

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Factory fabricated fiberglass/ wood composite windows with fixed and operating sash.
- B. Factory glazed including infill panels.
- C. Operating hardware.
- D. Insect screens.

1.02 RELATED REQUIREMENTS

- A. Section 072500 - Weather Barriers: Sealing frames to weather barrier installed on adjacent construction.
- B. Section 079200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- C. Section 088000 - Glazing.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- D. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- E. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007 (Reapproved 2016).

1.04 SUBMITTALS

- A. See Section 13300 - Submittals for submittal procedures.
- B. Product Data: Provide component dimensions, anchors, fasteners, glass, and internal drainage details.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, installation requirements.
- D. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.

- E. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.
- F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces with strippable coating. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).
- B. Maintain this minimum temperature during and after installation of sealants.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a ten year period after Date of Substantial Completion.
- C. Provide twenty year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of color finish.
- D. Glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.
- E. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Fiberglass / Wood Composite Windows:
 - 1. Marvin Essential Collection - Fiberglass Composite (All-Ultrex) Windows. as manufactured by Marvin, PO Box 100, Warroad, MN 56763 1-888-537-7828
 - 2. or approved equal.

2.02 WINDOW UNITS

- A. Fiberglass Composite Windows: Hollow, tubular, multi-layer fiber reinforced material; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
 - 1. Configuration: As indicated on drawings .
 - 2. Product Type: FW - Fixed window and H - Hung window, vertically sliding.
 - 3. Color: Stone white. Factory baked-on acrylic urethane in accordance with AAMA 624-10.

4. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
 5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 6. Thermal Movement: Design to accommodate thermal movement caused by 100 degrees F (34 degrees C) temperature change without buckling stress on glass, joint seal failure, damaging loads on structural elements, damaging loads on fasteners, reduction in performance or other detrimental effects.
- B. Performance Requirements: Provide products that comply with the following:
1. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
 - a. Performance Class (PC): LC.
 - b. Performance Grade (PG): 50, with minimum design pressure (DP) of 50.13 psf (2400 Pa).

2.03 COMPONENTS

- A. Frames: 3 1/8 inch (79 mm) wide by 2 inch (51 mm) deep profile; flush glass stops of screw fastened type.
1. Frame Corners: Mitered and joined with nylon corner locks.
 2. Exterior: Fiberglass reinforced Ultrex, 0.080 inch (2 mm) thick.
 3. Composite sash thickness: 1 9/16 inch - standard glass.
 4. Exterior Finish: Pultruded Fiberglass with factory baked-on acrylic urethane meeting AAMA 624 requirements. Color: Stone White.
 5. Interior Finish: Prefinished White
- B. Grilles: Between-the-glass (GBG):
1. Material: Aluminum.
 2. Size: 23/32 inch (18 mm).
 3. Shape: Contoured.
 4. Exterior Color: Match exterior sash.
 5. Interior color: Match interior sash.
 6. Pattern: as indicated on the drawings.
- C. Insect Screen Frame: Rolled aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
1. Frame color: white
- D. Insect Screens: Woven fiberglass mesh; 18 x 16 mesh size.
1. Color: Charcoal.
- E. Operable Sash Dual (primary and secondary) Weather Stripping: Resilient PVC; permanently resilient, profiled to effect weather seal set into a kerf on all four sides of the Ultrex frame and the sash respectively. Color: Black.
- F. Fasteners: Stainless steel.
- G. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.04 GLASS AND GLAZING MATERIALS

- A. Glass and Glazing Materials: As specified in Section 088000 of Types described below:
1. Glass in Exterior Lights: 11/16 inch insulated glass. Select quality complying with ASTM C1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E2190.

2. Glass Infill Panels: Low E3/ERS with Argon gas type glazing.
3. Glazing Sealant: Type Silicone bedding on both interior and exterior..
4. Obscure Glazing: Frost.
5. Glazing Tint: Bronze Tint

2.05 ACCESSORIES AND TRIM

- A. Exterior Casing:
 1. Non-integral to the unit – fastened to the exterior wall with barb and kerf.
 2. Color: As selected by the Architect.
- B. Mullion Kit: Mullion kit for field assembly of units – Kit includes: Aluminum mull pin, Sealant foam tape, Exterior mullion cover, Interior mull trim, Mull screws, Mull bracket, Mull bracket screws.
- C. Structural mullion kit: structural mullion kit for field assembly of units. Kits includes: instructions, reinforcement member, aluminum pins, wood mullion tie, sealant foam tape, interior mullion trim, #8 x 1 3/4" screws, #7 x 1 5/8" screws, nailing fin connectors and structural brackets.

2.06 HARDWARE

- A. Casement and Awning Sash: Zinc die-cast steel Roto gear operator with E-coated (E-Gard) finish.
 1. Operator Linkage, Hinge Slide, and Hinge Arms: 300 series stainless steel track and injection molded shoe.
 2. Casement and Awning Sash Lock: Single lever lock operates multi-point lock mechanism. The lock mechanism is concealed with only the actuator handle and escutcheon visible to the interior.
 3. Handle: Die cast removable folding handle.
 4. Snubber: Provides positive engagement of the sash and pulls sash tight to the frame.
 5. Color: As selected by the Architect.
 6. Hardware Options to be provided:
 - a. Provide Coastal Hardware.
 - b. Awning Limiter Device - Tumbled stainless steel.
 7. Pole operator with adapter for each sash indicated. Mill finish aluminum. Length: As selected by the architect.

2.07 FABRICATION

- A. Fabricate framing, mullions and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.
- B. Form sills and stools in one piece. Slope sills for wash.
- C. Form snap-in glass stops, closure molds, weather stops, and flashings for tight fit into window frame section.
- D. Form weather stop flange to perimeter of unit.
- E. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- F. Arrange fasteners to be concealed from view.
- G. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

- H. Assemble insect screen frame, miter and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.
- I. Double weatherstrip operable units with black weatherstripping material.
- J. Factory glaze window units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

3.02 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Install windows in accordance with ASTM E2112.
- C. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- D. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- E. Install sill, stool, and apron.
- F. Set sill members and sill flashing in continuous bead of sealant.
- G. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- H. Install operating hardware.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 0.5 inches per 100 ft (12 mm/30 m), whichever is less.

3.04 FIELD QUALITY CONTROL

- A. Test installed windows for compliance with performance requirements for water penetration, in accordance with ASTM E1105 using uniform pressure and same pressure difference as specified for laboratory tests.
 - 1. Test one window of each type, as directed by Architect.
 - 2. If any window fails, test additional windows at Contractor's expense.
- B. Replace windows that have failed field testing and retest until performance is satisfactory.

3.05 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 CLEANING

- A. Remove protective material from pre-finished surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION