SECTION 085400

COMPOSITE WINDOWS

(ANDERSEN® 100 SERIES CASEMENT, AWNING AND PICTURE WINDOWS)

PART 1 - GENERAL

SPECIFIER NOTE: DATA CONTAINED IN THIS GUIDE SPEC IS ACCURATE AS OF NOVEMBER 2010. DUE TO ONGOING PRODUCT CHANGES, THIS DATA MAY CHANGE OVER TIME. CONSULT MANUFACTURER FOR COMPLETE PRODUCT DETAILS.

1.1 SUMMARY

A. Section Includes:

SPECIFIER NOTE: RETAIN STYLE BELOW AND DELETE STYLES NOT REQUIRED FOR PROJECT.

1. Casement windows.
2. Awning windows.
3. Picture windows.

SPECIFIER NOTE: ARTICLE BELOW INCLUDES SUBMITTAL OF RELEVANT DATA TO BE FURNISHED BY CONTRACTOR BEFORE, DURING OR AFTER CONSTRUCTION. COORDINATE THIS ARTICLE WITH THE ARCHITECT'S AND CONTRACTOR'S DUTIES AND RESPONSIBILITIES IN CONDITIONS OF THE CONTRACT AND DIVISION 01 SUBMITTAL PROCEDURES SECTION.

1.2 ACTION SUBMITTALS

A. Product Data: Manufacturer's product data and installation guides.

B. Sustainable Building Submittals:

SPECIFIERS NOTE: RETAIN SUBPARAGRAPH BELOW AND ENERGY PERFORMANCE CERTIFICATION PARAGRAPH IN QUALITY ASSURANCE ARTICLE IF WOOD DOORS ARE REQUIRED TO BE CERTIFIED.

1. Energy Performance:
   a. Provide NFRC 100 Certified performance values meeting or exceeding values specified in Performance Criteria Article.

SPECIFIERS NOTE: RETAIN SUBPARAGRAPH BELOW AND RECYCLED CONTENT CERTIFICATION PARAGRAPH AND "FOREST CERTIFICATION" PARAGRAPH IN QUALITY ASSURANCE ARTICLE IF WOOD DOORS ARE REQUIRED TO BE CERTIFIED.

2. Recycled Content.
   a. Provide third party certified values in percent by weight of recycled content per ISO 14021 Standard for each product specified.
   b. Provide statement indicating total cost for each product containing recycled content.

SPECIFIERS NOTE: RETAIN SUBPARAGRAPH BELOW IF WOOD DOORS ARE REQUIRED TO BE QUALIFIED FOR REGIONAL MATERIALS.

3. Regional Materials.

a. Provide window manufacturer's Product Data for regional materials within [**500**] miles of project location, indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material.

b. Provide statement indicating cost for each product containing regional material and the fraction by weight that is considered regional material.

SPECIFIERS NOTE: RETAIN PARAGRAPH BELOW IF DOORS ARE REQUIRED TO BE CERTIFIED FOR INDOOR AIR QUALITY

4. Indoor Environmental Quality.

a. Provide third party certification that window materials used on project, including factory applied finishes, meet indoor air quality standards for low emitting materials under California CA Section 01350 Specifications.

C. Shop Drawings: Indicate direction of operable parts, typical jamb, head and sill conditions, and special mullion reinforcement details.

D. Color Samples: Selection and verification samples, including the following:

1. Hardware: Sample indicating typical finish on hardware.
2. Exterior: Samples of exterior colors.

1.3 INFORMATIONAL SUBMITTALS

A. Quality Assurance/Control Submittals:

1. Performance Data: Manufacturer’s published performance data for specified products.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documents specified herein.

B. Owner’s Manual: Bound manual clearly identified with project name, location, and completion date. Identify type and size of units installed. Provide recommendations for periodic inspections, care, and maintenance. Identify common causes of damage with instructions for temporary repair.

