium plated 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.
- E. Window shall be assembled in a secure and workmanlike manner to perform as specified herein. All joints of mainframe shall be of butt type, coped and neatly joined by means of stainless steel screws anchored in an integral boss. All joinery of mainframe shall be sealed with joint sealant per AAMA 800-05.
- 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 and to a maximum deflection of L/175 of its span. When integral or independent mullions are used to join windows, evidence of compliance may be by mathematical calculations.
- G. Glazing:
1. All glazing and insulated panels shall be glazed at the factory as follows:
    - a) All insulated glass units shall be constructed to a minimum thickness of 7/8 inch (22.2m) with two lights of 1/8" (3mm) , or as size, loading and/or local codes may require.
    - b) All insulated glass units shall be tested, certified and carry the respective CBA level certification.
    - c) Test reports supporting CBA certification shall be submitted upon request.
  2. The fixed light shall have aluminum glazing beads finished to match.
  3. Insulated Panels: If required, shall be 7/8 inch (22.2m) 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.
- H. 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 stainless steel screws in integral screw boss with the joints back sealed per AAMA 800-05. Exposed fasteners are not acceptable on the exterior of pan system.
  2. Interior trims: Shall be as depicted on drawings but sized by installer and provided in extruded profiles only. No break form shapes are permissible without written prior approval.
  3. Exterior mullion covers, when they occur, shall be of extruded profiles, finished to match window system. No break form shapes are permissible without written prior approval.
  4. Receptor Systems, if indicated on drawings, 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 offer thermal break design.

**2.05 ALUMINUM FINISHES:**

- A. Provide organic coating of type and color indicated or selected by Architect. Comply with AAMA 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 paint per AAMA 2604 and 2605 and anodic finishes are also available for architectural selection.*

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**PART 3 – EXECUTION**

**3.01 - PREPARATION**

- A. Prepare openings and chink with insulation, if necessary, to avoid excessive air infiltration from wall cavity; and to be in tolerance, plumb, level, and 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.
- C. Apply sealant per AAMA 800-05 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 502-90 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 and/or 610-02 standards. Comply with AAMA CW-10-04. Report any shipping damages to window manufacturer with 72 hours of receipt.
- B. Installing contractor shall make all final adjustments to insure 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 sealant and any other foreign substances. Initiate protection and precautions as required to insure that windows are not misused or abused by other Trades.

**END OF SECTION**