

SECTION 08600
POLYVINYL CHLORIDE (PVC) WINDOWS
8394 Patio Door

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)
National Fenestration Rating Council (NFRC)
American Society for Testing and Materials (ASTM)

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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NFRC 100-97	Procedure for Determining Fenestration Product U-Factors
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NFRC 200-97	Procedure for Determining Fenestration Product Solar Heat Gain Coefficients
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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 or door, hardware, fastener, accessory, operator, screen, and finish.

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

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

1.4 **PROTECTION:** The entire door unit shall be protected during shipping and handling using manufacturers’ standard method. This method of protection shall be a factory applied 1/2” plywood protective crate around the sides, top and bottom of the unit, with adequate corner bracing by structural wooden braces to ensure squareness. The screen shall be packaged in a separate cardboard protective box and shall be shipped inside of the plywood protective crate. The Sliding Patio Doors unit shall be shrink-wrapped at the factory.

- 1.5 CERTIFICATION: Patio door units shall be tested and certified for performance with the above referenced test methods. All units shall be labeled certifying conformance with AAMA 101/I.S.2-97, NFRC 100-97 and Energy Star.
- 1.6 CERTIFIED FABRICATOR: Patio doors shall be fabricated by an AAMA Certified Fabricator.
- 1.7 WARRANTIES:
- 1.7.1 Patio doors 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 PVC finish shall be warranted against chipping, peeling, cracking, or blistering for a period of 20 years from date of acceptance.
- 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: Thermopane double-glazed Low E² insulating glass and argon gas fill may be optional.
- 1.8.1 Test for air infiltration shall be in accordance with AAMA 101/I.S.2-97. On a test, the air rate shall not be greater than 0.3 cfm* per square foot of sash area.
- 1.8.2 Test for water infiltration shall be in accordance with AAMA/NWWDA 101/I.S.2-97. Test results for different patio sizes appear below.
- 1.8.3 Uniform Load Structural Test, with the window closed and locked, shall be in accordance with AAMA 101/I.S.2-97. Test results for different patio door sizes appear below.

Type	Rating (DP) ₁	Water Infl. ₂	Size Tested
SGD	R30	4.5	72 X 80
SGD	R30	4.5	96 X 80
SGD	R35	5.25	96 X 96
SGD	R40	6.0	72 X 82

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

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

Test for Thermal Performance shall be in accordance with NFRC 100-97.

Test for Condensation Resistance Factor (CRF) shall be in accordance with AAMA 1503-98

PART 2 – PRODUCTS

- 2.1 MANUFACTURER: Paradigm Sliding Glass Door as manufactured by Paradigm Window Solutions, 400 Riverside Industrial Parkway, Portland, ME 04103.
- 2.2 MATERIALS: Patio door shall conform to the requirements of specifications listed above. Provide doors & windows of combinations, types and sizes indicated or specified.
- 2.2.1 Extruded PVC components, produced from commercial quality virgin powder dry blend 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 exterior wall thickness of .090". Meeting rails between stationary and operating panels to have integral interlocks.

- 2.2.1.1 Locking Device : Provide each Sliding Patio Door with a 3 point stainless steel lock system which is engaged by rotating the lock handle located on the interior of the handle hardware. The handle hardware system provided with the sliding patio door shall be solid brass, with either a white powder coated finish, bright or antique brass, or brushed or polished chrome finish.
- 2.2.2 Glass and Glazing: Glass shall conform to DD-G-451 and not less than "B" quality. Sash shall be in factory glazed 1" insulating glass conforming to ASTM-E-774. 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.
- 2.2.3 Caulking and Sealing: As specified or recommended by door manufacturer.
- 2.2.4 Weather-stripping: All sliding panel units shall be double or triple weather-stripped using silicone treated pile to a rigid backing material which fits into a groove provided in the extruded door parts. Where the sliding panel meets the lock jamb an additional rubber gasket type compression weatherstrip shall be provided.
- 2.2.5 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 in an extruded baked enamel frame with a dimension not less than 2" on the face and ½" in thickness. The screen frame shall roll on two rollers at the bottom and two rollers at the top, all with individual adjustment settings. There shall be a weatherstrip provided where the screen contacts the lock jamb to ensure that the screen frame will not rattle.

