

SECTION 08600
POLYVINYL CHLORIDE (PVC) WINDOWS
Paradigm Window Solutions
8311 Standard Double Hung Window

PART 1 – GENERAL

1.1 **APPLICABLE PUBLICATIONS:** The publications listed below form a part of this specification to the extent referenced. The publications are referred to in text by basic designation only.

1.1.1 Federal Specifications (Fed. Spec.):

L-S-125B	Screening, Non-metallic, Insect
DD-G-45-1D	Glass, Float or Plate, Sheet

1.1.2 American Architectural Manufacturers Association (AAMA);

AAMA 101 I.S.2-97	Voluntary Specification for Aluminum, PVC, and Wood Windows and Glass Doors
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Test method for rate of Air Leakage through Exterior windows, Curtain walls and doors (ASTM E283)

Test method for Structural Performance of Exterior Windows, Curtain walls and doors (ASTM E330)

Test method for Water Penetration of Exterior windows, Curtain walls and doors by Uniform Static Air Pressure Difference (ASTM E547)

Specifications for Sealed Insulating Glass Units (ASTM E774)

AAMA 1503-98	Voluntary test method for Condensation Resistance of Windows, Doors, and Glazed wall sections
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AAMA 615-02	Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles
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NFRC 100-97	Procedure for Determining Fenestration Product U-factors
NFRC 200-97	Procedure for Determining Fenestration Product Solar Heat Gain Coefficients
NFRC 400-01	Procedure for Determining Fenestration Product Air Leakage

1.1.3 AAMA Certification Program for Vinyl Window Manufacturers

1.2 **SUBMITTALS:** Submit to Contracting Officer for Approval.

1.2.1 **Certified Test Reports:** Submit for air infiltration, water resistance, and uniform loading in accordance with the above referenced specification.

1.2.2 **Catalog Data:** Shall describe each type of window, hardware, fastener, accessory, operator, screen, and finish. (as applicable)

1.2.3 **Certification of Compliance:** Submit certificates that equivalent windows have been successfully tested and meet the requirements specified herein for air infiltration and water penetration.

1.3 **DELIVERY AND STORAGE:** Deliver windows to project site in an undamaged condition. Use care in handling and hoisting during transportation and at the job site. Store windows and components out of contact with the ground, under cover, protected from the weather, so as to prevent damage to the windows. Damaged windows shall be repaired to an “as new” condition or replaced as approved.

1.4 **PROTECTION:** Finished surfaces shall be protected during shipping and handling using manufacturers standard method.

- 1.5 CERTIFICATION: Window units shall be tested and certified for performance with the above referenced test methods. All window units shall be labeled certifying conformance with AAMA 101 I.S.2-97 , NFRC 100-97, and Energy Star.
- 1.6 CERTIFIED FABRICATOR: Windows shall be fabricated by an AAMA Certified Fabricator.
- 1.7 WARRANTIES:
 - 1.7.1 Windows shall be fully warranted against any defects in material or workmanship under normal use and service for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.
 - 1.7.2 Optional factory-applied exterior paint finish shall be warranted to the original purchaser against adhesive failure, peeling, cracking, or blistering for a period of 10 years when exposed to normal weather conditions. Color retention shall be warranted for the same period to be less than 5 Delta E per ASTM D2244. Change in gloss is not considered a defect.
 - 1.7.3 Insulated Glass Units shall be fully warranted against visual obstruction resulting from film formation or moisture collection between the interior glass surface, excluding breakage, for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.
 - 1.7.4 Contractor shall provide a written service warranty that clearly spells out how requests for service shall be handled, by whom, under whose responsibility and shall include the time frame for handling these service requests. A labor warranty providing service on the windows shall cover a period of not less than 10 years, and shall be provided in writing. A copy of the product and labor warranty must accompany other applicable warranties and be presented with bid.
- 1.8 PERFORMANCE REQUIREMENTS:
 - 1.8.1 Glazing options to suit specific thermal, visual, or acoustic requirements are available.
 - 1.8.2 Test for air infiltration shall be in accordance with AAMA/NWWDA 101/I.S.2-97 and NFRC 400-01. Test results for different window sizes appear below. Test data subject to change without notice.
 - 1.8.3 Test for water infiltration shall be in accordance with AAMA 101 I.S.2-97. Test results for different window sizes appear below. Test data subject to change without notice.
 - 1.8.4 Uniform Structural Load Test shall be in accordance with AAMA 101 I.S.2-97. Test results for different window sizes appear below. Test data subject to change without notice.

Type	Rating (DP)	Max. Structural Test Pressure ₁	Water Infiltration ₂	Air Infiltration ₃	Size Tested
H	R30	52.50	4.50	0.01	48 X 80
H	R40	60.00	6.00	0.01	44 X 66
H	HUD Z III	58.00	2.86	0.01	44 X 66

₁Structural Test Pressure (psf) tested to at least 150% of DP rating

₂Water Infiltration (psf) tested to at least 15% of DP rating

₃Air Infiltration units are scfm/ft²

- 1.8.5 Test for Thermal Performance shall be in accordance with NFRC 100-97. Test data subject to change without notice.
- 1.8.6 Test for Condensation Resistance Factor (CRF) shall be in accordance with AAMA 1503-98. Test data subject to change without notice.

PART 2 – PRODUCTS

- 2.1 MANUFACTURER: Paradigm Standard Double Hung Window as manufactured by **Paradigm Window Solutions**, 400 Riverside Industrial Parkway, Portland, ME 04103
- 2.2 MATERIALS: Windows shall conform to the requirements of specifications listed above. Provide windows of combinations, types and sizes indicated or specified.
- 2.2.1 Extruded PVC components produced from commercial quality virgin PVC (unplasticised polyvinyl chloride), conforms to AAMA 303 from sections in one piece, straight, true and smooth. Provide multi-chambered PVC extruded frames and sash in accordance with the manufacturers standard practice. Make fusion welded frame joints strong enough to develop full strength of members, with an external wall thickness of .070 “. Head and jamb members shall have integral screen stops. Make interior horizontal top surfaces of both meeting rails flat and in the same plane. Meeting rails have an integral interlock with two lines of pile weatherstrip provided. Upper and lower sash shall have the same glass size. Sash shall have fusion welded mitered corners with an external wall thickness of .070“.
- 2.2.2 Balance Mechanism (DH): Provide two 1/2" stainless steel, constant force coil spring balances for each sash. Enclose balance springs in rustproof cases, with jamb liner covers, from the top of the bottom sash to the head of the window unit. Balance covers shall be finished to match window frame finish and easily removable for field service. Balances shall also have an interlocking pivot bar, for integral frame alignment with sash for keeping window frames straight and true during installation.
- 2.2.3 Locking Device (DH): Provide each window over 32 inches in width with two cam-action sweep sash Locks, and windows under 30" in width with one lock . The lower sash shall have one continuous, integral lift rail at the bottom of the sash. The upper sash shall have a continuous, integral pull-down member on the sash top rail. Provide two tilt latches in the top of each sash for tilting in sash for cleaning. The tilt latches shall be integrally mortised into the sash top rails for a clean appearance.
- 2.2.4 Glass and Glazing: Glass shall conform to DD-G-451 and not less than “B” quality. Factory glazed 3/4” insulating glass conforming to ASTM-E-774, with Truseal Duraseal seal spacer, manufactured by TruSeal Industries Inc., Cleveland, OH. Glazing shall be integral glazing type system with architectural back bedded glazing tape and designed to maintain a watertight seal between glass and sash frame. Non-standard glass options will have metal box-type spacer with dual seal system.
- 2.2.5 Factory-applied exterior paint finish to be Royal Spectra-Coat™ as manufactured by Royal Bond Co., Ontario, Canada. Finish may be provided in 24 standard colors, satin finish only, on exterior surfaces as determined by the factory. Finish shall meet the performance requirements specified by AAMA 615-02. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.2.6 Weather-stripping: All sash units shall be triple weather-stripped where the sash meet the jamb using silicone treated pile with a mylar center fin bonded to backing.
- 2.2.7 Insect Screening: Fed. Spec. L-S-125, Type II, Class 2 (plastic coated or impregnated fibrous glass yarn) of standard color as approved, mesh 18 X 16.
- 2.3 FABRICATION
- 2.3.1 Weathering Surfaces: All frame members shall be multi-chambered PVC extrusions utilizing double wall design without the need for reinforcement. Frame corners shall be fusion welded. Sash members shall be multi-chambered PVC extrusions utilizing double wall design at all glazing locations. Horizontal sash members shall be mitered and fusion welded to vertical sash members.
- 2.3.2 Drips and Weep Holes: Provided as required to return water to the outside.
- 2.3.3 Glazing Thickness: Design glazed windows and rabbets suitable for glass thickness specified above.
- 2.3.4 Fasteners: All fasteners are to be stainless steel type, corrosion resistance. Use flathead, cross-recessed type, exposed head screws with standard threads on windows, trim, and accessories. Screw heads shall finish flush with adjoining surfaces. Self-tapping sheet metal screws are not acceptable for material more than 1/16 inch in thickness. All sheetmetal screw fasteners shall penetrate into a screw boss consisting of at least three layers of PVC profile for secure fastening and reduce pull out.

