

SECTION 08520

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SUMMARY

A. Related Sections:

1. 07200 - Joint Sealers.
2. 08800 - Glass and Glazing.

1.02 REFERENCES

A. AAMA/NWWDA 101-97 Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.

B. American Society for Testing and Materials (ASTM):

1. A123-89a Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. C509-94 Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
3. D2000-96 Classification System for Rubber Products in Automotive Applications
4. E283-91 Test Method for determining the Rate of Air Leakage Through Exterior Windows, Curtain walls, and Doors Under Specified Pressure Differences Across the Specimen.
5. E330-96 Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
6. E331-96 Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

C. Florida Department of Education, Office of Educational Facilities - State Requirements for Educational Facilities - 1999 (SREF).

D. Florida Building Code (FBC).

1.03 DEFINITIONS

A. Exposed: Any fasteners, anchors, clips, accessories, sealants, etc., visible on the exterior or interior side of

Project Name

M-DCPS MASTER

March 03

Project No.

SPECIFICATION GUIDELINES

08520 - 1

a window when in the maximum open position.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's specifications and catalog cuts.
- B. Shop Drawings:
 - 1. Indicate elevations, locations, markings, quantities, materials, jamb conditions, metal thicknesses, sizes, shapes, dimensions, and finishes.
 - 2. Indicate locations for installing frames.
 - 3. Indicate methods of assembling, connecting, anchoring, fastening, and bracing.
 - 4. Indicate types, material, finishes, sizes, and locations of hardware.
 - 5. Indicate operable and fixed panels of each window unit.
 - 6. Identify each type of mullion and anchorage system.
- C. Missile Impact Certification:
 - 1. Miami-Dade County product approval demonstrating compliance with FBC missile impact criteria for window type, size, and configuration.
 - 2. Comply with calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project according to American Society of Civil Engineers (ASCE) 7-98 using a wind speed of 146 mph, exposure category "C", and a wind load importance factor of 1.15.
- D. Calculations/Test Results/Details:
 - 1. Pressure test results by a M-DCPS accepted nationally recognized independent laboratory for supplied window units.
 - 2. Installation details, signed and sealed by a Florida registered professional engineer, with anchorage system noted and specified to comply with ASCE 7-98.
- E. Samples:
 - 1. Aluminum and color finish
 - 2. Sealants: Manufacturer color chart.

1.05 SYSTEM DESCRIPTION

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

March 03
08520 - 2

- A. Performance Requirements: Fabricate units to comply with:
 - 1. Design Wind Velocity Pressures: According to ASCE 7-98.
 - 2. Requirements of testing and certification by AAMA/NWWDA 101 for commercial or higher rated windows complying with AAMA/NWWDA 101, Table 2.1 Gateway Performance listed values as determined by ASCE 7-98.
 - 3. Provide double glazed windows with 45 condensation resistance factor, according to AAMA 1502.6.

1.06 QUALITY ASSURANCE

- A. Comply with Florida Department of Education, Office of Educational Facilities - State Requirements for Educational Facilities - 1999 (SREF).
- B. Notify inspector within 24-hours after completion of windows to arrange for inspection.
- C. Do not conceal anchors and connections until inspection is complete.
- D. Exposed fasteners, when the window is in a closed or opened position, shall be tamperproof.
- E. Means of egress shall comply with the requirements of SREF without compromising the aesthetics of the windows.
 - 1. Designated egress windows shall comply with handicap accessibility requirements, opening from the inside with one 5 pound movement, without tools. Screens or louvers of egress windows shall open with the same one movement opening of the egress window.
- F. Coordination of Fabrication:
 - 1. Check actual window openings in construction work by accurate field measurement before fabrication. Show recorded measurements on final shop drawings.
 - 2. Coordinate fabrication schedule with construction progress as directed by Contractor to avoid delay of work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver packaged materials in manufacturer's original,

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

March 03
08520 - 3

unopened, labeled containers.

- B. Store items to prevent damage to materials or structure and in approximate order of use to avoid excessive rehandling.
- C. Repair damaged materials and replace materials that cannot be repaired to original condition. Replace warped materials.
- D. Protect exposed surfaces of metal with removable covering to prevent damage to finish. Protect metal while adjacent painting and caulking are being performed.

