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ALUMINUM-CLAD WOOD DOUBLE-HUNG WINDOWS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Aluminum-clad wood fixed windows.
- B. Historic exterior window trim replacement

1.2 RELATED SECTIONS

A. Section 07 92 00, JOINT SEALANTS.

1.3 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 - AAMA 502 Voluntary Specification for Field Testing of Windows and Sliding Doors.
 - AAMA 2603 Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - AAMA 2605 Voluntary Specification, Performance Requirements and TeB.st Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 117 Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM C 1036 Flat Glass.
 - 3. ASTM C 1048 Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass.
 - 4. ASTM D 1149 Rubber Deterioration Surface Ozone Cracking in a Chamber.
 - 5. ASTM D 2803 Filiform Corrosion Resistance of Organic Coatings on Metal.
 - ASTM D 4060 Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - 7. ASTM E 283 Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Difference Across the Specimen.
 - 8. ASTM E 330 Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - 9. ASTM E 547 Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential.
 - 10. ASTM G 85 Modified Salt Spray (Fog) Testing.
- C. Window and Door Manufacturers Association (WDMA):
 - ANSI/AAMA/NWWDA 101/I.S.2 Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
 - 2. ANSI/AAMA/NWWDA 101/I.S.2/NAFS-02 Voluntary Performance Specification

for Windows, Skylights and Glass Doors.

 WDMA I.S.4 - Industry Standard for Water-Repellent Preservative Non-Pressure Treatment for Millwork.

1.4 PERFORMANCE REQUIREMENTS

- A. Windows shall be Hallmark certified to a rating of H-LC-R specifications in accordance with ANSI/AAMA/NWWDA I.S.2/A440-08.
- B. Window Unit Air Leakage, ASTM E 283, 1.57 psf (25 mph): 0.3 cfm per square foot of frame or less.
- C. Window Unit Water Penetration: No water penetration through window unit when tested in accordance with ASTM E 547, under static pressure of 7.5 psf (52 mph) after 4 cycles of 5 minutes each, with water being applied at a rate of 5 gallons per hour per square foot.

1.5 SUBMITTALS

- A. Comply with Division 01 requirements.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, indicating dimensions, construction, component connections and locations, anchorage methods and locations, hardware locations, and installation details.
- D. Samples: Submit full-size or partial full-size sample of window illustrating glazing system, quality of construction, and color of finish. Submit sample of historic window trim to VA COR for approval.
- E. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Mockup:
 - Provide sample installation for field testing window performance requirements and to determine acceptability of window installation methods.
 - 2. Approved mockup shall represent minimum quality required for the Work.
 - 3. Approved mockup may remain in place within the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site undamaged in manufacturer's or sales branch's original, unopened containers and packaging, with labels clearly identifying manufacturer and product name. Include installation instructions.
- B. Storage: Store materials in an upright position, off ground, under cover, and protected from weather, direct sunlight, and construction activities.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

PART 2 PRODUCTS

2.1 MANUFACTURER: - NOT USED

2.2 ALUMINUM-CLAD WOOD FIXED WINDOWS

- A. Aluminum-Clad Wood Fixed Windows: Factory-assembled aluminum-clad wood fixed windows. Basis of Design: Sierra Pacific 'Energy Saver Direct Set'.
- B. Frame:
 - Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
 - Interior Exposed Surfaces: Prefinished clear Pine with no visible fastener holes.
 - Exterior Surfaces: Clad with aluminum. Match VA Station Building 1 characteristics.
 - 4. Overall Frame Depth: 5 inches (127 mm).
- C. Sash:
 - Select softwood, water water-repellent, preservative-treated with in accordance with WDMA I.S.-4.
 - Interior Exposed Surfaces: Prefinished clear Pine with no visible fastener holes.
 - 3. Exterior Surfaces: Clad with aluminum, lap-jointed at corners.
 - 4. Corners: Mortised and tenoned, glued and secured with metal fasteners.
 - Extruded acrylonitrile butadiene styprene glazing flange. Flange is located on top of wood sash members and under exterior aluminum cladding.
 - 6. Sash Thickness: 1-3/4 inches (44 mm).
- D. Weather Stripping:
 - 1. Water-stop santoprene wrapped foam at head and sill.
 - Thermal-plastic elastomer bulb with slip coating set into lower sash for tight contact at checkrail.
 - Vinyl-wrapped foam inserted into jambliner or jambliner components to seal to sides of sash.
- E. Muntin:
 - 1. Divided lite muntin bars to match VA Station Building 1 characteristics.
 - Interior wood grille to match interior wood species and exterior aluminum grille to match exterior clad color.
- F. Operating hardware:
 - 1. Copper hardware for ICRA compliance.
- G. Historic Exterior Trim:
 - Provide exterior metal trim to match existing historic trim, at VA Station Building 1.

