SECTION 08600
POLYVINYL CHLORIDE (PVC) WINDOWS
8351 Casement

PART 1 – GENERAL

1.1.1 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
	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
NFRC 100-97	Procedure for Determining Fenestration Product U-Factors
NFRC 200-97	Procedure for Determining Fenestration Product Solar Heat Gain Coefficients

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 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 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 E^2 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.

1.8.2 Test for water infiltration shall be in accordance with AAMA/NWWDA 101/I.S.2-97. Test results for different window sizes appear below. (C = operating, F = fixed)

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 window sizes appear below.

Type	Rating $(DP)_1$	Water $Infl._2$	Size Tested
C	R50	9	36 X 60
C	R55	10.5	30 X 60
C	C60	9	24 X 48
F	R75	11.25	48 X 48
F	R50	11.25	60 X 60

$_1$Structural Pressure (psf) tested to at least 150% of DP rating

$_2$Water Infiltration (psf) tested to at least 15% of DP rating

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

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

PART 2 – PRODUCTS

2.1 MANUFACTURER: Paradigm Casement 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 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 external wall thickness of .070". Head, sill and jamb members shall have an integral kerf for screen attachment. Sash shall have fusion welded miter corners with an external wall thickness of .070".

2.2.1.1 Operating Hardware: Casement operating hardware shall be 'EntryGard' Maxim™ manufactured by Truth Hardware, Owatonna, MN 55060. Egress and Washable hardware shall be provided as specified. All operating handles shall be 'EntryGard' folding type.

2.2.1.2 Locking Device: The locking device shall be EntryGard Maxim™ multi-point locking system manufactured by Truth Hardware, Owatonna, MN 55060.
Locks: Materials shall be high pressure zinc die-cast handle, case and sliders (liquid or powder coated painted 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 ¾" insulating glass conforming to ASTM E774, with TruSeal Swiggle seal spacer, manufactured by TruSeal Industries Inc., Cleveland, OH 44122. 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 window manufacturer.

2.2.4 Weather-stripping: Three contact points of weather-stripping shall be provided on all four sides where the sash and frame make contact , and shall consist of an EPDM covered open cell foam weatherstrip on the sash, a Santoprene or equivalent TPR compression gasket on the frame and a co-extruded PVC fin weatherstrip on the frame.

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 affixed to a baked enamel finish, aluminum frame with vinyl spline screen attachment.

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 Truth E-Gard or stainless steel type, corrosion resistant. 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 Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.

2.3.7 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. Three contact points of weatherstrip shall be provided on all four sides where the sash and frame make contact . They shall be an EPDM covered open cell foam weatherstrip on the sash, a Santoprene or equivalent TPR compression type and a co-extruded PVC fin type weatherstrip on the frame.

2.3.8 Finishes: Exposed surfaces shall be factory finished. All windows for each building shall have same finish.

2.3.9 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, and a center tie bar on taller units to prevent frame compression.

2.3.9.2 Screen Frames: Provide same quality and color finish as the window units. Frames shall have extruded Sections not less than .375" by 1.0625" 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.

2.3.9.3 Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening inn the spline channel.

2.3.10 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 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 sill members, 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. 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, 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