



SECTION 08560
POLYVINYL CHLORIDE (PVC) WINDOWS
Viwinco Inc.
Series/Model: Cambridge Single Hung Window

Part 1 – General

- 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.
 - a) Code of Federal Regulations (CFR)
 - i) 16 CFR 1201 Consumer Product Safety Commission. Safety Standard for Architectural Glazing Materials
 - b) American Architectural Manufacturers Association (AAMA), National Fenestration Rating Council (NFRC), American Society for Testing and Materials (ASTM)
 - i) North American Fenestration Standard/Specification for windows, doors, and skylights (AAMA/WDMA/CSA 101/I.S.2/A440)
 - (1) Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen (ASTM E 283)
 - (2) Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Differences (ASTM E 330)
 - (3) Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Cyclic Static Air Pressure Differences (ASTM E 547)
 - (4) Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units (ASTM E 774)
 - (5) Standard Test Method for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact (ASTM F 588)
 - ii) Voluntary Specifications for Pile Weatherstripping and Replaceable Fenestration Weatherseals (AAMA 701/702)
 - iii) Voluntary Specification for Sash Balances (AAMA 902)
 - iv) Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections (AAMA 1503)
 - v) Procedure for Determining Fenestration Product U-Factors (NFRC 100)
 - vi) Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence (NFRC 200)
 - c) AAMA Certification Program for Vinyl Window Manufacturers
- 2) SUBMITTALS – Submit to contractor officer for approval
 - a) Certified Test Reports: Submit for air infiltration, water resistance, and uniform loading in accordance with the above referenced specification.
 - b) Catalog Data: Shall describe each type of window, hardware, fastener, accessory, operator, screen, and finish.
 - c) Certification of Compliance: Submit certificates that identical windows have been successfully tested and meet the requirements specified herein for air infiltration and water penetration.
 - d) Selection Samples: Select from Manufacturer's full range of colors.
- 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. Do not use unvented plastic or canvas shelters. Provide ¼" space between units to promote air circulation. Damaged windows shall be repaired to an "as new" condition or replaced as approved.
- 4) PROTECTION: Finished surfaces shall be protected during shipping and handling using manufacturers' standard method.



- 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/WDMA/CSA 101/I.S.2/A440, NFRC 100, NFRC 200, and Energy Star, Program Requirements for Residential Windows, Doors and Skylights.
- 6) **CERTIFIED FABRICATOR:** Windows shall be fabricated by an AAMA Certified Fabricator.
- 7) **WARRANTIES:**
 - a) 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 limited warranty to original homeowner on residential projects, 1 year factory labor included.
 - b) 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, 1 year factory labor included.
 - c) 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 5 years, and shall be provided in writing. A copy of the product and labor warranty must accompany other applicable warranties and be presented with the bid.
- 8) **PERFORMANCE REQUIREMENTS – General –** Provide vinyl windows capable of complying with performance requirements indicated, based on testing manufacturer’s windows that are representative of those specified
 - a) Test for air infiltration shall be in accordance with AAMA/WDMA/CSA 101/I.S.2/A440. On a test, the air rate shall not be greater than 0.3 cfm per square foot of sash area.
 - b) Test for water infiltration shall be in accordance with AAMA/WDMA/CSA 101/I.S.2/A440. Test results for different window sizes appear below.
 - c) Uniform Load Structural Test, with the window closed and locked, shall be in accordance with AAMA/WDMA/CSA 101/I.S.2/A440. Test results for different window sizes appear below.

Type	Class	Performance Grade (PG)	Max. Structural Test Pressure ₁	Water Infiltration ₂	Air Infiltration ₃	Size Tested	Reinforcement Option
H	R	R50	82.76	8.36	0.07	40 x 72	None
H	R	R25	37.62	8.36	0.07	52 x 80	None
H	R	R70	105.26	10.65	0.07	36 x 72	1
H	R	R55	82.76	8.36	0.07	48 x 72	2
H	R	R45	67.71	8.36	0.07	52 x 80	2
H	R	R60	90.23	9.19	0.09	48 x 72	3
H	C	C60	90.23	9.19	0.09	48 x 72	3
H	R	R40	60.15	7.52	0.09	56 x 91	3
H	C	C40	60.15	7.52	0.09	56 x 91	3

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 cfm/ft²

- d) Test for Thermal Performance shall be in accordance with NFRC 100, and NFRC 200.
- e) Test for Condensation Resistance Factor (CRF) shall be in accordance with AMMA 1503-98.