SPECIFIER NOTE: ARTICLE BELOW SHOULD INCLUDE STATEMENTS OF PREREQUISITES, STANDARDS, LIMITATIONS AND CRITERIA THAT ESTABLISH AN OVERALL LEVEL OF QUALITY FOR PRODUCTS AND WORKMANSHIP FOR THIS SECTION. COORDINATE ARTICLE BELOW WITH DIVISION 01 QUALITY ASSURANCE SECTION.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating windows that meet or exceed Performance Criteria indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

SPECIFIER NOTE: PARAGRAPH BELOW SHOULD LIST OBLIGATIONS FOR COMPLIANCE WITH SPECIFIC CODE REQUIREMENTS PARTICULAR TO THIS SECTION. GENERAL STATEMENTS TO COMPLY WITH A PARTICULAR CODE ARE TYPICALLY ADDRESSED IN CONDITIONS OF THE CONTRACT AND DIVISION 01 REGULATORY REQUIREMENTS SECTIONS. REPETITIVE STATEMENTS SHOULD BE AVOIDED.

C. Code and Regulatory Requirements and Approvals: <Specify applicable requirements of regulatory agencies.>

D. Certifications:
   1. National Fenestration Rating Council (NFRC). Products shall be certified and labeled for U-Factor, Solar Heat Gain Coefficient (SHGC), and Visible Transmittance per NFRC 100 and 200 Procedures. Unique glass types that are special ordered may not apply, check with Manufacturer.
   2. Window and Door Manufacturers Association (WDMA). Products shall be certified and labeled per WDMA Hallmark Certification Program to the AAMA/WDMA/CSA 101/I.S.2/A440 industry standard.
   3. Insulating Glass Units: Provide insulating glass units permanently marked with certification label of Insulating Glass Certification Council (IGCC) indicating compliance with ASTM E2190.

SPECIFIER NOTE: RETAIN CERTIFICATION LABEL REQUIREMENTS PARAGRAPH ABOVE OR BELOW, IF RETAINING BELOW RETAIN SECOND OPTION FOR CANADA.

   4. Insulating Glass Units: Provide insulating glass units permanently marked with certification label of Insulating Glass Manufacturers Alliance (IGMA) indicating compliance with ASTM E2190 and (IGMAC) indicating compliance with CGSB 12.8.

SPECIFIER NOTE: RETAIN PARAGRAPH BELOW IF PREINSTALLATION MEETING IS REQUIRED.

E. Pre-Installation Meetings: Pre-Installation Meetings: Conduct meeting at Project site to comply with requirements in Division 01 Section – Project Management and Coordination.

SPECIFIER NOTE: ARTICLE BELOW SHOULD INCLUDE SPECIFIC PROTECTION AND ENVIRONMENTAL CONDITIONS REQUIRED DURING STORAGE. COORDINATE ARTICLE BELOW WITH DIVISION 01 PRODUCT REQUIREMENTS SECTION.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Delivery: Deliver materials in manufacturer's original unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

D. Store materials and accessories off ground, under cover, and protected from weather and construction activities.

SPECIFIER NOTE: IN ARTICLE BELOW, STATE PHYSICAL OR ENVIRONMENTAL LIMITATIONS OR CRITERIA FOR INSTALLATION SUCH AS WEATHER, TEMPERATURE, HUMIDITY, VENTILATION OR ILLUMINATION REQUIRED FOR PROPER INSTALLATION OR APPLICATION.

1.7 SITE CONDITIONS

A. Field Measurements: Verify actual dimension of openings by field measurement before fabrication. Record measurements on Shop Drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

B. Install units per manufacturer's safety and weather recommendations.

SPECIFIER NOTE: COORDINATE ARTICLE BELOW WITH CONDITIONS OF THE CONTRACT AND WITH DIVISION 01 CLOSEOUT SUBMITTALS (WARRANTY) SECTION. USE THIS ARTICLE TO REQUIRE SPECIAL OR EXTENDED WARRANTY OR BOND COVERING THE WORK OF THIS SECTION.

1.8 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project Warranty provisions.

SPECIFIER NOTE: COORDINATE ARTICLE BELOW WITH MANUFACTURER'S WARRANTY REQUIREMENTS. VISIT THE ANDERSEN WEBSITE FOR A COMPLETE DESCRIPTION OF THE STANDARD LIMITED WARRANTY INCLUDING EXCLUSIONS AND LIMITATIONS.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard limited warranty document. Manufacturer's limited warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

PART 2 - PRODUCTS

SPECIFIER NOTE: RETAIN ARTICLE BELOW FOR PROPRIETARY METHOD SPECIFICATION. ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. USE OF SUCH PHRASES AS "OR EQUAL" OR "OR APPROVED EQUAL" OR SIMILAR PHRASES MAY CAUSE AMBIGUITY IN SPECIFICATIONS. SUCH PHRASES REQUIRE VERIFICATION (PROCEDURAL, LEGAL AND REGULATORY) AND ASSIGNMENT OF RESPONSIBILITY FOR DETERMINING "OR EQUAL" PRODUCTS.

2.1 MANUFACTURER

A. Provide products from the following manufacturer:
   1. Andersen Corporation
      100 4th Ave. N.
      Bayport, MN 55003-1096.
      Phone: (800) 299-9029.
      Fax: (800) 752-9230.
      E-mail: technicalsupport@andersenwindows.com.
      www.andersenwindows.com.
      Local Contact: <Specify contact information provided by local Andersen representative.>

SPECIFIER NOTE: ARTICLE BELOW SHOULD BE RESTRICTED TO STATEMENTS DESCRIBING DESIGN OF PERFORMANCE REQUIREMENTS AND FUNCTIONAL (NOT DIMENSIONAL) TOLERANCES OF A COMPLETE SYSTEM. LIMIT DESCRIPTIONS FOR COMPOSITE AND OPERATIONAL PROPERTIES REQUIRED TO LINK COMPONENTS OF A SYSTEM TOGETHER AND TO INTERFACE WITH OTHER SYSTEMS.

2.2 PERFORMANCE CRITERIA

SPECIFIER NOTE: MANUFACTURER RECOMMENDS REFERRING TO WEBSITE FOR MOST CURRENT PRODUCT PERFORMANCE DATA. RETAIN, EDIT, OR DELETE LANGUAGE BELOW TO SUIT PROJECT REQUIREMENTS. REFER TO WWW.ANDERSENWINDOWS.COM FOR PERFORMANCE INFORMATION.

A. Performance Requirements: Provide products/systems that have been manufactured, fabricated, and installed to the following performance criteria:
   1. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.
   2. Performance Class: <Specify performance class.>

3. Performance Grade: <Specify performance grade.>
4. U-Factor (NFRC 100): <Specify U-Factor.>
5. Solar Heat Gain Coefficient (SHGC) (NFRC 200): <Specify SHGC.>
6. Outdoor-Indoor Transmission Class (OITC) (ASTM E90): <Specify OITC.>
7. Sound Transmission Class (STC) (ASTM E90): <Specify STC.>

SPECIFIER NOTE: MANUFACTURER RECOMMENDS REFERRING TO WEBSITE DESIGN PRESSURE ESTIMATOR FOR ADDITIONAL WIND LOAD INFORMATION. RETAIN, EDIT, OR DELETE LANGUAGE BELOW TO SUIT PROJECT REQUIREMENTS

B. Structural Requirements: Provide products/systems capable of withstanding wind loads based on testing units representative of those indicated for Project that pass AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Structural Load Test:
   1. Design Wind Loads: Determine design wind loads applicable to Product from basic wind speed indicated in miles per hour (meters per second) at 33 feet (10 meters) above grade, according to ASCE, Section 6, based upon mean roof heights indicted on Drawings.
      a. Basic Wind Speed: <Specify wind speed.>
      b. Importance Factor: <Specify importance factor.>
      c. Exposure Category: <Specify exposure category.>
      d. Wind Load Requirement: <Specify design pressure requirement.>

2.3 MANUFACTURED UNITS

A. Proprietary Product/Systems:
   1. Andersen® 100 Series Casement Windows.
   2. Andersen® 100 Series Awning Windows.
   3. Andersen® 100 Series Picture Windows.

