

Aluminum

SINGLE HUNG SIDE LOAD H-C25

SINGLE HUNG WINDOW

MODEL: P4400

GUIDE SPECIFICATIONS

Section 08505 Metal- Aluminum Windows

Part I – General

1.01 **Work Included:**

- A. The conditions of the contract and all applicable sections of Division 1 are hereby made part of this section.
- B. Provide labor, materials and equipment necessary to furnish and install aluminum windows in accordance with the contract documents and detail drawings, if applicable, including, but not limited to:
 1. Removal and legal disposal of existing sash and other related items as indicated.
 2. Glass and glazing.
 3. All installation hardware and accessories as required for complete installation.
 4. Treated wood blocking, fillers and fasteners as required for a secure installation.
 5. Fiberglass insulation, if required, between window frames and adjacent construction.
 6. Perimeter sealing.

1.02 **Related Work:**

- A. Section 08800...Glass and Glazing
- B. Section 07900...Sealants
- C. Other (specify)

1.03 **System Description:**

- A. Units shall be Single Hung Aluminum Windows in accordance with AAMA/NWWDA 101/I.S.2-97 conforming to the requirements for a H-C25 designation and the detailed specifications herein.

1.04 **Testing and Performance Requirements:**

- A. Test Units:
 1. Specimens submitted for laboratory testing shall be completely glazed and assembled units of manufacturers standard construction and shall be of dimensions set forth in AAMA/NWWDA 101/I.S.2-97 for the designation Commercial Grade Single Hung Side Load Window.
- B. Test Procedures and Performance: Test sequence shall be conducted as follows: operating force (when required), air leakage, resistance to water penetration, life cycle testing, uniform structural deflection and uniform structural load test.

1. Operating Force: Sash shall be adjustable so they shall operate in either direction and not to exceed the operating force requirement of 45 lbs or less for a Commercial Graded Window.
2. Air Infiltration Test: With the unit closed and locked, it shall be subjected to an air infiltration test. The test shall be in accordance with ASTM 283. The air infiltration rate shall not exceed 0.3 cfm/sf max @ 1.57 psf (25 mph).
3. Water Resistance Test: With the unit closed and locked, it shall be subjected to a water resistance test in accordance with ASTM E-331, at a minimum test size of 54" x 90". There shall be no leakage as defined in the test method at a static air pressure differential of 3.75 psf.
4. Life Cycle testing (AW designated windows only): When tested in accordance of AAMA 910-93, there shall be no damage to fasteners, hardware parts, sash balances or any other damage which would cause the window to be inoperable.
5. Uniform Structural Deflection (for all AW Architectural Windows and HC Hung Windows only): The unit shall be subjected to a uniform load deflection test at the specified design pressure given in pounds per square foot (psf). This pressure is applied in both positive and negative to the unit. No member shall deflect more than 1/175 of its span. The test shall be in accordance with ASTM E-330.
6. Uniform Load Structural Test: With the unit closed and locked, it shall be subjected to a minimum static air pressure difference of 37.5 (psf) test in both positive and negative direction in accordance with ASTM E-330. There shall be no permanent deformation of any mainframe, sash, panel, and sash member in excess of 0.2% of its span.

1.05 **Quality Assurance:**

A. Pre-Bid Qualifications:

1. All units shall be Model P4400, H-C25 Single Hung Windows manufactured by Phoenix Glazing, 6901 Lynn Way, Pittsburgh, PA 15208, (412) 441-2775, or approval equal.
2. Other manufacturers must submit a written request for approval as well as the following at least ten (10) days prior to bid:
 - a. Full size sample; include panning, trim, muntins, glazing and other options as specified.
 - b. Certificates of compliance from the manufacturer, attesting that the submitted model meets the requirements specified herein.
 - c. Certified test reports from an AAMA accredited laboratory verifying compliance with all test requirements of Section 1.04
 - d. Evidence verifying that the manufacturer has been engaged in the domestic fabrication of similar aluminum windows for a period of ten (10) years.
 - e. A list of completed or work-in process projects of equal or greater size and complexity utilizing submitted model.
3. Approved equals shall be in the form of a written addendum. Verbal approval will not be given.