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. Panel members shall be multi-chambered PVC extrusions utilizing double wall design at all glazing locations.
- 2.3.2 Sill: The sill shall be a thermally broken unit with anodized aluminum interior threshold, the thermal break shall be PVC with .090" perimeter wall thickness, and an anodized aluminum exterior sill nosing piece. The PVC thermal break shall have a stainless steel cap over the roller channel where the door panel rollers glide.
- 2.3.3 Adjustments: Two adjustments shall be provided to change the height of the door panels above the rollers to ensure squareness with the frame and four adjustments shall be provided, two at the top and two at the bottom to adjust the fit of the screen. Rollers for the sliding door panels shall be zinc dichromate plated tandem rollers.
- 2.3.4 Drips and Weep Holes: Provided as required to return water to the outside.
- 2.3.5 Glazing Thickness: Design glazed Sliding Patio Doors with rabbets suitable for glass thickness specified above.

2.4 FABRICATION

- 2.4.1 Weathering Surfaces: All frame members shall be multi-chambered PVC extrusions utilizing double wall design. 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.
- 2.4.2 Drips and Weep Holes: Provided as required to return water to the outside.
- 2.4.3 Glazing Thickness: Design glazed windows and rabbets suitable for glass thickness specified above.
- 2.4.4 Fasteners: All fasteners are to be stainless steel type, corrosion resistant. Use flathead, cross-recessed type, exposed head screws with standard threads on doors, 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.

- 2.4.5 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.
- 2.4.6 Accessories: Provide patio doors complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.
- 2.4.7 Weather-stripping: Provide for ventilating sections of all sliding patio doors to insure a weather tight seal meeting the infiltration tests specified herein. Use easily replaceable factory applied weather-stripping of manufacturer's stock type, as specified above. For sliding surfaces, use silicone treated pile, bonded to a plastic-backing strip. Do not use neoprene or polyvinylchloride weather-stripping where they will be exposed to direct sunlight. Provide rubber compression type gasket where the sliding panel contacts the lock jamb and a mechanical and weather-stripped interlock where the sliding panel meets the stationary panel.
- 2.4.8 Screens: Provide one insect screen for each operable unit. Design screens to fit closely around entire perimeter of each opening, to be rewirable, easily removable, and interchangeable for same size patio doors with no exposed fasteners. Provide all guides, stops, clips, bolts and screws as necessary, for proper operation. Provide continuous extruded aluminum screen frame for screen strength. Aluminum screen wire shall be provided when stipulated.
- 2.4.8.1 Screen Frames: Provide same quality and color finish as the window units. Frames shall have aluminum sections not less than 2" by .500" 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 patio door unit. .
- 2.4.8.2 Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening in the spline channel.
- 2.4.9 Finish: Exposed surfaces of aluminum extrusions shall be thoroughly cleaned, primed and given a baked enamel 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 patio doors without forcing into prepared rough openings. Insulate perimeter of door frame with acceptable approved insulation material, as recommended by window manufacturer. Set doors at proper elevation, location, and reveal; plumb, square, level, and in alignment; and brace, strut, and stay properly to prevent distortion and misalignment. Protect and operating parts against accumulation of dirt, and building materials by keeping operating panel tightly closed and locked to frame. Bed screws in an approved sealant. Install windows in a manner that will prevent entrance of water. Provide sill pan flashing for weather tightness.
 - 3.1.2 Anchors and Fasteners: Make ample provision for securing units to adjoining construction.
 - 3.1.3 Adjustments after Installation: After installation of patio doors adjust all hardware to operate smoothly and to provide weathertight sealing when operating panels 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 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, 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