SPECIFIER NOTE: EDIT ARTICLE BELOW TO SUIT PROJECT REQUIREMENTS. IF SUBSTITUTIONS ARE PERMITTED, EDIT TEXT BELOW. ADD TEST TO REFER TO DIVISION 01 PROJECT REQUIREMENTS (PRODUCT SUBSTITUTIONS PROCEDURES) SECTION.

   4. Substitutions: No substitutions permitted.

SPECIFIER NOTE: SPECIFY MATERIALS TO BE FURNISHED. THIS ARTICLE MAY BE OMITTED AND THE MATERIALS CAN BE INCLUDED WITH THE DESCRIPTION OF A MANUFACTURED UNIT, EQUIPMENT, COMPONENT, OR ACCESSORY.

2.4 MATERIALS

A. Frame and Sash: Fabricated from Fibrex® composite material, in the following color:

SPECIFIER NOTE: RETAIN PROJECT REQUIRED COLOR BELOW. DELETE COLOR NOT REQUIRED.

   1. Color: White.
   2. Color: Sandtone.
   3. Color: Terratone®.
   4. Color: Cocoa Bean.
   5. Color: Dark Bronze

SPECIFIER NOTE: CASEMENT/AWNING PICTURE WINDOWS HAVE A SASHLESS DESIGN AND DO NOT REQUIRE WEATHERSTRIPPING. IMPACT RESISTANT UNITS USE EPDM FOAM WEATHERSTRIPPING IN LIEU OF TUBULAR FLEXIBLE VINYL.

B. Weatherstripping:
1. Venting/Stationary Sash: Weatherstripped with the following material:
a. Flexible tubular vinyl.
b. Flexible leaf vinyl.

2.5 HARDWARE

A. Venting Casement/Awning Hardware:
1. Hardened steel operator arm stamped with a gear ring. Set arm gear between nylon bushing and nylon spacer. Encased drive shaft and worm gear assemblies in zinc die cast base and removable polycarbonate cover.
2. Hinges: Stainless steel and heavy gauge steel arms. Stainless steel reinforcing insert in low friction shoe for casement units.

SPECIFIER NOTE: SELECT ONE OF THE FOLLOWING 3 HANDLE STYLES AND DELETE THOSE NOT REQUIRED ON PROJECT.

3. Operator Handle and Covers:
a. Folding handle with powder coated painted finish and polycarbonate operator cover with integral color in the following finish.
1) White.
4. Lock Handle and Bezel: Polycarbonate following integral color:
a. White.

SPECIFIER NOTE: RETAIN PROJECT REQUIRED COLOR ABOVE OR BELOW.

5. Sash Locks: Single actuation lock concealed by trim stops. Galvanized steel and engineered polymer components.

2.6 GLAZING

A. General: Insulating glass units certified through the Insulating Glass Certification Council as conforming to the requirements of IGCC. Provide dual sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Provide metal spacers with bent or soldered corners.

SPECIFIER NOTE: RETAIN CERTIFICATION REQUIREMENTS PARAGRAPH ABOVE OR BELOW.

B. General: Insulating glass units certified through the Insulating Glass Manufacturers Alliance of Canada (IGMAC) conforming to the requirements of Canadian General Standards Board CAN/CGSB 12.8. Provide dual sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Provide metal spacers with bent or soldered corners.

SPECIFIER NOTE: SELECT BETWEEN THE FOLLOWING STANDARD GLAZING OPTIONS. CONSULT AN ANDERSEN REPRESENTATIVE FOR ADDITIONAL GLAZING OPTIONS. IN ADDITION TO COMPLYING WITH SAFETY GLAZING REQUIREMENTS, TEMPERED GLASS MAY BE REQUIRED BECAUSE OF WINDOW SIZE AND WIND LOAD. CONSULT ANDERSEN CORPORATION FOR ASSISTANCE IN SPECIFYING THE APPROPRIATE GLAZING TYPE.