2.3 GLAZING

- A. Glazing:
 - Float Glass: ASTM C 1036, Quality 1.
 a. Tempered Glass: ASTM C 1048.
 - Type: Silicone-glazed 5/8-inch dual-seal, tempered, insulating glass, clear multi-layer Low-E coated.
 - 3. Integral Light Technology Glazing and Grilles:
 - a. Insulating glass contains non-glare grid between 2 panes of glass.
 - b. Non-glare Grid: Adhered to glass.
 - c. Room Side Grilles: Solid 7/8-inch wide Clear Pine.
 - d. Exterior Grilles: Extruded aluminum. Dimension to match room side grilles.
 - e. Bars shall be adhered to both sides of insulating glass with VHB acrylic adhesive tape and aligned with foam grid.
 - f. Finish: Finish color matches interior and exterior finish colors.

2.4 OPTIONS: - NOT USED

2.5 HARDWARE- NOT USED

2.6 TOLERANCES

- A. Windows shall accommodate the following opening tolerances:
 - Vertical Dimensions Between High and Low Points: Plus 1/4 inch, minus 0 inch.
 - 2. Width Dimensions: Plus 1/4 inch, minus 0 inch.
 - 3. Building Columns or Masonry Openings: Plus or minus 1/4 inch from plumb.

2.7 FINISH

- A. Exterior Finish System: 3-coat fluoropolymer.
 - Exterior aluminum surfaces shall be finished with the following multistage system:
 - a. Clean and etch aluminum surface of oxides.
 - b. Pre-treat with chrome phosphate conversion coating.
 - c. Pre-treat with chromic acid sealer/rinse.
 - d. Top coat with baked-on polyester enamel.
 - 2. Color: White.
 - 3. Performance Requirements: Exterior aluminum finishes shall meet or exceed the following performance requirements of AAMA 2605:
 - a. Dry Film Hardness: Eagle Turquoise Pencil, F minimum.
 - b. Film Adhesion: 1/16-inch crosshatch, dry, wet, boiling water.
 - c. Impact Resistance: 1/10-inch distortion, no film removal.
 - d. Abrasion Resistance: Falling sand coefficient value of 20 minimum.
 - e. Chemical Resistance: 10 percent Muriatic acid, 15 minutes. Mortar

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pat test, 24 hours.

- f. Detergent Resistance: 3 percent at 100 degrees F, 72 hours.
- g. Corrosion Resistance: Humidity, 3,000 hours. Salt spray exceeds 3,000 hours.
- B. Exterior Finish System Performance Requirements:
 - Exterior aluminum finishes shall meet or exceed following performance requirements:
 - a. Ozone Deterioration, ASTM D 1149, Modified: 5 ppm ozone, 160 degrees F, 60 percent relative humidity, 100 hours exposure, little or no loss of cure.
 - b. Filiform Corrosion Resistance of Organic Coatings on Metal, ASTM D
 2803: No corrosion.
 - c. Taber Abrasion Resistance, ASTM D 4060: 500 g weight, CS-10 wheel, 500 cycles, less than 25 g weight loss.
 - d. Cyclic Acidified Salt Fog Test, ASTM G 85, Appendix A-2.
- C. Interior Finish: Factory finished with 1 prime coat and 1 top coat of White acrylic latex.

2.8 INSTALLATION ACCESSORIES

- A. Flashing/Sealant Tape:
 - 1. Aluminum-foil-backed butyl window and door flashing tape.
 - 2. Maximum Total Thickness: 0.013 inch.
 - 3. UV resistant.
 - 4. Verify sealant compatibility with sealant manufacturer.
- B. Interior Insulating-Foam Sealant: Low-expansion, low-pressure polyurethane insulating window and door foam sealant.
- C. Exterior Perimeter Sealant: High quality, multi-purpose sealant as specified in the joints sealant section.

2.9 SOURCE QUALITY CONTROL

A. Factory Testing: Factory test individual standard operable windows for air infiltration in accordance with ASTM E 283, to ensure compliance with this specification.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive windows. Notify the COR of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install windows in accordance with manufacturer's instructions and approved shop drawings.

- B. Install windows to be weather-tight and freely operating.
- C. Maintain alignment with adjacent work.
- D. Secure assembly to framed openings, plumb and square, without distortion.
- E. Integrate window system installation with exterior weather-resistant barrier using flashing/sealant tape. Apply and integrate flashing/sealant tape with weather-resistant barrier using watershed principles in accordance with window manufacturer's instructions.
- F. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using insulating-foam sealant.
- G. Seal window to exterior wall cladding with sealant and related backing materials at perimeter of assembly.

3.3 FIELD QUALITY CONTROL

A. Field Testing: Field-test windows in accordance with AAMA 502, Test Method A. Manufacturer's representative shall be present.

3.4 CLEANING

- A. Clean window frames and glass in accordance with Division 01 requirements.
- B. Do not use harsh cleaning materials or methods that would damage finish.
- C. Remove labels and visible markings.

3.5 PROTECTION

A. Protect installed windows to ensure that, except for normal weathering, windows will be without damage or deterioration at time of substantial completion.

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