1.08 WARRANTY

- A. Submit written warranty, signed jointly by manufacturer, installer, and Contractor, agreeing to replace aluminum window units that fail in materials or installations within 3 years after substantial completion. The 3 parties jointly and separately are responsible for the installation for the warranty period.
- B. Failure of materials or installation shall include, but not be limited to, excessive leakage or air infiltration, excessive deflections, faulty operation of sash, deterioration of finish or metal in excess or normal weathering, and defects in hardware and weatherstripping.

PART 2 PRODUCTS

- A. Missile Impact Resistant Single Hung: Tempered glass and exterior operable certified missile impact resistant metal louvers:
 - 1. Sol-A-Trol - Series 540-S-IMP.
 - 2. Superior - Series 5500.
 - 3. Accepted equivalent.
- B. Missile Impact Resistant Double Hung: Tempered glass and exterior operable certified missile impact resistant metal louvers:
 - 1. Sol-A-Trol - Series 540-IMP.
 - 2. Superior - Series 5500.
 - 3. Accepted equivalent.

- C. Missile Impact Resistant Louverless Windows: Certified missile impact resistant glass.
 - 1. Sol-A-Trol.
 - 2. Superior.
 - 3. Traco.
 - 4. Accepted equivalent.

- D. Acoustical:
 - 1. Milco - Fixed.

- E. Communication Window: Horizontal pass-through, 48" x 44" high with wire glass.
 - 1. Traco - Countertop unit.
 - 2. Accepted equivalent.

2.02 MANUFACTURED UNITS

- A. Missile Impact Resistant Louvered Windows:
 - 1. Comply with ANSI/AAMA 101, Class HC40.
 - 2. 4" exterior extruded aluminum louvers. Maximum louver length shall be 34 inches.
 - 3. Vinyl weatherstripping, tube type at each louver blade.
 - 4. Stainless steel exterior louver jamb weatherstripping.
 - 5. Hinged louver section opposite lower sash shall comply with emergency fire exit requirements.
 - a. Emergency Rescue Openings: Frame and louvers shall be a side hinged assembly to allow an outward pivot providing a minimum clear opening width of 32 inches and a minimum clear opening height of 48 inches. The assembly shall be operable by an inside single operation release without tools.
 - 6. Pair of counterbalancing mechanisms complying with AAMA 902.2 - Specification for Sash Balances, pair of lift handles on lower rail of lower sash.
 - 7. Provide latch at meeting rails to lock sash in closed position.
 - a. Exception: At emergency rescue windows (secondary means of egress), the latching device shall not exceed 48 inches above finish floor and shall open from the inside with one 5 pound outward or upward

movement, and without tools. Screens, louvers, or shutters shall open with the same one movement opening of the egress window.

8. Provide for water drainage on louvers.
9. Glazing: 1/4" tempered glass.
10. Comply with items listed in Article 2.03 Components.
11. Louver Operating Device and Lock:
 - a. Combination of lever handle and cam-type latch.
 - b. Rotary gear crank.

B. Acoustical Windows:

1. STC Ratings: As shown on drawings.
2. Double Glazing: Tempered Glass.

2.03 COMPONENTS

A. Aluminum Extrusions: 6063-T5, alloy, minimum 22,000 psi ultimate tensile strength and minimum 0.062" thickness at any location for main frame and sash members.

B. Window Fabrication:

1. Provide manufacturer's standard fabrication and accessories that comply with indicated standards and are reglazable without dismantling of sash framing.
2. Include complete assembly of components and anchorage of window units, and prepare sash for glazing except where preglazed at factory.
3. Sizes and Profiles:
 - a. Fabricate to sizes and profiles indicated on final shop drawings.
 - b. Details in drawings are based upon standard details by one or more manufacturers.
 - c. Similar details by other manufacturers will be acceptable, provided they comply with size requirements, minimum/maximum profile requirements, and referenced performance standards and are approved by the Board.
4. Preglazed Fabrication:
 - a. Preglaze window units at factory where possible and practical.

b. Comply with requirements of Section 08800, in addition to requirements of ANSI/AAMA 101.

5. Provide subframes with anchors for window units as shown, of profile and dimensions indicated minimum 0.062" thickness extruded aluminum, with mitered or coped corners, welded and dressed smooth or with concealed mechanical joint fasteners. Finish to match window units. Seal joints on inside with sealant.

