

**DIAMOND 9000 SERIES
PROJECT IN WINDOW
MODEL 9400 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 904-01 "Voluntary Specification for Multi-Bar Hinges in Window Applications"

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6. AAMA 1503-98 "Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections"
7. AAMA 2603-02 "Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels"
8. AAMA 2604-02 "Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels"
9. AAMA 2605-02 "Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels"
10. 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: AP-HC80.

B. Windows: 2" frame depth; extruded aluminum with integral structural polyurethane thermal break; vent overlaps frame; equal-leg frame; finish factory-applied; factory-assembled.

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- C. Configuration: project in/hopper; 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: Neoprene gasket; 1" insulating glass [or single lites]; silicone heel bead; EPDM gasket; interior aluminum glazing bead; glass description in paragraph 2.04; factory-glazed.)

1.07 PERFORMANCE REQUIREMENTS

- A. Conformance to AP-HC80 specifications in AAMA/NWWDA 101/I.S.2-97 when tests are performed on a 5'0" x 2'8" 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 120 psf.
- B. Thermal testing per AAMA 1503-98, at the prescribed 4'0" x 6'0" test size glazed with 1" insulating glass made with 1/8" clear and 1/8" hard coat low E lites and argon gas, with the following test results:
1. Condensation Resistance Factor: minimum 67 frame and 64 glass CRF.
 2. Thermal Transmittance: maximum .45 BTU/HR/SQ.FT/F U value.
- (C. Sound: testing per ASTM E 90-97 with exterior 1/4" laminated x 2-1/4" airspace x interior 1/4" annealed in removable panel: minimum 45 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.

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: **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 9400 Project In 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 inward on horizontal axis; white bronze strike and cam [pole-operated] handle (; custodial lock with 1/4" hex key) (; 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 exterior tracks; two stainless steel leaf springs; 5/16" x 1-1/2" 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

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- 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 vent exterior above frame sill.

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]

A. Performance: **Enter U value, etc., information as required**

B. Exterior glass lite

- 1. Thickness: 1/8" [3/16"].

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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.
- 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.

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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 2603-02, 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.

H. Color: chosen from manufacturer's standards.

Or enter the following for an AAMA 611 clear anodize finish

B. Coating: clear anodize.

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- 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.
- 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)

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- 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