

+++ EDITOR NOTE: Items in red to be addressed on a per project basis +++

SECTION 08 5113

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Extruded aluminum windows with operating sash and infill panels.

1.02 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
- B. Section 08 1100 - Aluminum Doors and Frames.
- C. Section 08 3200 - Sliding Glass Doors.
- D. Section 08 4413 - Glazed Aluminum Curtain Walls.
- E. Section 08 6300 - Metal-framed Skylights.
- F. Section 08 8000 - Glazing.
- G. Section 08 9000 - Painting and Coating.

1.03 REFERENCE STANDARDS

1.04 ADMINISTRATIVE REQUIREMENTS

- A. System Supplier to provide Manufacturer with fabrication, assembly and installation training.
- B. System Supplier to perform inspections as needed.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions.
- C. Shop Drawings: Indicate daylight opening dimensions and overall frame dimensions, window schedule and elevations.
- D. System Supplier's Product Data: Include complete Order and Fabrication Manual extracts, maintenance and cleaning instructions.

1.06 QUALITY ASSURANCE

- A. System Supplier, Manufacturer and Installer Qualifications: Company specializing in fabrication of commercial aluminum windows of types required, with not fewer than three years of experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of AAMA CW-10.
- B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).
- B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide a two year material product warranty from the System Supplier starting on the date of delivery.
- C. Correct defective Work within a [] year period after Date of Substantial Completion.
- D. Provide [] year Manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- E. Provide [] year Manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.
- F. Provide a System Design Representation Statement from the System Supplier.

PART 2 PRODUCTS

2.01 ACCEPTABLE SYSTEM SUPPLIER PRODUCT

- A. Basis of Design: **Schuco (www.schuco-usa.com)**; Products: **AWS 70.HI Inward Opening Window**.
- B. Product Description: Thermally broken inward opening aluminum window into [facade, masonry, metal stud, ____ opening]. Thermal breaks to be constructed using Polythermid or Polyamide isobars. Pour and debridge thermal breaks are not acceptable. Glass to be [factory glazed; site glazed]. Please refer to AWS 70.HI Outward Opening Window Specification for outward opening windows.
- C. Window Types:
 - 1. Inward opening dual action (tilt before turn).
 - 2. Inward opening side-hung casement.
 - 3. Inward opening bottom-hung hopper.
 - 4. Fixed lite.

2.02 WINDOWS

- A. Performance and System Requirements
 - 1. Aluminum framing to be mitered, factory assembled using corner cleats, T-cleats and chevrons to support, align and seal all profile joints.
 - 2. Outer frame depth: 2-3/4 inches (70 mm).
 - 3. The positive design wind load of the project is [] psf ([] Pa).
 - 4. The negative design wind load of the project is [] psf ([] Pa).
 - 5. Design and size windows to withstand the following load requirements, when tested in accordance with ASTM E 330, using test loads equal to 1.5 times the design wind load with 10 second duration of maximum load. No permanent deformation in excess of 0.2% of the clear span per AAMA 501.
 - 6. Member Deflection: Limit member deflection to $L / 175$ for spans less than or equal to 13 ft 6 inches (4115 mm). For spans greater than 13 ft 6 inches (4115 mm) member deflection is equal to $L / 240 + 1/4$ inch (6.35 mm).
 - 7. Deflection: Maximum allowable deflection for any member supporting a single lite of glass:

- 3/4 inch (19 mm).
8. Condensation Resistance Factor: For the frame of CRF_r [] or better in accordance with AAMA 1503.
 9. U-value of glazed window assembly to be [] BTU/(h*sq ft*degrees F) ([] W/sq meters* degrees K)) or better, as determined from AAMA 507-07 thermal performance test report or simulation.
 10. Acoustical Performance: STC rating of []; OITC rating of [].
 11. Life Cycle Requirements: No damage to fasteners, hardware parts or other components that would render operable windows inoperable and no reduction in air and water infiltration resistance when tested according to AAMA 910.
 12. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly.
 13. System Internal Drainage: Drain to the exterior by means of a weep drainage network for any water entering joints, condensation occurring in glazing channel, or migrating moisture occurring with system.
 14. Forced Entry Resistance: Conform to ASTM F588 requirements for performance level Type B - Grade: 10.
 15. Glazing: [single; double; triple], [clear; bronze tinted; gray tinted;], [reflective; low-e; transparent;].
 16. Glazing: Outer gaskets to be installed in a continuous length with a single joint at top center of glass. Glazing support bridges to allow for water passage beneath so as not to block drainage path.
- B. Window Type Specific Performance, Hardware and Accessory Requirements: AW-PG70-DAW.
1. Inward opening dual action window (tilt before turn).
 - a. Performance Class and Grade: Performance Class = AW, Performance Grade = 70 in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
 - b. Water Infiltration: No uncontrolled water ingress at a static pressure difference of 15 psf (720 Pa) in accordance with ASTM E 331 & E 547.
 - c. Air Infiltration and Exfiltration: Limit air infiltration through operable light assembly to 0.10 cu ft min / sq ft ((0.5 L/s*sq m) of wall area, measured at a differential of 6.27 psf (300 Pa) in accordance with ASTM E 283.
 - d. Canadian Design Pressure: C5.
 - e. Canadian Air Infiltration/Exfiltration Level: A3.
 - f. Canadian Water Penetration Resistance Test Pressure: B7.
 - g. Proprietary System Supplier hardware and accessories to be used including:
 - 1) Fully concealed hardware including hinges.
 - 2) Concealed multi-point locking and corner drives to enable locking on all sides of sash as outlined by System Supplier per window sizes required.
 - 3) Handles:
 - (a) Type: [non-locking; locking to fully lock; single locking, to enable tilt mode to function when in locked position; double locking to enable window to be either fully locked in closed position or enable tilt mode functioning for ventilation].
 - (b) Color: Per System Supplier's Options.
 - (c) Concealed gearbox.
 - (d) Lever handles to be removable so as to prevent damage during transportation and prevent unauthorized window use before building occupation.
 - 4) Accessories (optional for selection)
 - (a) Windows to be fitted with concealed night/trickle ventilation hardware to hold window ajar in [single; multiple] opening position(s).
 - (b) Windows to be fitted with concealed 'anti-slam' device to prevent windows

- moving from open to closed tilt position during breezy conditions.
 - (c) Turn mode to be fitted with concealed **[releasable; non-releasable]** restrictors having adjustable friction and energy absorbing mechanism to reduce slamming in casement/turn mode.
- 2. Side-hung inward opening casement: AW-PG70-C.
 - a. Performance Class and Grade: Performance Class = AW, Performance Grade = 70 in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
 - b. Water Infiltration: No uncontrolled water ingress at a static pressure difference of 15 psf (720 Pa) in accordance with ASTM E 331 & E 547.
 - c. Air Infiltration and Exfiltration: Limit air infiltration through operable light assembly to 0.10 cu ft min / sq ft (0.5 L/s*sq m) of wall area, measured at a differential of 6.27 psf (300 Pa) in accordance with ASTM E 283.
 - d. Canadian Design Pressure: C5.
 - e. Canadian Air Infiltration/Exfiltration Level: A3.
 - f. Canadian Water Penetration Resistance Test Pressure: B7.
 - d. Proprietary System Supplier hardware and accessories to be used including:
 - 1) Fully concealed hardware including hinges.
 - 2) Concealed multi-point locking and corner drives to enable locking on all sides of sash as outlined by System Supplier per window sizes required.
 - 3) Handles:
 - (a) Type: **[non-locking; locking]**.
 - (b) Color: Per System Supplier's options.
 - (c) Concealed gearbox.
 - (d) Lever handles to be removable so as to prevent damage during transportation and prevent unauthorized window use before building occupation.
 - 4) **Accessories (optional for selection)**
 - (a) Concealed **[releasable; non-releasable]** restrictors having adjustable friction and energy absorbing mechanism to prevent slamming.
 - (b) Concealed releasable restrictor which disengages via main window handle.
- 3. Bottom-hung inward opening hopper: AW-PG70-AP.
 - a. Performance Class and Grade: Performance Class = AW, Performance Grade = 70 in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
 - b. Water Infiltration: No uncontrolled water ingress at a static pressure difference of 15 psf (720 Pa) in accordance with ASTM E 331 & E 547.
 - c. Air Infiltration and Exfiltration: Limit air infiltration through operable light assembly to 0.10 cu ft min / sq ft (0.5 L/s*sq m) of wall area, measured at a differential of 6.27 psf (300 Pa) in accordance with ASTM E 283.
 - d. Canadian Design Pressure: C5.
 - e. Canadian Air Infiltration/Exfiltration Level: A3.
 - f. Canadian Water Penetration Resistance Test Pressure: B7.
 - g. Proprietary System Supplier hardware and accessories to be used including:
 - 1) Fully concealed hardware including hinges.
 - 2) Concealed multi-point locking and corner drives to enable locking on all sides of sash as outlined by System Supplier per window sizes required.
 - 3) Handles:
 - (a) Type: **[non-locking; locking]**.
 - (b) Color: Per System Supplier's options.
 - (c) Position: **[top; side]**.
 - (d) Concealed gearbox.
 - (e) Lever handles to be removable so as to prevent damage during transportation and prevent unauthorized window use before building occupation.

