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USACE / NAVFAC / AFCEC / NASA | UFGS-08 52 00 (August 2020)
Change 1 - 02/22

Preparing Activity: NAVFAC | Superseding
UFGS-08 52 00 (August 2011)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2023
****

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SECTION 08 52 00

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08/20, CHG 1: 02/22

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****

SECTION 08 52 00

WOOD WINDOWS
08/20, CHG 1: 02/22

****

NOTE: This guide specification covers the requirements for wood windows of the following types: single-hung, double-hung, awning, casement, horizontal sliding, and non-operative (stationary window unit). If designer desires vinyl-clad or aluminum-clad windows, this specification must be edited accordingly.

In most projects, window upgrades for antiterrorism other than glazing requirements do not apply. When security analysis identifies an explosive threat and antiterrorism upgrades for blast resistance are required in accordance with Appendix B-3 of UFC 4-010-01, DoD Minimum Antiterrorism Requirements for Buildings, do not use wood windows as defined in this guide specification.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Do not use wood windows in humid locations or project locations with Environmental Severity Classifications (ESC) of C3 thru C5. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for

this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
****

PART 1 GENERAL

1.1 REFERENCES

****
NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.
****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA DAF45	(2003; Reaffirmed 2009) Designation System for Aluminum Finishes

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA 611	(2014) Voluntary Specification for Anodized Architectural Aluminum
AAMA 2603	(2020) Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels
AAMA 2605	(2020) Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels
AAMA/WDMA/CSA 101/I.S.2/A440	(2017) North American Fenestration Standard/Specification for Windows, Doors, and Skylights

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 169	(2013) Climate Data for Building Design Standards

ASTM INTERNATIONAL (ASTM)

ASTM D1784	(2020) Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D3656/D3656M	(2013) Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns
ASTM D6330	(1998; R 2014) Standard Practice for Determination of Volatile Organic Compounds (Excluding Formaldehyde) Emissions from Wood-Based Panels Using Small Environmental Chambers Under Defined Test Conditions
ASTM E90	(2009; R2016) Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
ASTM E413	(2022) Classification for Rating Sound Insulation
ASTM E1332	(2016) Standard Classification for Rating Outdoor-Indoor Sound Attenuation
ASTM E1886	(2019) Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
ASTM E1996	(2017) Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

NATIONAL FENESTRATION RATING COUNCIL (NFRC)

NFRC 100	(2020) Procedure for Determining Fenestration Product U-Factors
NFRC 200	(2020) Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

SCREEN MANUFACTURERS ASSOCIATION (SMA)

SMA 1004	(1987; R 1998) Aluminum Tubular Frame Screens for Windows

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 4-010-01	(2018; with Change 2, 2022) DoD Minimum Antiterrorism Standards for Buildings

U.S. DEPARTMENT OF ENERGY (DOE)

Energy Star	(1992; R 2006) Energy Star Energy Efficiency Labeling System (FEMP)

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

WDMA I.S.4	(2015A) Preservative Treatment for Millwork

1.2 SUBMITTALS

****

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" or "S"

classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Wood Windows; G[, [_____]]

SD-03 Product Data

Wood Windows; G[, [_____]]

[Energy Star Label for Residential Windows; S

] Engineered Wood Products

Fasteners

Adhesives; G[, [_____]]

SD-08 Manufacturer's Instructions

Wood Windows

SD-10 Operation and Maintenance Data

Wood Windows, Data Package 1; G[, [_____]]

Plastic Identification

1.2.1 Shop Drawing Information

Indicate elevations of units, full-size sections, fastenings, methods of installation and anchorage, method of glazing, locations of operating hardware, mullion details, method and material for weatherstripping, [bar and muntin layouts,]method of attaching[insect screens], details of installation, and connections with other work.

1.2.2 Wood Windows Manufacturer's Instructions

Submit manufacturer's written instructions for installation.

1.2.3 Engineered Wood Products

Submit documentation verifying that no urea-formaldehyde resins were used.

1.2.4 Plastic Identification O & M Data

When not labeled, identify types in Operation and Maintenance Manual per paragraph MATERIAL IDENTIFICATION REQUIREMENTS.

1.3 DELIVERY AND STORAGE

Deliver windows to site in sealed undamaged cartons or in palletized multiple units. Protect from damage, dampness and extreme temperature or humidity changes. Store under cover in well-ventilated enclosed space. Do not store in a building under construction until concrete, masonry, and

plaster are dry. Replace defective or damaged windows.

1.4 MATERIAL IDENTIFICATION REQUIREMENTS

1.4.1 Plastic Identification

****

NOTE: The marking system indicated below is intended to provide assistance in identification of products for making subsequent decisions as to handling, recycling, or disposal.

****

Label plastic products provided to indicate their polymeric composition according to the following list. Where products are not labeled, provide product data indicating polymeric information in Operation and Maintenance Manual.

Type 1: Polyethylene Terephthalate (PET, PETE).

Type 2: High Density Polyethylene (HDPE).

Type 3: Vinyl (Polyvinyl Chloride or PVC).

Type 4: Low Density Polyethylene (LDPE).

Type 5: Polypropylene (PP).

Type 6: Polystyrene (PS).

Type 7: Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.

1.5 WINDOW PERFORMANCE

Provide wood windows meeting the following performance requirements. Perform testing requirements by an independent testing laboratory or agency.

1.5.1 Thermal Performance

****

NOTE: Window properties are critical to energy performance and comfort. Specify low U value (rate of heat transfer) to reduce winter heat loss and summer heat gain.

Energy Star labeling is applicable to residential units only.

For nonresidential applications, refer to UFC 1-200-02, High Performance and Sustainable Building Requirements, for minimum requirements for energy efficiency and meeting minimum building envelope requirements of UFC 3-101-01 including fenestrations and glazing.

Coordinate with Section 08 81 00 GLAZING. Designer must verify availability and adequate competition for products meeting bracketed energy performance requirements before specifying and edit as needed.
****

Windows (including frames and glass) will be independently tested and certified with a Solar Heat Gain Coefficient (SHGC) determined according to NFRC 200 procedures and a whole window U-factor determined in accordance with NFRC 100 within the ranges as indicated below according to the ASHRAE 169 Climate Zone of the project location.[Windows used solely within the interior of a conditioned envelope are exempted from meeting U-Factor and SHGC requirements, unless otherwise noted.] Provide visual Transmittance (VT) of 0.5 or greater.[Residential glazed systems (including frames and glass) must be Energy Star label for residential windows labeled products for the [Northern] [North-Central] [South-Central] [Southern] climate zone. Provide proof of Energy Star label for residential windows.]

[1.5.1.1 Southern Climate

Windows installed in Climate Zone [1] [2] will have a U-Factor of [1.3] [1.25] [_____] W/m^2·degrees C [0.40] [_____] BTU/h·ft^2·degrees F or less and a SHGC of [0.25] [_____] or less.

][1.5.1.2 South-Central Climate

Windows installed within Climate Zone 3 will have a U-Factor of [0.85] [1.25] [_____] W/m^2·degrees C [0.30][_____] BTU/h·ft^2·degrees F or less and a SHGC of [0.25] [_____] or less.

][1.5.1.3 North-Central Climate

Windows installed within Climate Zone 4 will have a U-Factor of [0.85] [1.25] [_____] W/m^2·degrees C [0.30] [_____] BTU/h·ft^2·degrees F or less and a SHGC of [0.40] [_____] or less.

][1.5.1.4 Northern Climate

Windows installed within Climate Zone [5] [6] [7] will have a U-Factor of [0.65] [1.25][_____] W/m^2·degrees C [0.27] [_____] BTU/h·ft^2·degrees F or less. There is no SHGC limit for this climate zone.

][1.5.1.5 Non-residential Windows

Non-residential glazed systems (including frames and glass) must be certified by the National Fenestration Rating Council with a whole-window Solar Heat Gain Coefficient (SHGC) maximum of [_____] determined according to NFRC 200 procedures and a U-factor maximum of [_____] W per square m by K Btu per square foot by ht by degree F in accordance with NFRC 100.

][1.5.2 Sound Attenuation

****
NOTE: Include this paragraph when sound attenuation is a design parameter. Use outside-indoor transmission class (OITC) when exterior source noise is a concern.

****

When tested in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 or the following below, provide a minimum Sound Transmission Class (STC) of 35 in accordance with ASTM E90 and as determined by ASTM E413 or Outside-Indoor Transmission Class (OITC) of 25 in accordance with ASTM E1332 and as determined by ASTM E413 with the window glazed with 13 mm 1/2 inch air space between two pieces of 6 mm 1/4 inch.

][1.5.3 Windborne-Debris-Impact Performance

****

NOTE: Retain WINDBORNE-DEBRIS-IMPACT RESISTANCE paragraph if required by Project. The UFC 1-200-01 DoD Building Code cited IBC defines windborne debris regions. Enhanced protection applies to essential facilities. Verify site specific requirements with the AHJ. Delete items not required.

****

Exterior window system including glazing must comply with indicated basis or enhanced protection testing requirements in ASTM E1996 for [Wind Zone 1] [Wind Zone 2] [Wind Zone 3] [Wind Zone 4] when tested according to ASTM E1886. Test specimens must be no smaller in width and length than glazing indicated for use on Project and must be installed in same manner as glazing indicated for use on Project.

a. Refer to drawings for classification of window requiring basic or enhanced protection.

[b. Large-Missile Test: For glazing located within 9.1 m 30 feet of grade.

][c. Small-Missile Test: For glazing located more than 9.1 m 30 feet above grade.

]]PART 2 PRODUCTS

2.1 MATERIALS

****

NOTE: Wood is a renewable resource. Non-sustainable harvesting of wood can produce soil erosion, pollutant runoff, increased levels of atmospheric carbon dioxide, global warming, and habitat loss. Supplies of clear grades and large-dimension timbers are limited. Specify lower grades and engineered wood products for large-dimension timbers when appropriate.

****

2.1.1 Virgin Lumber

****

NOTE: The following paragraph is tailored for inclusion in Navy projects only.

****

****

NOTE: Old growth timber comes from trees over 200

years old. In industry, it is high quality lumber in "upper" or "architectural" grades. Lumber suppliers should know which timber is old growth and which is not, but sources are not always tracked.
****

Lumber fabricated from old growth timber is not permitted. Avoid companies who buy, sell, or use old growth timber in their operations, when possible.

2.1.2 Engineered Wood Products

****
NOTE: Engineered wood products include plywood, OSB, composite wood panels, fiberboard, particleboard, glue-laminated beams, structural composite lumber, including laminated veneer lumber and parallel strand lumber, as well as I-joists and metal plate connected wood trusses. The use of engineered wood products can result in higher resource efficiencies than conventional lumber/timber construction. Waste is minimized due to uniformity of product. Spans and spacing may be increased for engineered joists over spans for same depth dimensional lumber. However, adhesive binders used in engineered wood products are any of several synthetic resins that pose varying degrees of human health risks. Engineered wood products might be more difficult to recycle than standard, solid sawn lumber due to the binders used in manufacturing.
****

****
NOTE: Based on the type of engineered wood product selected for the project (such as composite wood, glue-laminated wood, or laminated veneer lumber), designer must identify the appropriate maximum VOC level based on the products that are available and their characteristics. VOC levels of some composite wood products are restricted by the requirements of 40 CFR 770; for example, this EPA rule limits VOC emissions for hardwood plywood to 0.05 ppm.
****

Products cannot contain added urea-formaldehyde. Determine Volatile Organic Compounds (VOCs), excluding formaldehyde, emitted from manufactured wood-based panels in accordance with ASTM D6330. Products must not be used if VOC emissions exceed [_____].

2.2 WOOD WINDOWS

****
NOTE: The following Article includes tailoring for Navy projects; on Navy projects, include the sentence stating requirements for "good sash insulation performance" with recycled wood fiber and recycled HDPE requirements.
****

****

NOTE: Where operating hardware is located 1980 mm 6 feet 6 inches or more above floor, specify poles and pole-operated handles to operate windows.

****

****

NOTE: Where storm windows are included in project, include Section 08 51 69.10 ALUMINUM STORM WINDOWS. Show locations where storm units are to be installed. Do not provide storm units for windows in equipment rooms, laundry rooms and similar spaces. Storm windows are not required over double-glazed insulating type windows.

Specify window screens in medical facilities, food preparation areas, dining areas, sleeping areas, and similar locations. Show screen locations on drawings.

****

****

NOTE: Include the last bracketed sentence where the antiterrorism requirements of UFC 4-010-01 apply based on the facility's occupancy classification and occupancy load.

****

Wood windows must consist of complete units including sash, glass, frame, weatherstripping, [insect screen,] and hardware. Window units must meet the Grade 40 requirements of AAMA/WDMA/CSA 101/I.S.2/A440, except maximum air infiltration must not exceed 0.00016 cu m per second 0.34 CFM per linear foot of sash crack when tested under uniform static air pressure difference of 75 pascals 1.57 psf. In addition to general hardware requirements of AAMA/WDMA/CSA 101/I.S.2/A440, provide hardware for various window types as indicated below. Glass and glazing materials must conform to Section 08 81 00 GLAZING. For good sash insulation performance, preference must be given to engineered wood core clad in wood veneer or PVC-wood composite (uninsulated), using post-industrial wood fiber and 100 percent post-consumer HDPE plastic. [Wood members which will receive transparent finish must be in one piece, not finger-jointed.][For windows required to comply with antiterrorism provisions, design in accordance with Standard 10 of UFC 4-010-01.]

2.2.1 Single-Hung and Double-Hung Windows

****

NOTE: For the remaining paragraphs in this Article representing window types, only include the window types used on the project and delete those that do not apply.

****

****

NOTE: Provide double-hung or single-hung windows for living quarters, where storm sash are to be provided or window air-conditioners used. Single-hung have less air leakage and should be considered over double-hung where feasible.

****

Provide with one sash fastener and two sash lifts, except provide one sash lift when window is fitted with a balance that counterbalances weight of sash.

2.2.2 Awning Windows (Top Hinged)

Awning window ventilators in same bay must operate [separately] [in unison]. Provide two or more hinges, pivots, or sash-supporting arms for each operative sash to allow easy operation, substantial support and cleaning of both sides of sash from inside. Provide latches for securing each sash if operating devices do not include locking features. Provide operating devices for controlling position of sash, including full open, tight close, and intermediate firm hold. Provide operating devices with rotary operators of worm-gear type with wear-resistant and impact-resistant gears or lever operators of lever handle, off-set arm type. Provide venting sash with corrosion resistant steel hinges connected to top and bottom rails of sash. When lever operators are used, operating arms must be adjustable so that even sash edge contact can be maintained. Provide compression-type weatherstripping.

2.2.3 Casement Windows

Provide two or more hinges, pivots, or sash-supporting arms for each operative sash to allow easy operation, substantial support and cleaning of both sides of sash from inside. Provide latches for securing each sash if operating devices do not include locking features. Provide operating devices for controlling the position of the operative sash, including full open, tight close, and intermediate firm hold. Operating devices must include rotary gears and adjustable operating arms so that even sash contact can be maintained. Provide compression-type weatherstripping.

2.2.4 Horizontal-Sliding Windows

Provide latches, pulls, and corrosion resistant steel slides necessary to control and secure window. Provide for cleaning of both sides of sash from inside.

2.2.5 Stationary Windows

Provide fixed sash and basic frame in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.

2.3 ACCESSORIES

2.3.1 Adhesives

Provide sealants as specified in Section 07 92 00 JOINT SEALANTS.

2.3.2 Fasteners

Fasteners and anchors exposed to the environment to be corrosion resistant coated steel, aluminum, or stainless steel compatible with the window material and adjoining construction, and of a type and size recommended by the manufacturer to meet the performance requirements.

2.4 FINISHES

****

NOTE: Factory-applied finishes are typically more durable and release fewer solvents to the environment than field-applied finishes.

****

[2.4.1 Paint

Provide windows with factory-primed surfaces which will be exempt from first paint coat application required in Section 09 90 00 PAINTS AND COATINGS.

][2.4.2 Vinyl (PVC) Cladding

****

NOTE: Select the applicable paragraphs(s) from the following:

****

Preservative treat all basic wood frame and sash members in accordance with WDMA I.S.4 and Section 06 10 00 ROUGH CARPENTRY, except do not use pentachlorophenol. Clad all exterior surfaces with rigid polyvinyl sheathing, complying with ASTM D1784, class 14344-C, not less than 0.9 mm 35 mil average thickness.

][2.4.3 Aluminum Cladding

Preservative treat all basic wood frame and sash members in accordance with WDMA I.S.4, except do not use pentachlorophenol. Clad all exterior surfaces with extruded aluminum with joints sealed during assembly. Aluminum clad frames and sash must meet performance requirements of AAMA/WDMA/CSA 101/I.S.2/A440.

2.4.3.1 Aluminum Finish

****

NOTE: The selection of anodic or organic coating is based primarily on the desired appearance: anodized finishes provide a metallic appearance and organic finishes provide a painted or metal-like finish (organic finishes are available in a variety of colors). Only allow both types as a Contractor option when the Designer confirms that the desired appearance is available in both types of finishes.

Based on research, there are a limited number of manufacturers supplying an aluminum cladded product with an anodic finish. If the Designer desires an anodic finish it is prudent to confirm availability by multiple suppliers prior to specifying.

****

Factory finish with [anodic coating] [or] [organic coating].

[2.4.3.2 Anodic Coating

****

NOTE: For anodic coatings, specify Architectural Class I for harsh atmospheres where dust, gases, salts, and other destructive elements will attack metal finish. Also specify Class I for humid locations or project locations with Environmental Severity Classifications (ESC) of C3 thru C5. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). Specify Architectural Class II for all atmospheric conditions not requiring Class I.
****

Conform to AA DAF45 and AAMA 611. Finish must be [clear (natural), designation AA-M10-C22-A31, Architectural Class II 0.010 to 0.0175 mm 0.4 mil to 0.7 mil] [clear (natural), designation AA-M10-C22-A41, Architectural Class I 0.0175 mm 0.7 mil or thicker] [integral color-anodized, designation AA-M10-C22-A32, Architectural Class II 0.010 to 0.0175 mm 0.4 mil to 0.7 mil] [integral color-anodized, designation AA-M10-C22-A42, Architectural Class I 0.0175 mm 0.7 mil or thicker] [electrolytically deposited color-anodized designation AA-M10-C22-A34, Architectural Class II 0.010 to 0.0175 mm 0.4 mil to 0.7 mil] [electrolytically deposited color-anodized, designation AA-M10-C22-A44, Architectural Class I 0.0175 mm 0.7 mil or thicker].[Finish Color: [_____] [as indicated].]

]2.4.3.3 Organic Coating

****
NOTE: For organic coatings, to provide enhanced resistant to corrosion, weathering, ozone, and UV radiation, utilize superior performance powder coat finishes conforming to AAMA 2605 in humid locations and project locations with an ESC of C3 thru C5; baked enamel finishes conforming to AAMA 2603 may be utilized for non-humid locations and ESC C1 or C2 project locations. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). Refer to UFC 1-200-01 for determination of ESC for a specific project location.
****

Clean and prime exposed aluminum surfaces. Provide [baked enamel finish in accordance with AAMA 2603 with total dry film thickness not less than 0.020 mm 0.8 mil] [superior performance finish in accordance with AAMA 2605 with total dry film thickness of not less than 0.030 mm 1.2 mils]. Finish color [_____] [as indicated].

][2.5 INSECT SCREENS

ASTM D3656/D3656M, Class 2, 18 by 14 mesh, color [charcoal] [gray] [_____]. Aluminum frames to meet SMA 1004.

]PART 3 EXECUTION

3.1 INSTALLATION

Any materials that show visual evidence of biological growth due to the presence of moisture must not be installed on the building project.

3.1.1 Wood Windows

Install in accordance with the approved installation instructions. Securely anchor windows in place. Install and seal windows in a manner that will prevent entrance of water and wind.

[3.1.2 Insect Screen

Install screen panels in accordance with manufacturer's instructions. Install aluminum framed screens in accordance with SMA 1004.

]3.2 ADJUSTMENTS

Make final adjustment for proper operation of ventilating unit after glazing. Make adjustments to operating sash or ventilators to assure smooth operation. Units must be weathertight when locked closed. Verify products are properly installed, connected, and adjusted.

3.3 CLEANING

Clean windows on both exterior and interior in accordance with manufacturer's recommendations.

-- End of Section --