

**DIAMOND 9000 SERIES  
CASEMENT WINDOW  
MODEL 9500 SPECIFICATION**

*\*TO FINISH SPECIFICATION: 1. Read then delete comments in \*stars\*. 2. Add or delete options in (parentheses). 3. Replace preceding standards with options in [brackets] or delete options in [brackets]. 4. Revise paragraph numbers and/or letters, as necessary.\**

**SECTION 08520 - ALUMINUM WINDOWS (Heavy Commercial)**

**PART 1 - GENERAL**

1.01 SECTION INCLUDES

- A. Material: aluminum windows as on the drawings and specified in this section.
- B. Installation: labor, tools, and material needed to install aluminum windows.
- C. Glass and glazing.

**(1.02 PRODUCTS FURNISHED BUT NOT INSTALLED)**

*\*Enter description, e.g., extra sash sets to be supplied and stored for the future\**

**(1.03 PRODUCTS INSTALLED BUT NOT FURNISHED)**

*\*Enter description, e.g., louver supplied by others to be installed in new window\**

1.04 RELATED SECTIONS - Section 07900 - Sealants

1.05 REFERENCES

- A. AAMA - American Architectural Manufacturers Association
  - 1. AAMA/NWWDA 101/I.S.2-97 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors"
  - 2. AAMA 502-02 "Voluntary Specification for Field Testing of Windows and Sliding Glass Doors"
  - 3. AAMA 611-98 "Voluntary Specification for Anodized Architectural Aluminum"
  - 4. AAMA 800-92 "Voluntary Specifications and Test Methods for Sealants"
  - 5. AAMA 901-96 "Voluntary Specification for Rotary Operators in Window Applications"

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6. AAMA 904-01 “Voluntary Specification for Multi-Bar Hinges in Window Applications”
7. AAMA 1503-98 "Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections"
8. AAMA 2603-02 “Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels”
9. AAMA 2604-02 “Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels”
10. AAMA 2605-02 “Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels”
11. AAMA CW-10-97 "Care and Handling of Architectural Aluminum from Shop to Site"

B. ASTM - American Society for Testing and Materials

1. ASTM E 90-97 "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions"
2. ASTM E 283-99 "Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors"
3. ASTM E 330-97 "Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference"
4. ASTM E 331-00 "Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference"
5. ASTM E 547-00 "Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential"
6. ASTM E 774-00 "Specification for Sealed Insulating Glass Units"

1.06 SYSTEM DESCRIPTION

- A. AAMA Designation: C-HC-135.

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- B. Windows: 2" frame depth; extruded aluminum with integral structural polyurethane thermal break; vent overlaps frame; equal-leg frame; finish factory-applied; factory-assembled.
- C. Configuration: casement outswing; single vent [single vent and fixed] [multiple vents] [multiple vents and fixed] per frame.
- D. Vent glazing: Neoprene gasket; 1" insulating glass [or single lites]; EPDM gasket; interior aluminum glazing bead; glass description in paragraph 2.04; factory-glazed.

[D. Vent dual glazing: Neoprene gasket; 1/4" exterior lite; internal EPDM gasket; (blinds;) maximum 1/4" interior lite in flexible PVC gasket in butt-hinged panel secured with aluminum swivel clips opened with a star pin wrench; glass description in paragraph 2.04; factory-glazed.]

[D. Vent triple glazing: Neoprene gasket; 3/4" insulating glass; internal EPDM gasket; (blinds;) maximum 1/4" interior lite in flexible PVC gasket in butt-hinged panel secured with aluminum swivel clips opened with a star pin wrench; glass description in paragraph 2.04; factory-glazed.]

(E. Fixed glazing: EPDM gasket; exterior [interior] aluminum glazing bead; silicone heel bead; 1" insulating glass [or single lites]; Neoprene gasket; glass description in paragraph 2.04; factory-glazed.)

## 1.07 PERFORMANCE REQUIREMENTS

- A. Conformance to C-HC135 specifications in AAMA/NWWDA 101/I.S.2-97 when tests are performed on a 2'0" x 4'0" minimum frame size with the following test results:
  - 1. Air Infiltration: maximum .01 cfm/square foot when tested per ASTM E 283-99 at a static air pressure difference of 6.24 psf.
  - 2. Water Penetration: no uncontrolled water leakage when tested per ASTM E 547-00 and ASTM E 331-00 at a static air pressure difference of 12 psf.
  - 3. Uniform Structural: window to be operable, and maximum .4% permanent deformation per member when tested per ASTM E 330-97 at a static air pressure difference of 202.5 psf.
- B. Thermal testing per AAMA 1503-98, at the prescribed 6'0" x 4'0" test size glazed with 1" insulating glass made with 1/8" clear and 1/8" hard coat low E lites and argon, with the following test results:
  - 1. Condensation Resistance Factor: minimum 57 frame and 64 glass CRF.
  - 2. Thermal Transmittance: maximum .48 BTU/HR/SQ.FT/F U value.

(C. Sound: testing per ASTM E 90-97 with exterior 11/16” insulating glass (1/4” laminated x 1/4” airspace x 3/16” annealed) and interior 3/16” annealed in removable panel: minimum 44 STC.)

#### 1.08 SUBMITTALS

- A. Shop drawings: window location chart; typical window elevations; details of assemblies, hardware, and glazing details for factory-glazed units.
- B. Product data: manufacturer's specifications and test reports from an AAMA-accredited laboratory.
- C. Samples: each specified finish for aluminum; other samples as requested.

#### 1.09 QUALITY ASSURANCE

- A. Submit for prebid approval ten days prior to bid opening a sample window representing the bid window except for color and valid test reports from an AAMA-accredited laboratory conforming to test results in Paragraph 1.07.
- B. Acceptance will be by addendum only as no verbal approvals will be allowed.
- C. Submit bid on prequalified products in prebid written addendum. Bidder must identify manufacturer and model of product on which the bid is based.
- D. Furnish a valid AAMA “Notice of Product Certification” indicating that the windows for the project conform to AAMA/NWWDA 101/I.S.2-97.
- E. Furnish visible, permanent IGCC certification labels for the CBA rating level on double insulating glass units.
- F. Manufacturer's warranties:
  - 1. Windows: warrant for one year against defects in material or workmanship under normal use.
  - 2. Insulating glass units: warrant seal for five years *\*Contact DIAMOND WINDOW for other time frames\** against visual obstruction from film formation or moisture collection between internal glass surfaces, excluding that caused by glass breakage or abuse.
  - 3. Paint finish: PPG...

*\*Enter the following for an AAMA 2605 70% fluoropolymer paint finish\**

...Duranar™ organic finish conforming to AAMA 2605-02: warrant for fifteen years against chipping, peeling, cracking, chalking, or fading.

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*\*Or enter the following for an AAMA 2604 50% fluoropolymer paint finish\**

...Acrynar FX™ organic finish conforming to AAMA 2604-02: warrant for ten years against chipping, peeling, cracking, chalking, or fading.

*\*Or enter the following for an AAMA 2603 acrylic paint finish\**

...Duracron™ organic finish conforming to AAMA 2603-02: warrant for five years against chipping, peeling, or cracking.

(G. Project Survey: *\*Contact DIAMOND WINDOW to register before project bid date\** by installer and manufacturer's representatives; one year after date of completion; to recommend maintenance procedures.)

1.10 DELIVERY, STORAGE, AND HANDLING - Handle and protect windows and accessories in accordance with AAMA CW-10-97 until project completion.

## **PART 2 - PRODUCTS**

### 2.01 MANUFACTURERS

- A. DIAMOND WINDOW 9500 Casement Outswing Thermal Aluminum Window
- B. Other acceptable manufacturers who have demonstrated a successful history of manufacturing for *\*Enter number\** years equivalent products:
  - 1. *\*Enter appropriate information as required\**
  - 2. *\*Enter appropriate information as required\**

### 2.02 MATERIALS

- A. Aluminum extrusions: produced from commercial quality 6063-T5 alloy; free from defects impairing strength and durability.
- B. Hardware: concealed stainless steel hinges conforming to AAMA 904-01 [exposed aluminum butt hinges with finish to match window] to rotate vent outward on vertical axis; white bronze cam handles and strikes [roto operator conforming to AAMA 901-96 and multi-point lock]; stainless steel limit arm with release key.
- C. Weatherstrip: secured in extruded ports; double rows of EPDM gasket on vent perimeters.

(D. Blinds: 5/8" x .008" aluminum slats; slat color chosen from manufacturer's standards; interior tilt control knob.)

(E. Screens: full; field-mounted on interior with steel spring clips; handle-access wickets; 3/4" x 1-1/8" x .050" extruded tubular aluminum frame with finish to match window in color and performance; corners mitered, gusset reinforced, and crimped; 18 x 16 dark fiberglass [aluminum] mesh; PVC spline.)

## 2.03 FABRICATION

- A. Frame and vent: all members double tubular; corners mitered, double gusset reinforced, factory-sealed with sealant conforming to AAMA 800-92, and crimped.
- B. Water control: pressure equalization gasket on vent interior; vent and frame weeps, weep covers, and exterior hoods to allow water to drain by gravity and resist wind-driven water.
- C. Drip cap: field-mounted on frame exterior above vent head.

## 2.04 DOUBLE INSULATING GLASS UNITS

### A. Performance

- 1. Dual-seal durability: conformance to ASTM E 774-00; visible, permanent IGCC certification label for CBA rating level.

(2. Other: *\*Enter U value, etc., information as required\**)

### B. Exterior glass lite

- 1. Thickness: 1/8" [3/16"] [1/4"].
- 2. Tint: clear [bronze] [gray].
- 3. Type: annealed [tempered] [laminated *\*Enter interlayer and lite descriptions\**].

(4. Coating: solar-reflective.)

### C. Interior glass lite

- 1. Thickness: 1/8" [3/16"] [1/4"].
- 2. Tint: clear [pattern #62 obscure].
- 3. Type: annealed [tempered] [laminated *\*Enter interlayer and lite descriptions\**].

(4. Coating: hard coat low E on #3 surface.)

## [2.04 TRIPLE INSULATING GLASS UNITS]

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- A. Performance: *\*Enter U value, etc., information as required\**)
- B. Exterior glass lite
  - 1. Thickness: 1/8" [3/16"].
  - 2. Tint: clear [bronze] [gray].
  - 3. Type: annealed [tempered].
- C. Internal film: Southwall Heat Mirror™ #SC75.
- D. Interior glass lite
  - 1. Thickness: 1/8" [3/16"].
  - 2. Tint: clear [pattern #62 obscure].
  - 3. Type: annealed [tempered].

[2.04 MONOLITHIC VISION LITES]

- A. Thickness: 1/8" [3/16"] [1/4"].
- B. Tint: clear [bronze] [gray] [pattern #62 obscure].
- C. Type: annealed [tempered] [laminated *\*Enter interlayer and lite description\**] [1/4" clear wired *\*Enter pattern\**] [polycarbonate *\*Enter description\**].
- (D. Coating: solar-reflective [hard coat low E on #2 surface].)
- (E. Performance: *\*Enter transmittance information as required\**)

2.05 FINISH ON ALUMINUM EXTRUSIONS

- A. Application: on clean extrusions free from serious surface blemishes; on exposed surfaces visible when installed product's operating sash are closed.

*\*Enter the following for an AAMA 2605 70% fluoropolymer paint finish\**

- B. Coating: PPG Duranar™ with resin containing 70% fluoropolymer; thermosetting; alternative finishes will not be acceptable.
- C. Quality standard: conforming to AAMA 2605-02, including 10 years Florida exposure and 4000 hours humidity tests.
- D. Pretreatment: five-stage; zinc chromate conversion coating.

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- E. Application: electrostatic spray and oven bake by approved applicator.
- F. Coating quantity: minimum one primer coat and one color coat.
- G. Dry film thickness: minimum 1.2 mils on exposed surfaces, except inside corners and channels.
- H. Color: chosen from manufacturer's standards.

(I. Additional different interior finish and color: subject to manufacturer's approval.)

*\*Or enter the following for an AAMA 2604 50% fluoropolymer paint finish\**

- B. Coating: PPG Acrynar FX™ with resin containing 50% fluoropolymer; thermosetting; alternative finishes will not be acceptable.
- C. Quality standard: conforming to AAMA 2604-02, including 5 years Florida exposure and 3000 hours humidity tests.
- D. Pretreatment: five-stage; zinc chromate conversion coating.
- E. Application: electrostatic spray and oven bake by approved applicator.
- F. Coating quantity: minimum one primer coat and one color coat.
- G. Dry film thickness: minimum 1.4 mils on exposed surfaces, except inside corners and channels.
- H. Color: chosen from manufacturer's standards.

(I. Additional different interior finish and color: subject to manufacturer's approval.)

*\*Or enter the following for an AAMA 2603 acrylic paint finish\**

- B. Coating: PPG Duracron™ with acrylic resin; thermosetting.
- C. Quality standard: conforming to AAMA 2603-98, including 1 year Florida exposure and 1500 hours humidity tests.
- D. Pretreatment: five-stage; zinc chromate conversion coating.
- E. Application: electrostatic spray and oven bake by approved applicator.
- F. Coating quantity: one color coat.
- G. Dry film thickness: minimum .8 mils on exposed surfaces, except inside corners and channels.



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H. Color: chosen from manufacturer's standards.

*\*Or enter the following for an AAMA 611 clear anodize finish\**

B. Coating: clear anodize.

C. Quality standard: conforming to AAMA 611-98.

D. Thickness: AAM10C22A41 Class I - .7 mils #215 [AAM10C22A31 Class II - .4 mils #204].

*\*Or enter the following for an AAMA 611 color anodize finish\**

B. Coating: color anodize.

C. Quality standard: conforming to AAMA 611-98.

D. Thickness: AAM10C22A44 Class I - .7 mils.

E. Color: #313 dark bronze [#311 light bronze] [#312 medium bronze] [#315 black].

## (2.06 INSTALLATION ACCESSORIES)

A. Material: extruded aluminum; nominal .062" wall; with exposed surfaces finished to match window color and finish performance; concealed fasteners; required weatherseals; designed for unrestricted expansion and contraction.

B. Exterior: (wrap around panning;) (preset panning;) (two-piece mullion cover;) (two-piece head and jamb receptor with thermal break;) (subsill with thermal break and end dams;) (sill cover;) (slip-on expanders).

C. Interior: (two-piece snap trim;) (stool cover).

D. Mullions: with thermal break; (stack;) (offset stack;) (three-piece).

## **PART 3 - EXECUTION**

3.01 PREPARATION - Prepare openings to be in tolerance, plumb, level, provide for secure anchoring, and in accordance with approved shop drawings.

### 3.02 INSTALLATION

A. Install windows in accordance with manufacturer's recommendations and approved shop drawings with skilled craftspeople who have demonstrated a successful history of installing windows for *\*Enter number\** years.

B. Provide required support and securely fasten and set windows plumb, square, and level without twist or bow.

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- C. Apply sealant per sealant manufacturer's recommendations at joints, wipe off excess, and leave exposed sealant surfaces clean and smooth.

(3.03 FIELD TESTING)

- A. Test installed units in conformance with AAMA 502-02 minimum requirements for air and water infiltration with the window manufacturer, contractor, and owner present.
- B. Select test units as directed by the owner's representative and use an AAMA-accredited laboratory provided by the owner or contractor.

3.04 ADJUSTING AND CLEANING - Adjust windows as necessary for smooth and weathertight operation, and leave windows clean and free of construction debris.

END OF SECTION