Reinforcement Option	Thermal Package	Foam ₁	Grid Type	Total Window U-Value	Solar Heat Gain Coefficient	Visible Light Transmittance	Condensation Resistance Factor
None	30/30	No	None	0.29	0.28	0.52	56
	30/30	No	Both	0.29	0.25	0.46	56
	R4	No	None	0.25	0.27	0.46	46
	R4	No	Both	0.25	0.24	0.41	46
	R5	Yes	None	0.22	0.19	0.41	46
	R5	Yes	Both	0.22	0.17	0.37	46
1	30/30	No	None	0.29	0.28	0.52	56
	30/30	No	Both	0.29	0.25	0.46	56
	R4	Yes	None	0.23	0.27	0.46	46
	R4	Yes	Both	0.23	0.24	0.41	46
	R5	Yes	None	0.22	0.19	0.41	46
	R5	Yes	Both	0.22	0.17	0.37	46
2	30/30	No	None	0.30	0.28	0.52	56
	30/30	No	Both	0.30	0.25	0.46	56
	R4	Yes	None	0.24	0.27	0.46	46
	R4	Yes	Both	0.24	0.24	0.41	46
	R5	NOT APPLICABLE					
3	30/30	No	None	0.30	0.28	0.52	56
	30/30	No	Both	0.30	0.25	0.46	56
	R4	Yes	None	0.25	0.27	0.46	46
	R4	Yes	Both	0.25	0.24	0.41	46
	R5	NOT APPLICABLE					

¹For foam filled frame and sash components. See Section 3, Section g, for details.

PART 2 – Products

- 1) MANUFACTURER: Viwinco Cambridge Single Hung Window as manufactured by Viwinco, Inc., located at 851 Hemlock Road, Morgantown, PA 19543-0499. Phone (610) 286-8884.
www.viwinco.com
- 2) Materials – Windows shall conform to the requirements of specifications listed above. Provide windows of combinations, types and sizes indicated or specified.
 - a) Frame
 - i) Extruded PVC components, produced from commercial quality virgin PVC (unplasticized polyvinyl chloride), conforms to AAMA 303, Voluntary Specification for Rigid Poly (Vinyl Chloride) (PVC) Exterior Profiles, from sections in one piece, straight, true and smooth. Provide multi-chambered PVC extruded frame in accordance with the manufacturer’s standard practice. Make fusion welded frame joints strong enough to develop full strength of members, with an exterior wall thickness of .070. Jamb depth will measure 3.25”. Head and jamb members shall have accessory grooves, integral screen stops, and beveled exterior.



- ii) Sill –Exterior wall thickness is .080” sloped 5 degrees with a step down screen track. The double wall sill dam is fully welded to the jamb with a 0.945” height. The sill has a replaceable, snap in double wall sill dam leg with one contact point of weather-strip and is mortised ¼” into jambs. Sill dam leg is installed with a bedding bead of silicone sealant to create a 1.440” total height.
 - b) Sash –
 - i) Make interior horizontal top surfaces of both meeting rails flat and in the same plane. Meeting rails have an integral interlock with two contact points of pile weather-strip provided. Sash shall have fusion welded miter corners with an external wall thickness of .070. Upper insulated glass lite contained in a sash which shall be hooked into the frame and secured with two corner brackets to provide equal glass lites and ease of removal. The lower sash shall have one continuous, integral lift rail at the bottom of the sash. 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. There shall be two contact points of weather-stripping where the lower sash comes into contact with the master frame sill. The one at the highest point of the sill will be silicone treated pile and the second is co-extruded flexible sill bulb which is designed to snap in place and wrap underneath the sash.
 - ii) Sash shall be reinforced on all sides with aluminum extrusions in chambered profiles.
 - iii) The upper sash assembly shall be fixed in place using two brackets secured to the frame.
 - c) Glass – Factory glazed 15/16” insulating glass conforming to ASTM E 2190, Standard Specification for Insulating Glass Unit Performance and Evaluation. Sputter-coated Low –E double strength (3 mm) glass with Ultra Intercept Stainless Steel Spacer and argon gas. Glazing shall be exterior glazed against a bead of silicone, secured with PVC mitered glazing beads and designed to maintain a watertight seal between glass and sash frame.
 - d) Hardware
 - i) Balance Mechanism: Provide stainless steel 3/4” thick constant force coil balance springs for sash. Balances shall also have an interlocking pivot bar, for integral frame alignment with sash for keeping window frames straight and true during installation.
 - ii) The upper sash has two night vents standard.
 - iii) Window operating control devices that meet ASTM F 2090, Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms, are optional.
NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iv) Tilt- n- Lock hardware system is standard. Tilt-n-lock hardware system combines the locking action of the cam lock with the tilt-release mechanism for tilting so there are no visible tilt latches on the meeting rail of the lower sash. The elongated C-shaped aluminum reinforcement shall run the entire width of the meeting rail and house the tilt latch slide bolts. Slide bolts shall be connected to the lock with a unique strapping system. Double locks where openings exceed 36.25” in width with the right lock engaging the tilt function.
 - v) Adjustable alignment screw located at the middle of the frame on each jamb.
 - e) Screen –
 - i) Screen Frame: Provide same quality and color finish as the window units. Frames shall have extruded aluminum sections with reinforced corners and built in lift rails for ease of operation. Frame extrusions shall house spring loaded slide bolts so that half screens can be latched in either the down or up position. Hardware, attachment devices, and accessories shall be manufacturer’s standard and of same quality, material and finish as hardware of window unit.
 - ii) Insect Screening: ASTM D 3656, Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl Coated Glass Yarn, (plastic coated or impregnated fibrous glass yarn) of standard color as approved. BetterVue fabric, .009 by .011 diameters, 18 x 18 woven mesh count. Provides for 68-69% light transmission.
 - f) Caulking and Sealing: As specified or recommended by window manufacturer.
 - g) Foam: To achieve R4 and R5 U-factors for certain configurations, manufacturing sprays a two part polyurethane foam into specific cavities in the frame and sash lineals for processing that same day.
- 3) Fabrication