- 4) **Accessories (optional for selection)**
 - (a) Windows to be fitted with concealed night/trickle ventilation hardware to hold window ajar in [single; multiple] opening position[s].
 - (b) Safety restrictor and cleaning stay that secures the vent when it is moved from the cleaning position back into the tilt position.
 - (c) Releasable rebate stay restrictor.
4. Fixed lite:
 - a. AW-PG50-FW
 - 1) Performance Class and Grade: Performance Class = AW, Performance Grade = 50 in accordance with AAMA/WDMA/CSA 101.I.S.2/A440-11.
 - 2) Water Infiltration: No uncontrolled water ingress at a static pressure difference of 15 psf (720 Pa) in accordance with ASTM E 331 & E 547.
 - 3) Canadian Design Pressure: C3.
 - 4) Canadian Water Penetration Resistance Test Pressure: B7.
 - b. AW-PG60-FW
 - 1) Performance Class and Grade: Performance Class = AW, Performance Grade = 60 in accordance with AAMA/WDMA/CSA 101.I.S.2/A440-11.
 - 2) Water Infiltration: No uncontrolled water ingress at a static pressure difference of 12 psf (580 Pa) in accordance with ASTM E 331 & E 547.
 - 3) Canadian Design Pressure: C4.
 - 4) Canadian Water Penetration Resistance Test Pressure: B5.
 - c. Air Infiltration and Exfiltration: Limit air infiltration through operable light assembly to 0.04 cu ft min / sq ft (0.2 L/s*sq m) of wall area, measured at a differential of 6.27 psf (300 Pa) in accordance with ASTM E 283.
 - d. External glazing gaskets to replicate and align fixed and operable glazing.

2.03 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Gaskets: EPDM.
- C. Glazing: As specified in Section 08 8000.

2.04 FABRICATION

- A. Fabricate components with smallest possible clearances and shim spacing around perimeter of assembly.
- B. Accurately fit, secure and seal joints and corners using corner keys and epoxy glue.
- C. Prepare components to receive anchor devices.
- D. Triple weatherstrip operable units, utilizing vulcanized or moulded corner gasket frames at outer and center positions.

2.05 FINISHES

- A. Class I Natural Finish or Anodized Plus Natural Anodized 2-step Finish:
 1. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.
 2. Anodized Plus Natural Anodized Finish: AAMA 612 clear anodic coating with electrolytically deposited organic seal not less 0.7 mils (0.02 mm) thick; color as scheduled.
- B. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils (0.01 mm) thick.

- C. Class I Color Anodized Finish or Anodized Plus Color Anodized 2-step Finish:
 - 1. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils (0.018 mm) thick; light bronze.
 - 2. Anodized Plus Color Anodized Finish: AAMA 612 electrolytically deposited colored anodic coating with electrolytically deposited organic seal not less 0.7 mils (0.02 mm); color as scheduled.
- D. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils (0.018 mm) thick; light bronze.
- E. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils (0.01 mm) thick; light bronze.
- F. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system; color as scheduled.
- G. High Performance Organic Finish: AAMA 2604; multiple coats, thermally cured fluoropolymer system; color as scheduled.
- H. Pigmented Organic Coating System: AAMA 2603; polyester or acrylic baked enamel finish; color as scheduled.
- I. Operator and Exposed Hardware: Enameled to _____ color.
- J. Apply 1 coat of bituminous coating to concealed aluminum and steel surfaces in contact with dissimilar materials.
- K. Shop and Touch-Up Primer for Steel Components: SSPC-Paint 25, zinc oxide, alkyd, linseed oil primer.
- L. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 INSECT SCREEN

- A. Aluminum frame to match windows.
- B. Insect Screens: woven plastic mesh, stainless steel strands, steel strands, aluminum strands or glass fiber strands.
- C. Insect Screens may be **[hinged; fixed]**.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

3.02 INSTALLATION

- A. Install windows in accordance with System Supplier's instructions.
- B. Install window assembly in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
- C. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- D. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

- E. Final adjust and fix sash position relative to frame after installation
- F. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.
- G. Install perimeter sealant in accordance with requirements specified in Section 07 9005.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft (1.5 mm/m) non-cumulative or 1/8 inches per 10 ft (3 mm/3 m), whichever is less.

3.04 FIELD QUALITY CONTROL

- A. Provide the services of the manufacturer's field representative to observe installation and make report.
- B. See Section 01 4000 - Quality Requirements, for general requirements for testing and inspection.

3.05 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
- C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECTION

Disclaimer: Schüco USA LLLP has written this sample specification as an aid to a professionally qualified design professional. Schüco shall not be responsible for the use of this specification in project construction documents. The use of this specification requires the sole professional judgment and expertise of a qualified design professional to adapt the information in this specification to the specific needs of the project, to coordinate with the construction documents, and to meet all applicable building codes, regulations and laws. **THEREFORE, SCHÜCO EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY INCLUDING THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.**