SECTION 08 52 13 - ALUMINUM CLAD WOOD WINDOWS

PART I - GENERAL

1.1 HISTORIC PRESERVATION

A. [Note to AE: For those buildings listed on the National Register of Historic Places or which are considered eligible for listing, the University's Historic Preservation Officer shall be consulted for window selection.]

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. E 283: Standard Test Method for Rate of Air Leakage through exterior windows, curtain walls, and doors.
2. E 330: Standard Test Method for structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
3. E 547: Standard Test Method for water penetration of exterior windows, curtain walls, and doors by cyclic static air pressure differential.
4. E 774: Specification for sealed insulated glass units.
5. C 1036: Standard specification for flat glass.
6. ASHRAE 90.1 (for thermal performance).

B. WDMA I.S.4: Industry Standard for water repellent preservative treatment for millwork.

C. American Architectural Manufactures Association / Window and Door Manufactures Association (AAMA / WDMA): ANSI / AAMA / NWWDA 101 / I.S-97 voluntary specifications for aluminum, vinyl (PVC) and wood windows and glass doors and 101 / I.S 2 / NAFS-02 voluntary performance specification for windows, skylights and glass doors.

D. Window and door manufacturers Association (WMDA): 101 / I.S.2 WDMA Hallmark Certification Program.

E. Sealed Insulating Glass Manufactures Association / Insulating Glass Certification Council (SIGMA / IGCC).

F. American Architectural Manufacturers Association (AAMA): 2605: Voluntary Specifications for High Performance Organic Coatings on Architectural Extrusions and Panels.

G. National Fenestration Rating Council (NFRC): 101: Procedure for determining fenestration product thermal properties.

1.3 DESIGN AND PERFORMANCE REQUIREMENTS:

A. Definitions

1. Performance grade number, included as part of the AAMA/NWWDA product designation code, is actual design pressure in pounds force per square foot (pascals) used to determine structural test pressure and water test pressure.
2. Structural test pressure, for uniform load structural test, is equivalent to 150 percent of design pressure.
3. Minimum test size is smallest size permitted for performance class (gateway test size). Products must be tested at minimum test size or at a size larger than minimum test size to comply with requirements for performance class.

B. General: Provide wood windows capable to match or exceed test results dated with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of test size indicated below:

1. Minimum size required by AAMA/NWWDA 101/I.S 2.

C. AAMA/NWWDA Performance Requirements: Provide wood windows of the performance class and grade indicated that comply with AAMA/NWWDA 101/I.S.2.

1. Window up to 53" x 104" shall meet AAMA C50 in all performance cirteria. Total window unit including factory installed exterior casing and brick mold shall be tested.
2. Windows larger than 53" x 104" up to 59" x 120" shall meet C35 in all performance criteria. Total window unit including factory installed exterior casing and brick mold shall be tested.
3. Windows larger than 59" x 120" shall pass the air and water infiltration requirements for C35, and shall pass a structural load test of 25 psf. They need not meet the L/175 performance criteria. Total window unit including factory installed exterior casing and brick mold shall be tested
4. Windows shall be tested by an independent testing lab. Windows shall be Hallmark Certified through WDMA.

D. The following is an abbreviated list of performance criteria which are applicable to C50. See AAMA/NWWDA 101/I.S.2 for full explanation of requirements:

1. Design pressure 50 psf
2. Structural test pressure 75 psf
3. Water leakage – no leakage at 7.5 psf
4. Air infiltration – less than .3 cfm/sf when tested at 6.2 psf.
5. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or ¾ inch (19 mm), whichever is less, at design pressure based on structural computations.

E. For C35

1. Design Pressure 35 psf
2. Structural Test Pressure 52.5 psf
3. Water Leakage – none at 5.25 psf
4. Air Infiltration – less than .3 cfm when tested at 1.57 psf.
5. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or ¾ inch (19 mm), whichever is less, at design pressure based on structural computations.

1.4 WARRANTY

A. Windows shall be warranted to be free from defects in manufacturing, materials, and workmanship for a period of ten (10) years from purchase date.

B. Insulating glass shall be warranted against visible obstruction thru the glass caused by a failure of the insulating glass air seal for a period of twenty (20) years from the date of original purchase.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Permitted manufacturers are:

1. Marvin Windows and Doors
2. Kolbe & Kolbe Woodworking
3. Parrett Windows
4. Eagle windows
5. *[Note to AE: Manufacturers wishing to be included should contact F&S Engineering Services to arrange an appointment to demonstrate their product.]*

2.2 ALUMINUM CLAD WOOD WINDOW MATERIALS

A. Frame: Wood species of frame member shall be the same species as existing original windows. Windows to be painted may be clear vertical grain Douglas fir or Douglas fir finger jointed core with clear vertical grain Douglas fir veneer; Finger jointed clear sill. Kiln dried to a moisture content no greater than twelve (12) percent at the time of fabrication. Water repellent preservative treated in accordance with WDMA I.S.4. Finger jointed wood is only allowed on non-visible parts.

B. Aluminum extrusions: Manufacturer's standard extruded-aluminum cladding, Provide aluminum alloy and temper recommended by wood window manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000 psi (150-MPa) ultimate tensile strength, and not less than 16,000 psi (110-MPa) minimum yield strength . Exterior extruded aluminum clad 0.050 inch (1.27 mm) thick minimum.

1. All Aluminum shall be extruded. No roll formed aluminum shall be allowed.

C. Aluminum extrusions shall be formed to exactly replicate the profile and dimensions of existing wood windows. Shop drawings shall be submitted to Owner [*Note to AE: F&S Engineering Services and the Historic Preservation Officer need to approve shop drawings.*]

D. Glazing: provide Double insulating glass with low e film on #2 or #3 surface, and argon filled air space.

E. Finish:

1. Exterior: Aluminum clad. Fluoropolymer modified acrylic topcoat applied over primer. Meets or exceeds AAMA 2605 requirement. All brick molds and exterior trim to be finished to match manufacturer's standard color.
2. Interior: finish shall match existing whether it is paint or stained and varnished.
    a. If windows are to be primed and painted, primer shall be applied at factory.
    b. If windows are to be stained and varnished, stain and varnish shall be applied by painting contractor to match other finishes in the room.

F. Hardware:

1. Double hung window unit:
    a. Balance system: shall be coil spring block and tackle with nylon cord and fiber filled nylon clutch. Meets or exceeds AAMA 902 requirements.
    b. Jamb carrier: shall be vinyl extrusion with wood and aluminum inserts. Color Beige.
    c. Sash lifts and sash locks – U of I may desire to re-use existing sash hardware. If new hardware is provided, it shall be brass.

G. Weather-strip:

1. Double hung and single hung window units:
    a. Continuous leaf weather strip at head jamb parting stop; foam filled bulb weather-strip at check rail; foam filled bulb weather strip along vertical sash edge, bulb weather-strip at bottom rail. Color: Beige.

H. Jamb Extension: Factory installed jamb extension for wall thickness indicated or required. Finish: Match interior finish.

I. Insect Screens: Factory installed full screen over lower sash. Screen cloth, 18 by 16 mesh: Charcoal aluminum wire. Aluminum frame finish: Custom color to match rest of window.

2.3 ACCESSORIES AND TRIM

A. Installation Accessories:

1. Exterior Lugs: If existing windows have sash lugs, then replacement windows shall be provided with sash lugs. Sash lugs shall be mounted such that there is no visible gap between the edge of the lug and the edge of the jamb. Ability to operate any tilt to clean feature is not important to the University. If method of installing sash lugs prohibits use of tilt feature, that is acceptable.

2. Interior lugs, if existing windows have sash lugs on the bottom sash, then new windows shall be provided with sash lugs. Sash lugs shall be mounted such that there is no visible gap between the edge of the lug and the edge of the jamb. Ability to operate any tilt to clean feature is not important to the University. If method of installing sash lugs prohibits use of tilt feature, that is acceptable.

2.4 ELASTOMERIC JOINT SEALANT

A. Provide sealant recommended by window manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components; Drawings; and Shop Drawings.

B. [Note to AE: Existing jambs and sills may remain in place or the entire existing unit may be removed and new blocking provided. Decision is to be made on a case by case basis depending on condition of existing windows and complexity of removing existing windows. Instructions to the Contractor should be clearly stated in the Contract Documents].

END OF SECTION 08 52 13

This section of the *U of I Facilities Standards* establishes minimum requirements only.
It should not be used as a complete specification.