

**SECTION 085313
VINYL (PVC) WINDOWS**

**SERIES 3000/3900
NEW CONSTRUCTION DOUBLE HUNG**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. All windows of the types and sizes called for in this specification shall be furnished with necessary hardware and miscellaneous equipment as specified herein and shall be manufactured by Silver Line Building Products, Inc.

1.02 RELATED SECTIONS

- A. Section 061000 – Rough Carpentry.

1.03 REFERENCES

- A. American Society of Testing Materials (ASTM)
 - 1. ASTM B 456 - Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium, 2008.
 - 2. ASTM F 588- Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact, 2007.
 - 3. ASTM B 633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel, 2007.
 - 4. ASTM B 766 - Specification for Electrodeposited Coatings of Cadmium, 2003.
 - 5. ASTM D 638 - Test Method for Tensile Properties of Plastics, 2008.
 - 6. ASTM D 4216 - Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly (Vinyl Chloride) (CPVC) Building Products Compounds, 2006.
 - 7. ASTM D 4726 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors, 2002.
 - 8. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings, 2007.
 - 9. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation, 2008.
- B. American Architectural Manufacturers Association (AAMA)
 - 1. AAMA 701/702 - Combined Voluntary Specification for Pile Weatherstrip and Replaceable Fenestration Weatherseals, 2004.
 - 2. AAMA 902 - Voluntary Specification for Sash Balances, 2007.
- C. Window and Door Manufacturers Association (WDMA)
 - 1. AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors, 2008
- D. National Fenestration Rating Council (NFRC)
 - 1. NFRC 100- Procedure for Determining Fenestration Product U Factors, 2004
 - 2. NFRC 200- Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence, 2004
 - 3. NFRC 500- Procedure for Determining Fenestration Product Condensation Resistance Values, 2004

1.04 SYSTEM PERFORMANCE DESCRIPTION

- A. Single, Twin, and Triple Unit Air Infiltration shall exceed 0.30 CFM/SqFt when tested in accordance with: AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08
 - 1. For specific product air infiltration performance, contact Silver Line Engineering Department.
- B. Unit Water Penetration Resistance Pressure vs. size when tested in accordance with: AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08
 - 1. 7.52 PSF for single unit sizes up to 48" x 77"
 - 2. 6.06 PSF for twin unit sizes up to 96" x 77"
 - 3. 7.52 PSF for twin unit sizes up to 76" x 77"
 - 4. 7.52 PSF for triple unit sizes up to 107" x 77"
- C. Unit Structural Performance ratings vs. size when tested in accordance with: AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08
 - 1. H-R50 for single unit sizes up to 38" x 57"
 - 2. H-R45 for single unit sizes up to 36" x 72"
 - 3. H-R35 for single unit sizes up to 48" x 57"
 - 4. H-R35 for single unit sizes up to 38" x 77"
 - 5. H-R25 for single unit sizes up to 48" x 77"
 - 6. H-R50 for twin units up to 76" x 65"
 - 7. H-R45 for twin units up to 72" x 72"
 - 8. H-R40 for twin units up to 76" x 77"
 - 9. H-R35 for twin units up to 96" x 57"
 - 10. H-R25 for twin units up to 96" x 77"
 - 11. H-R45 for triple units up to 107" x 57"
 - 12. H-R40 for triple units up to 107" x 77"
- D. Where needed, supplemental reinforcements and glass packages shall be available to increase unit performance Design Pressures.
 - 1. H-R50 for single unit sizes up to 36" x 72"
 - 2. H-R50 for triple units up to 107" x 57"
- E. Unit Thermal Performance ratings vs. size when tested in accordance with: NFRC 100, 200 and 500
 - 1. Window shall achieve NFRC thermal u-value rating of 0.47 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of .62 with clear glass and no argon gas fill
 - 2. Window shall achieve NFRC thermal u-value rating of 0.35 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of .33 using Low E 272 and no argon gas fill.
 - 3. Window shall achieve NFRC thermal u-value rating of 0.31 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of .33 using Low E 272 and argon gas fill.
 - 4. Window shall achieve NFRC thermal u-value rating of 0.34 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of .22 using Low E 366 and no argon gas fill.
 - 5. Window shall achieve NFRC thermal u-value rating of 0.31 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of .21 using Low E 366 and argon gas fill.

1.05 SUBMITTALS

- A. See Section 013300 – Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard details and catalog data demonstrating compliance with referenced standards. Include Installation Instructions.
- C. Provide third-party certification that window meets or exceeds AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08 Structural ratings per section 1.04.A.
- D. Shop Drawings; Submit the following:
 - 1. Elevation for each style window specified; indicate sizes, glazing types, muntin pattern and designs.
 - 2. Schedule: Indicate each window in project; reference each unit to specific elevation detail.
 - 3. Details: Head, jamb and sill details for each project condition.
- E. Quality Assurance Submittals: Evidence of certifications of window units required in Quality Assurance Article of this section.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum five (5) years of documented experience producing products of the type Specified in this section.
- B. Certifications:
 - 1. Provide window units rated for air infiltration, water penetration and structural performance per AAMA/WDMA/CSA 101/I.S.2/A440-05 or 08 and certified by independent third-party agent.
 - 2. Provide window units rated and certified for thermal performance by NFRC, and for seal integrity of insulating glass seal.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect products from moisture, construction traffic, and damage in according with manufacturer's printed instructions.
- B. Do not use non-vented plastic or canvas shelters; open plastic wrapper immediately upon delivery to provide ventilation.