C. Fasteners:

1. Aluminum, nonmagnetic stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.
2. Reinforcement: Fasteners screw-anchored into aluminum less than 0.125" thick, shall have interior reinforced with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.
3. Exposed fasteners, when the window is in a closed or opened position, shall be tamperproof.
4. Do not use exposed fasteners except for application of hardware.
5. Exposed fasteners shall match finish of adjoining metal.
6. Provide tamperproof machine screws or rivets for exposed fasteners.

D. Anchors, Clips and Window Accessories: Depending on strength and corrosion-inhibiting requirements, fabricate units of aluminum, nonmagnetic stainless steel, or hot-dip zinc coated steel complying with ASTM A123. Exposed items shall match the window frame color.

E. Compression Glazing Strips and Weatherstripping: Molded neoprene gaskets complying with ASTM D2000 designation 2BC415 to 3VC620, or molded expanded neoprene gaskets complying with ASTM C509, Grade 4.

F. Sealant:

1. Seal frame joints, completely filling voids, flush with exposed surfaces. Provide type recommended by window manufacturer for joint size and movement, to remain

- permanently elastic, non-shrinking, and non-migrating.
- 2. Comply with Section 07900 for materials and installation of sealants.
- 3. Color shall be as selected by A/E.

G. Friction Shoes: Nylon or other non-abrasive, nonmetallic, non-staining, non-corrosive durable material.

H. Balance Mechanism: Spring loaded, with adjustable tension control.

I. Mullions:

- 1. Provide mullions and cover plates as shown, matching window units, and complete with anchors for support and installation.
- 2. Allow for erection tolerances and provide for movements of window units due to thermal expansion and building deflections.

J. Insect Screens:

NOTE TO SPECIFIER: Screens are not required on windows except at kitchen and food preparation areas, cafeterias, home economics rooms, existing toilet rooms, and other locations according to program requirements.

- 1. Provide insect screen unit for each operable exterior sash.
- 2. Locate screen units on either side or outside of sash, depending upon window type.
- 3. Design window units and hardware to accommodate screens in a tight-fitting removable arrangement, with a minimum of exposed fasteners and latches, and without necessity of wickets for hardware access.
- 4. Fabricate screen frames of either extruded or formed aluminum tubular-shaped members minimum 0.040" wall thickness, with mitered or coped joints and concealed mechanical fasteners, with removable PVC spline-anchor concealing edge of screen fabric.
- 5. Finish frames to match window units.
- 6. Screens: Insect wire fabric, 18/16 mesh of 0.024" diameter 5052 aluminum wire, complying with FS RR-W-365, Type VII.

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

March 03
08520 - 8

NOTE TO SPECIFIER: Kynar 500 is the preferred finish and is required in areas of high corrosive conditions (such as coastal locations). Other finishes are allowed.

K. Finish for Windows and Window Components:

1. Kynar 500 with 70 percent resin.
2. Anodized: NAAMM AA-C2241, Class I, minimum 0.7 mils, natural aluminum color (or color as selected by A/E).
3. Baked enamel.
4. Electrostatic Paint (ESP).
5. Color as selected by A/E.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install windows according to Section 08800 and manufacturer's printed instructions and accepted shop drawings under direct supervision of manufacturer's representative.
- B. Erect windows plumb, level, and true.
 1. Do not distort windows by erection screws or fittings.
 2. After window erection, apply an even spray coat of liquid wax to window surfaces for protection against stains and scratches.
- C. Separate aluminum from masonry and ferrous metals by use of bituminous coating or gasketing to eliminate possibility of corrosion from electrolytic action.
- D. Protect work from corrosion, prime coat concealed steel stiffeners, anchors, brackets, fasteners, and the like before installation and seal joints between window frames and building tightly and continuously.
- E. Maintain wire or clips holding ventilators closed in place until windows are completely erected and hardware is attached.

3.02 ADJUSTING AND CLEANING

- A. Adjust operating sash and hardware to provide tight fit at contact points and at weatherstripping, and to ensure

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

March 03
08520 - 9

smooth operation and weathertight closure.

B. Cleaning:

1. Clean surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.
2. Remove excess glazing and sealant compounds, dirt, and other substances.
3. Lubricate hardware and moving parts.
4. Clean glass of preglazed units promptly after installation of windows.
5. Comply with Section 08800 for cleaning and maintenance.

C. Protection: Provide protection to prevent damage to window units.

END OF SECTION