B. Labeling:

1. All aluminum windows conforming to the H-C25 designation for

Commercial Grade Single Hung Windows shall have quality certification labels affixed to the window in accordance with AAMA/NWWDA 101/I.S.2-97.

1.06 **References:**

- A. The specifications include, when referenced, standards listed in the AAMA/NWWDA 101/I.S.2-97.

1.07 **Submittals:**

- A. Product Data: Submit manufacturers specifications, certified test reports, and standard details to show compliance and specifications.
- B. Shop Drawings: Submit shop drawings showing exterior wall elevations or floor plans, typical unit evaluations and full size details of every typical composite member. Show anchors, hardware, and other components not included in manufacturers standard data. Include glazing details and standards for factory glazed units.
- C. Samples:
 - 1. Submit one sample of each specified aluminum finish on a 12” long section of extrusion.
 - 2. Submit additional samples as directed by the architect to show fabrication techniques, workmanship or component parts, design of hardware and exposed auxiliary items for window units.

1.08 **Product Delivery, Storage and Handling:**

- A. Materials shall be packed, loaded, shipped, unloaded, stored and protected in a manner which will avoid abuse, damage and defacement, in accordance with the recommendations in AAMA Curtain Wall Manual #10 “Care and Handling of Architectural Aluminum From Shop to Site”.
- B. The general contractor is responsible for protection of windows and their components from the elements, construction activities and other hazards throughout the project.

1.09 **Project Warranties:**

- A. Product Warranties (Supplied by manufacturer)
 - 1. Windows shall be warranted against defects in material and workmanship, under normal use and service, for a period of one (1) year from date of manufacture.
 - 2. Insulating glass shall be warranted to be free from material obstruction of vision by film formation or dust collection between the interior surfaces of the glass panes (excluding breakage) for a period of five (5) years from date of manufacture.
 - 3. The pigmented organic finishes of the window and related component parts shall be warranted against blistering, cracking, peeling or chipping for a period of five (5) years from date of manufacture.
- B. Installation Warranty: (Supplied by installer)
 - 1. The installation shall be warranted against defects in workmanship for a period of one (1) year from date of installation.

Part 2 - Product

2.01 **Manufacturers:**

- A. Phoenix Glazing, Pittsburgh, PA, Model P4400 H-C25.
- B. Pre-approved equals in accordance with Section 1.05.

2.02 **Materials:**

A. Aluminum for Windows and Components:

- 1. Aluminum, for window construction, shall be produced from primary billets of commercial quality homogeneous alloys, free from defects impairing strength and durability.
- 2. Extruded aluminum profiles shall be of 6063-T5 alloy and temper having a minimum ultimate tensile strength of 22,000 PSI and a yield strength of not less than 16,000 PSI.
- 3. All references herein to dimensions for wall thickness and other cross-sectional dimensions of window members are nominal to which standard tolerances in compliance with ANSI H35.2 and the Aluminum Association (AA) shall apply.
- 4. All principal framing and sash members shall have a minimum wall thickness of .062 inch and provide structural strength to satisfy applicable performance requirements specified herein.
- 5. Master frame depth shall be not less than 2 7/16 inches.
- 6. Master frame sill shall have a wall thickness of not less than .062 inch.

B. Fasteners:

- 1. Fasteners incorporated in the product shall be of sufficient strength and quality to perform their designated function. They shall be of stainless steel conforming to Section 1.43 of AAMA/NWWDA 101/I.S.2-97.

C. Hardware:

- 1. Hardware shall be of corrosion resistant materials compatible with aluminum.
 - 2. Provide one (1) sill lock for units under 32" wide on a continuous extruded lift handle rail with a stainless spring and self engage when closed.
- 2. Hardware shall be field replaceable without disassembly of sash members.