1.08 WARRANTY

- A. See Section 017800 – Closeout Submittals, for additional warranty requirements.
- B. Manufacturer's Warranty: Furnish manufacturer's Limited Lifetime Warranty on window products.

PART 2 PRODUCTS

2.01 MANUFACTURERS: Acceptable Manufacturer

- A. Silver Line Building Products, Series 3000/3900 Double Hung including Single, Double and Triple units.

2.02 COMPONENTS

- A. Vinyl Extrusions: Multi-chamber extrusions of impact-resistant exterior-grade rigid polyvinyl chloride (PVC) complying with ASTM D 4726, ASTM D 4216 and ASTM D 638 standards.
- B. Insulating Glass Unit: Unit thickness 7/8 inch:
 - 1. Insulating Glass products shall be permanently marked either on spacers or on an insulating unit component with certification label of Insulating Glass Certification Council (IGCC).
 - 2. Insulating Glass shall comply to the ASTM E 2190 standard.
 - 3. Insulating Glass type selection shall comply to the ASTM E 1300 standard.
 - 4. Air Chamber: Hermetically sealed space between panes. Clear Glass is standard. LoE2 glazing as well as argon gas filling options available. Low conductance spacer.

2.02 COMPONENTS (cont.)

- C. Screens: Installable from interior side, providing only ventilation and reasonable insect control when operable sash is in open position: re-screenable using fiberglass mesh, 16 x 18 gage, secured in channel of aluminum box frame with continuous vinyl spline; frame color matching frame and sash color.
- D. Operating Hardware: Types for specified operable-sash windows; sight-exposed hardware of UV-stabilized, engineered plastic; color matched to vinyl extrusions for uniform appearance.
- E. Fasteners: All screws and other miscellaneous fastening devices incorporated shall be of aluminum, stainless steel, or other non-corrosive material compatible with vinyl extrusions. Cadmium or zinc plated steel, where used, shall be in accordance with ASTM B 766 or ASTM B 633. Nickel or chrome plated steel, where used, shall be in accordance with ASTM B 456.
- F. Weatherstripping: Types for specified operable sash windows and operable doors.
- G. Integral Muntins: Aluminum pre-finished to match window frame, factory-mounted between panes of insulating glass unit before sealing glass unit.

2.03 DOUBLE HUNG WINDOWS

- A. Configurations:
 - 1. Windows must be a true Double Hung unit with both upper and lower sash operable and able to tilt inward for cleaning.
 - 2. Windows must be available as individual Double Hung units and as Integral Twin and Triple units with two or three pair of operational sash respectively in one continuous unit frame.
- B. Operable-Sash Windows:
 - 1. Frame and sash: Vinyl extrusions, nominal extrusion wall thickness 0.070 inch. Mitered and fusion-welded corners: integral 2 inch pre-punched nailing fin four sides; all upper and lower sash must tilt-in for cleaning; integral glazing provision: molded-in lift handles.
 - 2. Factory Glazing: 7/8 inch Insulating Glass Unit.
 - 3. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper, capable of meeting ASTM F 588 forced entry resistance, engineered to force meeting stiles/rails with interlock for minimum air infiltration.
 - b. Balances: Block and tackle balances, meeting requirements of AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
 - 4. Weatherstripping: Double-row high-density silicone-treated wool pile, with double mylar fin, meeting requirements of AAMA 701.
 - 5. Screens: Frame color matching window frame and sash color.
 - a. Full size: Integral rails.
 - 6. Muntins: Integral, patterns to suit window sizes.
- C. Color: White standard. Optional Beige available.
- D. Styles and Sizes: As indicated on drawings.

2.04 ACCESSORIES

- A. Mullion Posts: Extruded aluminum, color matching adjacent window frame.
 - 1. Exterior and interior mullion trim accessories including wood build out, dry wall receiver and vinyl dry wall return.
- B. Exterior and interior trim accessories including wood build out, dry wall receiver and vinyl dry wall return.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Installer to verify that project conditions are acceptable before beginning installation of products; verify that rough openings are as indicated, and are correct sizes for clearance spaces specified in manufacturer's instructions.
- B. Correct any unacceptable conditions before proceeding with installation.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's printed installation instructions and approved shop drawings.
- B. Install products plumb and in true alignment; fasten to achieve maximum operational effectiveness and best appearance of units.

3.03 ADJUSTING AND CLEANING

- A. Ensure that windows operate correctly, free from binding or other defects.
- B. Clean and restore soled surfaces; remove scraps and debris, and leave site in clean condition.

END OF SECTION