C. Dual-Pane Insulating Glass Units:
1. Glass: Insulating glass units consisting of 2 lites of clear annealed glass conforming to ASTM C1036, Type 1, Class 1, q3.

SPECIFIER NOTE: RETAIN SUBPARAGRAPH ABOVE FOR NON-TEMPERED INSULATING GLASS UNITS. SELECT SUBPARAGRAPH BELOW FOR TEMPERED INSULATING GLASS UNITS.

2. Glass: Insulating glass units consisting of 2 lites of clear tempered glass conforming to ASTM C1048, Type 1, Class 1, q3, Kind FT where indicated on Drawings and as required by window manufacturer.

SPECIFIER NOTE: WHERE PATTERNED GLASS IS REQUIRED FOR PROJECT, DELETE PARAGRAPH ABOVE AND RETAIN PARAGRAPH BELOW WITH APPROPRIATE PATTERNED GLASS TYPE. DELETE TYPES NOT REQUIRED FOR PROJECT.

3. Glass: Insulating glass units consisting of an outboard lite of clear tempered glass conforming to ASTM C1048, Type 1, Class 1, q3, Kind FT and the following patterned glass:
   a. Inboard Pattern Glass Lite:
      1) Cascade.
      2) Fern.
      3) Obscure.
      4) Reed.
   b. Air Space: 3/4 inch (75 mm).
4. Filling: Fill space between glass lites with argon gas blend.

D. Low-E Glass Argon Gas Blend Filled Insulating Glass Units:
1. Glass – Operating Units: Insulating glass units consisting of an outboard lite of clear annealed glass conforming to ASTM C1036, Type 1, Class 1, q3 and an inboard lite of clear glass conforming to ASTM C1048, Type 1, Class 1, q3, Kind HS.

SPECIFIER NOTE: RETAIN SUBPARAGRAPH ABOVE FOR NON-TEMPERED INSULATING GLASS UNITS. SELECT SUBPARAGRAPH BELOW FOR TEMPERED INSULATING GLASS UNITS.

2. Glass: Tempered insulating glass units consisting of an outboard and inboard lite of clear tempered glass conforming to ASTM C1048, Type 1, Class 1, q3, Kind FT.
   a. Inboard Pattern Glass Lite:
      1) Cascade.
      2) Fern.
      3) Obscure.
      4) Reed.
   b. Air Space: 3/4 inch (75 mm).
3. Filling: Fill space between glass lites with argon gas blend.

E. SmartSun™ Low-E Glass, Low SHGC, Argon Gas Blend Filled Insulating Glass Units:
1. Glass – Operating Units: Insulating glass units consisting of an outboard lite of clear annealed glass conforming to ASTM C1036, Type 1, Class 1, q3.

SPECIFIER NOTE: RETAIN SUBPARAGRAPH ABOVE FOR HEAT STRENGTHENED INSULATING GLASS UNITS. SELECT SUBPARAGRAPH BELOW FOR TEMPERED INSULATING GLASS UNITS.

2. Glass: Tempered insulating glass units consisting of an outboard and inboard lite of clear tempered glass conforming to ASTM C1048, Type 1, Class 1, q3, Kind FT.
   a. Inboard Pattern Glass Lite:
      1) Cascade.
      2) Fern.
      3) Obscure.
      4) Reed.

b. Air Space: 3/4 inch (75 mm).

3. SmartSun Low-E Glass Coating: Magnetron sputtering vapor deposition (MSVD) Low-E coating applied to the No. 2 surface.
4. Filling: Fill space between glass lites with argon gas blend.

2.7 JOINING SYSTEMS

SPECIFIER NOTE: ANDERSEN WINDOWS STRONGLY RECOMMENDS CONSULTATION WITH AN EXPERIENCED STRUCTURAL ENGINEER, ARCHITECT, OR CONTRACTOR AND A LOCAL ANDERSEN REPRESENTATIVE WHEN SPECIFYING ANDERSEN JOINING SYSTEMS. CONSULT AN ANDERSEN REPRESENTATIVE FOR JOINING OPTIONS WHEN JOINING IMPACT RESISTANT WINDOW PRODUCTS.

A. Wood Non-Reinforced Joining: Machined LVL wood members treated with water repellent preservative after machining in accordance with WDMA I.S.4.
   1. Gusset Plates: Galvanized steel plates that attach to wood frame.
   2. Exterior Trim Strips: As recommended by window manufacturer for each joining method used.
   3. Color: Match window unit exterior color.

B. Fasteners: Corrosion-resistant screws as provided by window manufacturer for fastening reinforcement members to wood frame and fastening end brackets to reinforcement members. Other fasteners provided by window installer.

C. Provide sealant recommended by window manufacturer and complying with Section 079200 – Joint Sealants.

D. Provide vinyl trim strips as recommended by window manufacturer for each joining method used.
   1. Color: Match window unit exterior color.

E. Provide Head Flashing: Full-length aluminum drip cap.
   1. Color: Match window unit exterior color.

F. Jamb clips: Galvanized steel.

SPECIFIER NOTE: SPECIFY SUBORDINATE OR SECONDARY ITEMS THAT AID AND ASSIST PRIMARY PRODUCTS SPECIFIED ABOVE OR ARE NECESSARY FOR PREPARATION OR INSTALLATION OF THOSE ITEMS.

2.8 ACCESSORIES

SPECIFIER NOTE: COORDINATE SPECIFICATIONS FOR GRILLE MATERIAL OF ADJACENT UNIT FOR JOINED UNITS OF DIFFERENT TYPES. STANDARD GRILLE WIDTH IS 3/4 INCH (19 MM). HARDWOOD MAPLE GRILLES ARE PROVIDED FOR PICTURE WINDOWS AND ARE AVAILABLE FOR OTHER WINDOW TYPES ON SPECIAL ORDER. CONSULT AN ANDERSEN REPRESENTATIVE FOR ADDITIONAL GRILLE OPTIONS. POLYCARBONATE GRILLES ARE NOT AVAILABLE FOR IMPACT RESISTANT PRODUCTS.

A. Grilles:

SPECIFIER NOTE: REFER TO *ANDERSEN® DIVIDED LIGHT PATTERN GUIDE* FOR AVAILABLE DIVIDED LIGHT PATTERNS AND DETAILS. EXTERIOR AND INTERIOR COLORS CAN BE DIFFERENT. RETAIN PROJECT REQUIRED GRILLE PATTERN SUBPARAGRAPH BELOW AND DELETE SUBPARAGRAPHS NOT REQUIRED.

   1. Finelight™ Grilles: Provide contour profile aluminum muntin bars permanently mounted within insulating glass unit where indicated on Drawings.

a. Grille Intersections: ABS concealed plastic connectors with nylon end keepers.

SPECIFIER NOTE: RETAIN PROJECT REQUIRED FINISH SUBPARAGRAPH BELOW. DELETE SUBPARAGRAPHS NOT REQUIRED. SPECIFY IF INTERIOR COLOR IS DIFFERENT THAN EXTERIOR COLOR.

b. Exterior: White painted finish.
c. Exterior: Sandtone color painted finish.
d. Exterior: Terratone® color painted finish.
e. Exterior: Cocoa Bean painted finish.
f. Exterior: Dark Bronze painted finish.
g. Interior: White painted finish.
h. Width: 3/4 inch (19 mm).
i. Pattern: As indicated on Drawings.
j. Pattern: Colonial.
k. Pattern: Modified Colonial.
l. Pattern: Prairie A (9 light).
m. Pattern: Renaissance.
n. Pattern: Short fractional.
o. Pattern: Specified equal light.
p. Pattern: Sunburst.
q. Pattern: Tall fractional.
r. Pattern: Victorian.

SPECIFIER NOTE: SELECT BETWEEN STANDARD OR TRUSCENE® INSECT SCREEN OPTIONS.

B. Insect Screens: Provide venting sash with an insect screen, including attachment hardware.
1. Frames: 0.024 inch (0.61 mm) rolled aluminum frame with chromate conversion coating. Provide matching corner locks and latch retainers.
a. Insect Screen Cloth: Fiberglass mesh, gunmetal finish.
b. Frame Finish: High-bake polyester finish in white.
2. TruScene® Insect Screen: Provide venting sash with an insect screen, including attachment hardware.
a. Frames: 0.024 (0.61 mm) inch rolled aluminum Frame Finish:
b. High-bake polyester finish in the following color:

SPECIFIER NOTE: RETAIN PROJECT REQUIRED FRAME FINISH SUBPARAGRAPH BELOW. DELETE SUBPARAGRAPHS NOT REQUIRED.

c. White.
d. Sandtone.
e. Terratone®.
f. Cocoa Bean.
g. Dark Bronze.

SPECIFIER NOTE: RETAIN PROJECT REQUIRED COLOR SUBPARAGRAPH BELOW. DELETE SUBPARAGRAPHS NOT REQUIRED.

h. Color: White.
3. Insect Screen Cloth: 25 by 25 mesh per inch micro fine stainless steel wire with a polyester non-reflective coating.

SPECIFIER NOTE: IF EXTERIOR TRIM AND CASING IS REQUIRED FOR PROJECT, RETAIN SUBPARAGRAPH ABOVE FOR 1/2 INCH (13 MM) OR SUBPARAGRAPH BELOW FOR 3/4 INCH (19 MM).

2.9 FABRICATION

A. Fibrex® Composite Material:
   1. Sash Members: Fibrex® material sash members with co-extruded interior and exterior colored cap stock.
   2. Frame Units: Fibrex® material frame member co-extruded interior and exterior colored cap stock and with co-extruded flanges for installation.

SPECIFIER NOTE: RETAIN REQUIRED EXTERIOR COLOR SUBPARAGRAPH BELOW. DELETE SUBPARAGRAPHS NOT REQUIRED.

   a. Exterior Finish: White.
   b. Exterior Finish: Sandtone.
   c. Exterior Finish: Terratone®.
   d. Exterior Finish: Cocoa Bean.
   e. Exterior Finish: Dark Bronze.
   f. Interior Finish: White.
   g. Interior Finish: White.

B. Glazing: Factory glazed with glazing sealant and snap-in rigid vinyl glazing bead.

C. Weatherstripping: Factory-applied to unit frame. Field-applied interlocking weatherstripping at panel meeting stiles.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of window manufacturer.

SPECIFIER NOTE: SPECIFY ACTIONS TO PHYSICALLY DETERMINE THAT CONDITIONS ARE ACCEPTABLE TO RECEIVE PRIMARY PRODUCTS OF THE SECTION.

3.2 EXAMINATION

A. Site Verification of Conditions: Verify that site conditions are acceptable for installation of units, including the following:
   1. Concrete surfaces are dry and free of excess mortar, rocks, sand, and other construction debris.
   2. Masonry openings are square and dimensions are correct.

SPECIFIER NOTE: RETAIN SUBPARAGRAPH BELOW FOR WOOD FRAMING. RETAIN SUBPARAGRAPH ABOVE FOR MASONRY CONSTRUCTION.

   3. Rough openings are square and dimensions are correct.
   4. Sill plates are level.

SPECIFIER NOTE: DELETE THE FOLLOWING SUBPARAGRAPH IF NO WOOD FRAMING ON PROJECT.

   5. Wood frame walls are dry, clean, sound, and well nailed or glued, free of voids and without offsets at joints.

6. Nail heads are driven flush with surfaces in openings and within 3 inches (75 mm) of rough opening.

B. Do not proceed with installation of units until unacceptable conditions are corrected.

SPECIFIER NOTE: COORDINATE ARTICLE BELOW WITH MANUFACTURER'S RECOMMENDED INSTALLATION REQUIREMENTS.

3.3 INSTALLATION

A. General:
1. Remove unit components, parts, accessories, and installation guides from carton.
2. Inspect unit components and verify that components are not damaged and that parts are included before disposing of carton.
3. Shop-assemble multiple units before installation per manufacturer's installation guides.