D. Weatherstrip:

- 1. Provide sliding type weatherstrip of high quality materials compatible with aluminum and proven to be capable of meeting environmental exposure and performance requirements.
- 2. All weatherstrip shall be locked-in to extruded pockets and secured to prevent shrinkage, movement or loss during operation. Adhered weatherstrips shall be rejected.
- 3. Frame sill shall be single weatherstripped using (1) silicone treated woven pile with mylar center fin conforming to AAMA 701.2.
- 4. Sash Stiles shall be double weatherstripped with (1) woven pile stripping on side and (1) rigid PVC weather seal (1) single weatherstrip at lock rail.

E. Balances:

1. Sash balances of appropriate size and capacity to hold sash stationary at any open position shall be used for the weights of sash to be counter balanced.
 2. Block and Tackle balances shall complying to AAMA 902.2 shall be accepted.
 3. Balances shall be factory applied, easily accessible when in the window and shall be field replaceable.
- F. Glass and Glazing:
1. Glass:
 - a. Glass thickness, type, area and dimensional configuration shall be based on the manufacturers recommendations for the specified design pressure.
 - b. Glass shall be no less than q3 quality.
 - c. Annealed glass installation in windows shall meet GSA FS DD-G-451D and conform to ASTM C 1036 "Standard Specifications for Flat Glass".
 - d. Safety glazing materials, where used, shall meet the requirements of ANSI Z97.1 or CPSC-16 CFR 1201.
 - e. Tempered or heat strengthened glass, where used, shall meet GSA FS DD-G-1403B and comply with ASTM C 1048.
 - f. Spacer system shall be swiggle seal tested in accordance with ASTM E 773 and shall have a Class 'A' rating when tested to ASTM E 774.
 2. Glazing Materials:
 - a. Gaskets shall be of materials compatible with aluminum, be resistant to weathering and maintain a seal between the glass and its surrounding frame.
 - b. Sash shall be factory glazed with 5/8" insulating glass held in place by PVC glazing bead.
 3. Muntin Grids: (Optional)
 - a. Internal grids shall be formed aluminum of configuration specified, set between the glass panes of the 5/8" insulating glass unit.
- G. Insect Screens: (Optional)
1. Screen frames shall be of extruded aluminum 6063-T5 alloy and temper having minimum dimensions of .300" x 1.000" and wall thickness of .050". Rolled frames will not be accepted.
 2. Screen frames shall be fitted with leaf springs and retained by an applied masterframe screen track.
 3. Screening mesh shall be manufacturers standard 18 x 16 fiberglass woven cloth mesh meeting FS L-S-125B requirements secured to screen frame with and extruded reusable flexible PVC spline. (Optional aluminum wire meshing conforming to FS RR-W-365 available.)
 4. Screens shall be easily removed and replaced, from interior, without the use of special tools.
 5. Screens shall incorporate an extruded aluminum pull rail for easy removal. Pull tabs of any kind will not be acceptable.

2.03 **Fabrication:**

A. Construction:

1. All frame and vent members shall be thermally broken by the incorporation of a poured-in-place polyurethane thermal isolator separating the exterior and interior portions of the extrusions.
 - a. Provide thermal break construction, which has been in use for a period of not less than five (5) years, has been tested to demonstrate resistance to thermal conductance, condensation, adequate strength and security of glass retention and shall meet the requirements of ASTM D-638.
2. Main Frame:
 - a. All main framing corners shall be of coped and butt-type construction, neatly joined and mechanically secured by means of two (2) screws anchored into integral screw ports.
 - b. All main framing joints shall be sealed with a quality grade sealant, meeting AAMA specification 803.3, to ensure a water tight joint, at all required locations.
3. Sash:
 - a. All sash corners shall be of coped and butt type construction, neatly joined and mechanically secured by means of one (1) screw anchored into an integral screw port at all horizontal member locations.
 - b. Meeting rail sash shall mechanically interlock in the closed position with the fixed center meeting rail.
 - c. The lift rail shall incorporate an additional integrally extruded interlock to engage master frame sill when in a closed position.
 - d. Horizontal sash rails shall be of hollow tubular profile.
 - e. Sash shall be removed, from interior, without tools.
4. Exterior Panning System (Optional)
 - a. Exterior panning systems shall be extruded aluminum of 6063-T5 alloy and temper no less than nominal .062 inch wall thickness.
 - b. Aluminum sections shall be one piece, designed to wrap around entire window frame perimeter for a weather-tight assembly but shall allow unrestricted expansion and contraction of panning and window frame.
 - c. Corners shall be mitered or coped, neatly butted and mechanically secured with screws anchored into integral screw ports.
 - d. All corners shall be thoroughly backsealed with a quality sealant, meeting AAMA 808.3, prior to installation.
 - f. No exposed fasteners will be permitted on the exterior of the panning system.
5. Receptors: (Optional)
 - a. Window units shall be secured via a sub-framing system comprised of a two-piece designed receptor base and clip at head (and jambs).
 - b. receptor and clip sections shall be extruded aluminum of 6063-T5 alloy and temper no less than nominal .062 inch wall thickness.
 - c. Receptor shall incorporate a polyurethane fill isolator separating the exterior and interior portions of the extrusion.
 - d. No exposed fasteners are permitted in the attachment of the sub-framing system to the condition substrate.

