

## SECTION 08 53 13

### VPI ENDURANCE SERIES VINYL HORIZONTAL AND VERTICAL SLIDING WINDOWS

Project Name:

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES:

- A. Factory fabricated tubular extruded plastic windows with fixed and operating sash.
- B. Factory glazed including infill panels
- C. Operating hardware
- D. Insect screens
- E. Perimeter sealant

##### 1.02 RELATED REQUIREMENTS

- A. Section 07 90 05 - Joint Sealers: Perimeter sealant and back-up materials

##### 1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2016.
- B. NFRC 100-2017 – Procedure for Determining Fenestration Product U-factors.
- C. NFRC 200-2017 – Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
- D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; American Architectural Manufacturers Association; 2016.
- E. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2012.
- F. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002 (Reapproved 2010).
- G. ASTM E 1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- H. FS L-S-125 - Screening, Insect, Nonmetallic; Federal Specifications and Standards; Revision B, 1972.
- I. ASTM E 547 – 00(2016) – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Cyclic Static Air Pressure Difference.

- J. NAFS (2011) – North American Fenestration Standard, as required by IBC 2016.
- K. ASTM E 90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

#### **1.04 PERFORMANCE REQUIREMENTS**

- A. Performance Requirements: As specified in PART 2, with the following additional requirements: **(attach project specific requirements)**
- B. System Design: Design and size components to withstand positive and negative dead and live loads caused by wind pressure acting on the normal plane of the window.
  - 1. Calculate fenestration design pressures in accordance with applicable code (ASCE 7-10).
- C. Deflection: For CW Performance Class Limit member deflection to 1/175 of the longest unsupported span dimension. For LC Performance Class, all structural members must comply with the requirements of AAMA 101 9.3.4.3 Uniform Load Structural Test.
- D. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- E. Thermal Resistance of Assembly: U value of 0.22\* Triple Glaze, 0.28\* Dual Glaze.
- F. Air Infiltration: Limit air infiltration through assembly to 0.3 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57psf (for LC performance class) and 6.24psf (for CW performance class) as measured in accordance with ASTM E 283.
- G. Condensation Resistance Factor: CRF of 60\* when measured in accordance with AAMA 1503.
- H. Water Leakage: None, when measured in accordance with ASTM E 547 at a pressure differential as required for specified design pressure.
- I. System Internal Drainage: Pressure equalized water management system designed to drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- J. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.
- K. Thermal Movement: Design sections to permit movement caused by thermal expansion and contraction of plastic to suit glass, infill, and perimeter opening construction.
- L. Design Temperature Range: 120° F.

#### **1.05 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-installation Meeting: Convene minimum of one week before starting work of this section.

#### **1.06 SUBMITTALS**

- A. See Section covering Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, anchorage and fasteners, and glazing details. AAMA/NFRC certified testing data shall be provided for project configurations.

- C. Shop Drawings: Indicate net frame dimensions, framed opening tolerances, Installation requirements. Drawing shall indicate compliance with codes and laws, including ADA reach range height.
- D. Samples: Upon request submit two window and frame sections, 12 x 12 inch in size, illustrating window frame section, mullion section, screen and frame, and finished surfaces.
- E. Upon request submit two samples of operating hardware.
- F. Manufacturer's Certificate: Certify that products of this section meet or exceed project requirements. Manufacturer's certificate shall not supersede code or regulatory certification or requirements.
- G. Warranty: Submit manufacturer warranty, ten year minimum.

### **1.07 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in window installation, with minimum five years of experience. Architect and General Contractor shall qualify installation contractor.

### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Protect exposed glazing surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
- B. Windows shall be stored in protected area on flat surface protected from weather. Refer to manufacturer's storage and handling instructions.

### **1.09 FIELD CONDITIONS**

- A. Install sealants per manufacturer's instructions.
- B. Compatibility testing may be required for all envelope materials.

### **1.10 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Manufacturers standard 10-year warranty.
- C. Warranty period begins on the date of installation.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Tubular Plastic Windows:
  1. Manufacturer; VPI Quality Windows, Endurance Series
  2. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.02 COMPONENTS**

- A. Windows: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.

1. Performance Requirements: AAMA/WDMA/CSA 101/I.S.2/A440 LC-PG40.
  2. Configuration: Horizontal or vertical sliding sash, and fixed.
  3. Color: Color as selected from manufacturers standard colors.
- B. Frames: 1-7/8 inch wide x 3-1/2 inch deep profile; chambered glaze bead.
  - C. Mullion: 2-1/2 inch or 4-1/4 inch wide x 3-1/2 inch deep profile.
  - D. Sills: 1-7/8 inch nominal thickness, with pressure equalized drainage system.
  - E. Insect Screens: Woven fiberglass mesh; 14/18 mesh size.
    1. Color: Gray.
  - F. Operable Sash Weather Stripping: extruded fin-pile; permanently resilient, profiled to effect weather seal.

### **2.03 GLASS AND GLAZING MATERIALS**

- A. Glass and Glazing Materials: As described below.
  1. Glass in Exterior Lights; 3mm minimum thickness Cardinal Low-e; Glass interior 3mm minimum.

### **2.04 IGU SEALANT MATERIALS**

- A. Perimeter Sealant and Backing Materials: Dual seal; Hot melt PIB backed with silicone.

### **2.05 HARDWARE**

- A. Sash lock: Cam lock, or positive action accessible lock.
- B. Operator: Dual integral pull handles on operable sash, 1/2 inch minimum height, limit stops available.
- C. Finish for exposed hardware: Color matched baked enamel.

### **2.06 FABRICATION**

- A. Fabricate framing, mullions and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.
- B. Form sills in one piece.
- C. Form snap-in glass stops, closure molds, weather stops, and flashings of extruded PVC for tight fit into window frame section.
- D. Form weather stop flange to perimeter of unit.
- E. Fabricate components with uniform fit and finish, including gasketed seals at inter-connecting joints. Minimize clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- F. Arrange fasteners to be concealed from view.
- G. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

- H. Assemble insect screen frame, miter and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with stainless steel compression springs and integral pull handles.
- J. Factory glaze window units.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

### **3.02 INSTALLATION**

- A. Install window units in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Provide thermal isolation where components penetrate or disrupt building insulation, per building details.
- E. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- F. Install operating hardware.
- G. Install perimeter sealant and backing materials in accordance with building details.

### **3.03 TOLERANCES**

- A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft non-cumulative or 0.5 inches per 100 ft, whichever is less.

### **3.04 FIELD QUALITY CONTROL**

- A. Test installed windows for compliance with performance requirements for water penetration, in accordance with ASTM E 1105 using uniform cyclic pressure at of 2/3 pressure difference specified for laboratory tests.
  - 1. Test one window of each type, as directed by Architect.
  - 2. If any window fails, test an additional window at Contractor's expense.
- B. Correct or replace windows that have failed field testing and retest until performance is satisfactory.
- C. General contractor is responsible for complete installation and adjustment in accordance with construction documents and manufacturer's installation instructions prior to conducting field testing.

### **3.05 ADJUSTING**

- A. Adjust hardware for smooth operation and secure weather-tight closure.

### **3.06 CLEANING**

- A. Remove protective material from pre-finished 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 manufacturer.

\*May vary with glass package.

**END OF SECTION**