- 2.3.5 Provisions for Glazing: Design sash for outside double-glazing and for securing glass with manufacturer's standard glazing systems. Provide glazing channels of adequate size and depth to receive and properly support the glass and glazing accessories.
- 2.3.6 Factory Mulls: Factory mulls to be fully reinforced with extruded aluminum I-beam reinforcement of 6005-T5 alloy and assembled utilizing interior and exterior "U" channels and proprietary sealant application patterns. Reinforcement to be further attached to window frames with .080" x 1.375" x 12" stainless steel straps and appropriate stainless steel fasteners. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.7 Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.
- 2.3.8 Type 908 Brick Mould Casing: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. Offset design of casing to 'hide' beveled surface of screen track and provide a traditional 'stepped' appearance relative to the window frame. The extrusion shall consist of multiple chambers with a 1 7/8" extruded nailing fin and 1" by 1" integral J channel with an exterior wall thickness minimum of 0.075". All welded joints shall be aesthetically cleaned of weld flash material. The nominal overall dimension of the 908 brick mould Casing is 2 1/4" by 1 5/8". Optional exterior color finish may be applied to match or complement the exterior color of the window. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.9 Five Inch Brick Mould Casing: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. Offset design of casing to 'hide' beveled surface of screen track and provide a traditional 'stepped' appearance relative to the window frame. The extrusion shall consist of multiple chambers with a 1 7/8" extruded nailing fin and 1" by 1" integral J channel with an exterior wall thickness minimum of 0.075". All welded joints shall be aesthetically cleaned of weld flash material. The nominal overall dimension of the brick mould casing is 5" by 1 5/8". Optional exterior color finish may be applied to match or complement the exterior color of the window. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.10 Flat Casing: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. Offset design of casing to 'hide' beveled surface of screen track and provide a traditional 'stepped' appearance relative to the window frame. The extrusion shall consist of multiple chambers with a 1 7/8" extruded nailing fin and 1" by 1" integral J channel with an exterior wall thickness minimum of 0.075". All welded joints shall be aesthetically cleaned of weld flash material. The nominal overall dimension of the casing is 3 1/2" by 1 3/8". Optional exterior color finish may be applied to match or complement the exterior color of the window. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.11 Sill Nose: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. The extrusion shall consist of multiple chambers with a 1 3/4" extruded nailing fin and 1" by 3/4" integral J channel. Exterior wall thickness shall be a minimum of 0.075". A color-matched end cap shall be installed at both ends. Optional exterior color finish may be applied to match or complement the exterior color of the window. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.12 Jamb Extension: *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.12.1.1 Clear pine
- 2.3.12.1.2 Primed finger-jointed pine
- 2.3.12.1.3 Premium oak
- 2.3.12.1.4 Azek cellular pvc (white)
- 2.3.13 Grill options to be verified by manufacturer. *NOTE TO SPECIFIER: Remove this section if not applicable.*
- 2.3.13.1.1 Grill Patterns: Refer to Drawings.
- 2.3.13.1.2 Rectangular internal grids
- 2.3.13.1.3 Contour internal grids
- 2.3.13.1.4 Simulated divided lites.
- 2.3.14 Weather-stripping: Provide for ventilating sections of all windows to insure a weathertight seal meeting the infiltration tests specified herein. Use easily replaceable factory applied weather-stripping of manufacturer's stock type, as specified above. Use EPDM covered open cell foam weatherstrip for compression contact between the sill and the sash. For sliding surfaces, use silicone treated pile, with a mylar center fin bonded to a plastic-backing strip.

- 2.3.15 Screens: Provide one insect screen for each operable ventilating unit. Design screens to fit closely around entire perimeter of each ventilator or opening, to be rewirable, easily removable from inside building, and interchangeable for same size ventilators of similar type windows, with no exposed fasteners and latches. Provide all guides, stops, clips, bolts and screws as necessary, for a secure and insect tight attachment to window. Provide continuous extruded aluminum screen frame for screen strength.
- 2.3.15.1 Screen Frames: Provide same quality and color finish as the window units. Frames shall have extruded sections not less than .4375" by 1.25" by 0.050" thick and shall have removable vinyl splines. Hardware, attachment devices, and accessories shall be manufacturer's standard and of same quality, material and finish as hardware of window unit. Painted windows to have full screens only.
- 2.3.15.2 Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening in the spline channel.
- 2.3.15.3 Screen Finish: Exposed surfaces of aluminum extrusions shall be thoroughly cleaned, primed and given a finish in accordance with AAMA 603.8 with total dry thickness not less than 0.8mil. The finish color shall match the vinyl window.

PART 3 – EXECUTION

3.1 INSTALLATION

- 3.1.1 Method of Installation: Install in strict accordance with the window manufacturer's printed instructions and details, except as specified otherwise herein. Install windows without forcing into prepared window openings. Insulate perimeter of window frame with acceptable approved insulation material, as recommended by window manufacturer. Set windows at proper elevation, location, and reveal; plumb, square, level, and in alignment; and brace, strut, and stay properly to prevent distortion and misalignment. Protect ventilators and operating parts against accumulation of dirt, and building materials by keeping ventilators tightly closed and locked to frame. Bed screws in joints at mullions, contacts of windows with sills, built in fins, and sub-frames in approved sealant. Install windows in a manner that will prevent entrance of water. For replacement window installations, provide sill angle flashed in sealant at windowsills.
- 3.1.2 Anchors and Fasteners: Make ample provision for securing units to each other, and to adjoining construction.
- 3.1.3 Adjustments after Installation: After installation of windows adjust all ventilators and hardware to operate smoothly and to provide weathertight sealing when ventilators are closed and locked. Lubricate hardware and operating parts as necessary.
- 3.1.4 Protection: Where surfaces are in contact with, or fastened to wood, or dissimilar materials, the surface shall be protected from dissimilar materials as recommended by the manufacturer. Surfaces in contact with sealant after installation shall not be coated with any type of protective material.
- 3.2 CLEANING: Clean interior and exterior of window units of mortar, plaster, paint spattering spots, sealants, and other foreign matter to present a neat clean appearance and to prevent fouling of weather-stripping surfaces and weather-stripping, exterior finish, and to prevent interference with the operation of hardware. Replace with new windows all stained, discolored, or abraded windows that can not be restored to their original condition.

END OF SECTION