



## SECTION 08520 ALUMINUM WINDOWS

### MPG Series 2780-ZS Thermally Broken Aluminum Window Zero Sightline Series

#### PART 1 GENERAL

##### 1.01 Work Included

- A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.
  - 1. Provide all labor, materials, tools, equipment and services needed to furnish and install windows.
- B. All windows shall be Milwaukee Plate Glass, series 2780-ZS Casement and Awning windows. Other manufacturers requesting approval to bid their product as an equal must submit the following information ten days prior to the bid date.
  - 1. A sample window, 3'-0" x 2'-0" single unit, as per requirements of the architect.
  - 2. Test reports from an independent laboratory are required that certifies that the proposed product meets or exceeds the performance requirements of Section 1.02. Glass and Glazing.
  - 3. All units shall be factory glazed.

##### 1.02 Testing and Performance Requirements

- A. Units shall comply with air, water and structural requirements as specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 and AAMA 910-93 for type and classification of window units required.
- B. Test Procedures and Performance Requirements
  - 1. Windows shall conform to all AAMA/WDMA/CSA 101/I.S.2/A440-05 and AAMA 910-93 requirements for the type and classification of window units required. In addition, the following performance criteria must be met:
    - 2. Air Infiltration Test
      - a. With the vents closed and locked, test unit in accordance with ASTM E 283 at a static air pressure difference of 6.24 psf.
      - b. Air infiltration shall not exceed 0.3 cfm per square foot of unit.
    - 3. Water Resistance Test
      - a. With vents closed and locked, test unit in accordance with ASTM E 331 & ASTM E 547 at a static air pressure difference of 12.0 psf.
      - b. There shall be no uncontrolled water leakage.
    - 4. Uniform Load Structural Test
      - a. With vents closed and locked, test unit in accordance with ASTM E 330 at a positive and negative static air pressure difference of 150 psf.
      - b. There shall be no glass breakage, permanent damage to fasteners, hardware parts, support arms or actuating mechanisms or any other damage that would cause the window to be inoperable.
      - c. There shall be no permanent deformation of any main frame, vent, panel or vent member in excess of L/175 of its span.
    - 5. Condensation Resistance Test
      - a. Test unit for thermal performance in accordance with AAMA 1503-98 with a frame condensation resistance factor (CRF) of at least \_\_\_\_.
    - 6. Thermal Transmittance Test (Conductive U-Value)
      - a. Test unit in accordance with AAMA-98 with U-value of \_\_\_\_ or less.
    - 7. Forced Entry Resistance Test
      - a. With vents closed and locked, test unit in accordance with AAMA 1302.5-76.
      - b. Locks shall provide reasonable security against forced entry.

8. Emergency Escape and Rescue

- a. Sash opening widths and heights and approved hardware shall comply with emergency escape and rescue requirements of the local building code (greater or equal to 5.7 sq. ft. clear opening)

**1.03 Quality Assurance**

- A. Provide test reports from an AAMA certified laboratory verifying performance as specified in section 1.02.
- B. Provide test reports and window manufacturer's letter of certification showing compliance with AAMA/WDMA/CSA 101/I.S.2/A440-05 and AAMA 910-93 for the appropriate window type.
- C. Test reports shall be no more than five years old.

**1.04 Submittals**

- A. Submit shop drawings, finish samples, test reports and warranties.
  1. Shop drawings shall indicate type of glazing, screen and window finish and specified hardware to be supplied.
  2. Shop drawings shall show perimeter conditions and anchor locations per project conditions.
  3. Additional samples may be requested if so directed by the architect.

**1.05 Delivery and Storage**

- A. Protect units adequately against damage from the elements, construction activities, theft and other hazards before, during and after installation.

**1.06 Warranties**

- A. Manufacturers Warranties
  1. Submit written warranties from window manufacturer for the following:
    - a. Windows: Windows furnished are certified as fully warranted against any defects in material or workmanship under normal use and service for a period of one **(1) year** from date of substantial completion.
    - b. Finish: The finishes on windows and component parts (such as panning, trim, mullions, and the like) are certified as complying fully with the requirements of the AAMA 2604 for pigmented organic coatings and AAMA 611 for electrolytically deposited anodized finishes and will be fully warranted against chipping, peeling, cracking or blistering for a period of five **(5) years** from date of substantial completion.
    - c. Glass: The insulating glass units shall be warranted for a period of ten **(10) years** from visual obstruction due to moisture on the interior surface of the glass as caused by failure of the perimeter seal due to defective workmanship in the manufacturing of this product.

**PART 2 PRODUCTS**

**2.01 Materials**

- A. Aluminum
  1. Extruded aluminum shall be 6063-T6 alloy and temper.
- B. Hardware
  1. All operating hardware shall be AAMA certified.
  2. Locking handles shall be cam type and manufactured from high pressure zinc die-cast with manufacturer applied electrostatic paint finish and stainless steel keepers and strikes.
  3. Operating hardware shall be a concealed 4-bar stainless steel hinges with friction adjusters.
  4. Roto-operators (optional) shall be high impact zinc die-cast case, Acetal pivot shoes and stainless steel tracks.

C. Fasteners

1. Fasteners shall be aluminum, non-magnetic stainless steel or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors and other components of the window units.
2. Exposed fasteners shall not be permitted on exterior except where unavoidable for the application of hardware.

D. Weatherstrip

1. Internal weather-strip shall be Neoprene, EPDM or TPE (Santoprene®) bulb style with a rigid Polypropylene base as tested and approved by the window manufacturer.  
All weather-strip components shall be field replaceable.
2. Primary (exterior) weather-seal shall be a blade style 70 durometer EPDM gasket.

E. Thermal Barrier

1. Frame and sash members must include a thermal break, using a concealed low conductance poured-in-place, two-part Polyurethane barrier.
2. The Polyurethane must be poured into pre-finished and mechanically pre-treated cavities to create a composite bond.
3. After proper curing; the aluminum bridge section must be removed to provide a nominal 1/4" separation between exterior and interior sections.

F. Sealant

1. Sealants shall comply with all provisions of AAMA 800 and/or Federal Specifications FS-TT-001 and 002 series.
2. Frame and sash joinery sealants shall be suitable for application as tested and approved by the window manufacturer.

G. Glass

1. Provide glass units in accordance with Section 08800 of the project specification.  
Accommodations for 1" thick glass shall be standard.  
*Glazing tape and sealant are visible from the exterior.*  
*The use of tinted glass, dark spacer and or reflective glass is recommended.*

H. Glazing materials:

1. Sash ventilators shall be factory structural silicone glazed for long-term "no-sag" performance. "Dry" glazing or non-structural glazing of ventilators not allowed.  
Setting blocks and edge blocks and accessories shall be silicone in accordance with the GANA Glazing Manual.
2. Spacer tape in continuous contact with structural silicone shall be tested for compatibility and approved by the sealant manufacturer for the intended application.

## 2.02 Fabrication

A. General

1. Units shall be able to be re-glazed without dismantling the master or vent frame.
2. Main frame and vent extrusions shall have a wall thickness of 0.125".
3. Mechanical fasteners and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
4. Accurately fit joints, make joints flush, hairline and weatherproof.
5. Factory glaze units wherever practical and possible for applications indicated.

B. Frame

1. Main frame shall be no less than 2 7/8" deep.
2. Frame extrusions shall be of tubular design.
3. Frame corners shall be mitered, reinforced with extruded corner keys and hydraulically crimped and sealed to form a weathertight joint.

C. Ventilator

1. Vent frame shall be no less than 2 7/8" deep.
2. Vent frame extrusions shall be of tubular design.

3. Vent corners shall be mitered, reinforced with extruded corner keys and hydraulically crimped and sealed to for a weathertight joint.
4. Vent frame shall utilize two rows of bulb style weather-strip and shall be pressure equalized.

D. Screens

1. Screen frames shall be 6063-T5 extruded aluminum in compliance with ANSI/SMA 1004 with removable vinyl spline.
2. Screen mesh shall be 16 x 18 fiberglass or aluminum in compliance with GSA-FS-RR-W-365.
3. Screen mounting holes shall be factory drilled.
4. Screen corners shall be mitered and joined with a corner key for strength and alignment.

E. Finish

1. Organic
  - a. Finish all exposed areas of aluminum windows and components with organic coating of type and color as selected by the architect.
  - b. Finish shall be certified by the manufacturer to meet or exceed AAMA 2605 specification.
- OR-
2. Anodic
  - a. Finish all exposed areas of aluminum windows and components with electrolytically deposited color in accordance with Aluminum Association Designation AA-M10-C22-\_\_.

*\*\* Eco-friendly acid etch is standard.*

<u>AA Description</u>	<u>Description</u>	<u>Arch. Class</u>	<u>AAMA Spec.</u>
AA-M10-C22-A41	Clear Anodized	I (215-R1)	611-98
AA-M10-C22-A31	Clear Anodized	II (204-R1)	611-98
AA-M10-C22-A44	Color Anodized	I	611-98

3. Exposed operating hardware shall have painted or anodized color finishes which are complementary or compatible to the window surface finish as determined by the manufacturer.

## PART 3 EXECUTION

### 3.01 Inspection

A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface and are in accordance with the approved shop drawings.
2. If substrate preparation is the responsibility of another trade; notify architect of unsatisfactory preparation before proceeding.

### 3.02 Installation

- A. Work to be completed in accordance with the approved shop drawings and specifications by skilled tradesmen.
- B. Set units plumb and level in a single plane for each wall plane without warp or rack of frames or vents. Adequately anchor units in place separating aluminum and other corrodible surfaces from sources of corrosion or electrolytic action.
- C. Adjust window units for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation.
- E. Leave all exposed surfaces clean, smooth and free of debris.



### 3.03 Anchorage

- A. Adequately anchor to maintain permanent position when subjected to normal, thermal, building movement and specified wind loads.

### 3.04 Cleaning and Protection

- A. After completion of installation, units shall be inspected, adjusted and promptly cleaned to prevent damage to the finish or glazing surfaces.
- B. Adjust operating sash, screens, hardware and accessories for a tight fit at contact points and weather-stripping for smooth operation and weather tight closure. Lubricate hardware and moving parts as necessary.
- C. Remove excess sealant, labels, dirt and other substances.
- D. Upon Completion; advise owner or general contractor to monitor and protect the installed and exposed window surfaces from abrasion and damaging contaminants such as muriatic acid, alkaline products, permanent stains, dirt and scum throughout the remaining construction period.

— End of Section —