6. Mullions (Optional)
 - a. Mullions and cover plates shall be extruded aluminum of 6063-T5 alloy and temper with a wall thickness of no less than .062 inch.
 - b. Mullions must provide adequate structural properties to resist exterior and interior pressures generated by the wind.
 - c. Provide mullions and cover plates complete with anchors for support to structure and installation of windows.
 - d. All anchors and securing fasteners to be concealed. Exposed fasteners will not be permitted.
 7. Interior Trim: (Optional)
 - a. Interior trims, closures, angles, etc., shall be extruded aluminum of 6063-T5 alloy and temper with a wall thickness of no less than .062 inch.
 - b. All interior trims shall be a two-piece snap type design. No exposed fasteners will be allowed.
- B. Finish:
1. The exposed surfaces of all aluminum members shall be clean and free from all serious blemishes. Finish shall be: (Select applicable)
 - a. Organic finish applied over a five-stage aluminum pretreatment. Finish shall be a one-coat, baked-on system with a minimum of .8 mil. thickness and shall conform to AAMA 2603.8.
Color shall be _____.
 - b. Organic finish applied over a five-stage aluminum pretreatment. Finish shall be a two-coat, Kynar based fluorocarbon baked-on system with a minimum of 1.2 mil. thickness and shall conform to AAMA 2605.2.
Color shall be _____.
 - c. Organic finish applied over a five-stage aluminum pretreatment. Finish shall be a three-coat, Kynar based fluorocarbon baked-on system with a minimum of 1.5 mil. thickness and shall conform to AAMA 2605.2. Third coat shall be a clear top coat.
Color shall be _____.
 - d. Clear anodized finish – Class II (204-R1) – AAM10C22A31. Thickness shall be .4 mil. minimum conforming to AAMA 607.1
 - e. Clear anodized finish – Class I (215-R1) – AAM10C22A41. Thickness shall be .7 mil. minimum conforming to AAMA 607.1

Part 3 – Execution

3.01 **Inspection:**

A. Job Conditions:

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface and are in accordance with approved shop drawings.
2. Window installation shall not initiate until all conditions are satisfactory.

3.02 **Installation:**

- A. Windows shall be erected by skilled craftsmen in accordance with manufacturers recommendations, approved shop drawings and ASTM E-737.
- B. Frames shall be securely supported, fastened and set plumb, square, and level without twist or bow, accurately fitted with tight joints and intersections.
- C. Provide and apply sealant compound, meeting AAMA 808.3, at all joints and intersections and at opening perimeters. Wipe of excess material and leave all exposed surfaces and joints clean and smooth.

3.03 **Adjusting and Cleaning:**

- A. Frames, sash, and/or hardware shall be adjusted after installation to ensure a smooth and weather-tight operation.
- B. Windows shall be left clean, free of labels, dirt, etc., after completion of installation.
- C. Protection from this point shall be the responsibility of the general contractor.