- a) 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.
- b) Drips and Weep Holes: Provided as required to return water to the outside.
- c) Glazing Thickness: Design glazed windows and rabbets suitable for glass thickness specified above.
- d) Fasteners: All fasteners are to be 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" in thickness. All sheet metal screw fasteners shall penetrate into a PVC screw boss, or screw raceway, or internal .062" wall thickness aluminum reinforcement to secure fastening and reduce pull out.
- e) 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.
- f) Factory Mulls: Factory mulls to be fully reinforced with 2 1/2" aluminum extrusions for a structurally rated mullion, and assembled utilizing interior and exterior "U" channels and proprietary sealant application patterns.
- g) Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.
- h) PVC Color Selection: Integral PVC color with UV inhibitors to reduce fading.
- i) PVC Color Selection: Integral PVC color with UV inhibitors to reduce fading.
 - i) White PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - ii) Tan PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iii) Clay PVC: NOTE TO SPECIFIER: NOTE TO SPECIFIER: *Remove this section if not applicable.*
- j) Interior / Exterior Color Selection: Laminating films in accordance with RAL 716/1 and EN 513-2 resist abrasion and weather. NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - i) White PVC with Bronze Laminate Exterior: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - ii) White PVC with Hunter Green Laminate Exterior: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iii) White PVC with Cocoa Brown Laminate Exterior: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iv) White PVC with Driftwood Laminate Exterior: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - v) Cherry Laminate Interior with White PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - vi) Natural Oak Laminate Interior with White PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - vii) Dark Oak Laminate Interior with White PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - viii) Maple Laminate Interior with White PVC: NOTE TO SPECIFIER: *Remove this section if not applicable.*
- k) Grill options to be verified by manufacturer. NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - i) Grill Patterns: Refer to Drawings
 - ii) 5/8" Flat Internal Grids: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iii) 11/16" Contour Internal Grids: NOTE TO SPECIFIER: *Remove this section if not applicable.*
 - iv) 3/4" SDL Grids - SDL (Simulated Divided Lites) NOTE TO SPECIFIER: *Remove this section if not applicable.*



- l) Weather-stripping: Provide for ventilating sections of all windows 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, with a mylar center fin bonded to a plastic-backing strip. Do not use neoprene or polyvinylchloride weather-stripping where they will be exposed to direct sunlight.
- m) 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 rewired, easily removable from inside building, and interchangeable for same size ventilators of similar type windows, with no exposed fasteners. Provide all guides, stops, clips, bolts, and screws as necessary, for a secure and insect tight attachment to window.
- n) Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening in the spline channel.
- o) Screen Finish – Exposed surfaces of aluminum extrusions shall be thoroughly cleaned, primed and given a baked enamel finish in accordance with AAMA 603.8, Voluntary Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum, with total dry thickness not less than 0.8mil. The finish color shall match the vinyl window.

PART 3 – Execution

1) Examination

- a) Have installer 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 unacceptable conditions before proceeding with installation.

2) Installation

- a) 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 where applicable.
- b) Anchors and Fasteners: Make ample provision for securing units to each other, and to adjoining construction.
- c) Adjustments after Installation: After installation of windows adjust all ventilators and hardware to operate smoothly and to provide weather tight sealing when ventilators are closed and locked. Lubricate hardware operating parts as necessary.
- d) 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) 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 window that cannot be restored to their original condition.



END OF SECTION