SPECIFIER NOTE: RETAIN SUBPARAGRAPH ABOVE FOR SHOP-ASSEMBLED UNITS. RETAIN SUBPARAGRAPH BELOW FOR FIELD-ASSEMBLED UNITS.

4. Field-assemble multiple units before installation per manufacturer's installation guides.

B. Interface With Other Work:
1. Perform installation per Manufacturer's instructions.
2. Install units plumb, level, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction. Install drip cap at head of single units and joined assemblies.
3. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
4. Install insulation in shim space around unit perimeter to maintain continuity of building insulation. Do not overfill.
5. Hold back exterior siding or other finish materials from edge of unit to allow for expansion and contraction and installation of proper joint sealant with backing materials. Seal perimeter of unit after exterior finish is applied per requirements of Section 079200 – Joint Sealants.
6. Finish interior units per requirements specified in related sections. Refer to, and comply with, additional requirements in manufacturer's installation guides.
7. Install optional hardware and unit accessories after cleaning.

SPECIFIER NOTE: SPECIFY ALLOWABLE VARIATIONS BELOW.

C. Site Tolerances:
1. Adjust operation, insect screens, hardware, and accessories for a tight fit at contact points and weatherstripping for smooth operation and weathertight closure.

SPECIFIER NOTE: SPECIFY THE FINAL ACTION REQUIRED TO CLEAN INSTALLED EQUIPMENT OR OTHER COMPLETED WORK TO PROPERLY FUNCTION OR PERFORM. COORDINATE ARTICLE BELOW WITH DIVISION 01 EXECUTION REQUIREMENTS (CLEANING) SECTION AND SPECIFIC PROJECT REQUIREMENTS.

3.4 FIELD TESTING

SPECIFIER NOTE: COORDINATE ARTICLE BELOW WITH CONDITIONS OF THE CONTRACT AND WITH DIVISION 01 QUALITY CONTROL. TESTING EQUIPMENT SHALL BE CALIBRATED PER SECTION 9 OF 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, WHERE THE WATER TEST PRESSURE SHALL BE RUN AT 2/3 (0.667) OF THE WATER TEST PRESSURE USED TO ACHIEVE THE PRODUCTS RATED DESIGN PRESSURE. THE NUMBERS OF PRODUCTS TESTED SHALL BE AGREED AND WRITTEN IN THE PROJECT SPECIFICATION AND SHALL NOT EXCEED 1% OF THE TOTAL NUMBER OF OPENINGS UNLESS AGREED UPON FIELD TESTING

A. General: If applicable, test units per with the following procedures:
   1. Inspect units and verify installation per Manufacturer's instructions.
   2. For products installed less than 6 months, comply with AAMA 502-08 Voluntary Specification for Field Testing of Windows and Sliding Glass Doors, Procedure B.
   3. For products installed longer than 6 months, comply with AAMA 511-08: Voluntary Guideline for Forensic Water Penetration Testing of Fenestration Products. If test indicates that field testing of units is necessary, test product as indicated in paragraph 1 above.
   4. Do not proceed with installation of additional units until unacceptable conditions are corrected.

3.5 CLEANING

A. Clean units using cleaning material and methods specifically recommended by window manufacturer.

B. Remove excess sealants, glazing materials, dirt, and other substances.

C. Avoid damaging protective coatings and finishes.

D. Protect unit surfaces from masonry cleaning solution that could damage insulation glass panels or hardware.

E. Remove debris from work site and properly dispose of debris.

SPECIFIER NOTE: SPECIFY PROVISIONS FOR PROTECTING WORK AFTER INSTALLATION BUT PRIOR TO ACCEPTANCE BY THE OWNER. COORDINATE ARTICLE BELOW WITH DIVISION 01 EXECUTION REQUIREMENTS SECTION.

3.6 PROTECTION

A. Protect installed work from damage due to subsequent construction activity on site.

END OF SECTION