

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes extruded aluminum windows with operating sash, operating hardware, and insect screens.
- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealers: Perimeter sealant and back-up materials.
 - 2. Section 08 41 13 - Aluminum-Framed Storefronts: Operable sash within storefront system.
 - 3. Section 08 80 00 - Glazing.

1.2 REFERENCES

- A. Aluminum Association:
 - 1. AA DAF-45 - Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association:
 - 1. AAMA 101 - Voluntary Performance Specification for Windows, Skylights and Glass Doors.
 - 2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
 - 4. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 5. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - 6. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
 - 7. AAMA MCWM-1 - Metal Curtain Wall manual.
- C. American Society of Civil Engineers:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- D. ASTM International:
 - 1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 3. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 4. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 - 5. ASTM D3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns.

6. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 7. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
 8. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
 9. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
 10. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
 11. ASTM F588 - Standard Test Methods for Resistance of Window Assemblies to Forced Entry Excluding Glazing.
- E. Consumer Product Safety Commission:
1. CPSC 16 CFR 1201; Safety Standard for Architectural Glazing.
- F. Glass Association of North America:
1. GANA - Glazing Manual.
- G. National Fenestration Rating Council Incorporated:
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.
- H. SSPC: The Society for Protective Coatings:
1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
 2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.3 SYSTEM DESCRIPTION

- A. Windows: Tubular aluminum sections, factory fabricated, factory finished, factory glazed vision glass, infill panels, related flashings, anchorage and attachment devices.
- B. Configuration: Conform with AAMA 101 Designations for windows required for Project; P-projected, F-fixed non-operable, sash.
- C. Glazing: Interior.
- D. Forced Entry Resistance: Conform to ASTM F588 Type B&E.

1.4 PERFORMANCE REQUIREMENTS

- A. System Design: Design and size components to withstand dead loads and live loads caused by pressure and negative wind loads acting normal to plane of window to design pressure of 75 lb/sq ft and suction of 75 lb/sq ft and as tested in accordance with ASTM E330.
- B. Deflection: Limit member deflection to 1/200 of longer dimension with full recovery of glazing materials.

- C. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- D. Thermal Transmittance of Assembly: Maximum U Value of 0.45 Btu/sq ft per hour per deg F when measured in accordance with AAMA 1503.
- E. Air Infiltration: Limit air infiltration through assembly to 0.1 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 6.24 psf as measured in accordance with ASTM E283.
- F. Water Leakage: None, when measured in accordance with ASTM E331.
- G. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, and migrating moisture occurring within system, to exterior by weep drainage network.
- H. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air barrier and vapor retarder.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related Work; and installation requirements.
- C. Product Data: Submit component dimensions, anchorage and fasteners, glass, internal drainage, and typical details.
- D. Samples: Submit two 12 x 12 inches in size illustrating window frame section mullion section, screen and frame, factory finished aluminum surfaces, glazing materials. Submit two samples of operating hardware.
- E. Manufacturer's Certificates: Certify Product performance ratings by independent third party such as AAMA, CAWM, or NFRC as meeting or exceeding specified requirements.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Aluminum Windows: Fabricate and label window assemblies in accordance with AAMA 101 for types of windows required.
 - 2. Insulated Glass: Fabricate insulated glass units in accordance with GANA (formerly FGMA) Glazing Manual.
 - 3. Safety Glass: Conform to CPSC 16 CFR 1201 and applicable codes.
 - 4. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing commercial aluminum windows with minimum ten years documented experience, and with service facilities within 100 miles of Project.

WCPS: Boonsboro High School
Window & Door Replacement

- B. Installer: Company specializing in installation of commercial aluminum windows with minimum ten years documented experience.

1.8 PRE-INSTALLATION MEETINGS

- A. Section 01 33 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.9 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Handle Work of this section in accordance with AAMA MCWM-1 - Curtain Wall Manual #10.
- C. Protect factory finished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Do not install glazing materials when ambient temperature is less than 40 degrees F.
- C. Maintain this minimum temperature during and after installation of glazing materials.

1.11 WARRANTY

- A. Section 01 70 00 - Execution Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same.
- C. Warranty: Include 15 year coverage for finish.

PART 2 PRODUCTS

2.1 ALUMINUM WINDOWS

- A. Manufacturers:
 - 1. YKK AP America, Inc. Model YES 600 (Thermally Broken). (Basis of Design) with YES SSG vent at operable locations.
 - 2. EFCO Corp.
 - 3. Kawneer Co., Inc.
 - 4. Traco.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Aluminum windows thermally broken with interior portion of frame insulated from exterior portion; applied glass stops of snap-on type.

2.2 COMPONENTS

- A. Extruded Aluminum: ASTM B221; 6063 alloy, T5 temper.
- B. Sheet Aluminum: ASTM B209; 5005 alloy, H15 or H34 temper.
- C. Steel Sections: Profiled to suit mullion sections.
- D. Insulating Glass: Sealed double pane units conforming with requirements in Section 08 80 00.
- E. Hardware:
 - 1. Operator: Lever action handle fitted to projecting sash arms with limit stops.
 - 2. Projecting Sash Arms: Zinc plated steel, friction pivot joints with nylon bearings, removable pivot clips for cleaning.
 - 3. Pulls: Manufacturer's standard.
 - 4. Sash lock: Lever handle with cam lock.
- F. Sills: Extruded aluminum; sloped for positive wash; fit under sash 1/2 inch beyond wall face; one piece full width of opening jamb angles to terminate sill end.
- G. Stools: Extruded aluminum; sloped for positive wash; fit under sash to Project 1/2 inch beyond wall face; one piece full width of opening.
- H. Operable Sash Weather Stripping: Nylon pile; permanently resilient, profiled to effect weather seal.
- I. Insect Screen Frame: Rolled steel frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
- J. Insect Screens: ASTM D3656, Class 2, 18 by 14 mesh, gray color.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Galvanized steel.
- B. Bituminous Paint: Fibered asphaltic type.
- C. Limit Stops: Resilient rubber.

2.4 FABRICATION

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Arrange fasteners and attachments to ensure concealment from view.

- E. Prepare components with internal reinforcement for operating hardware.
- F. Permit internal drainage weep holes and channels to migrate moisture to exterior. Furnish internal drainage of glazing spaces to exterior through weep holes.
- G. Assemble insect screen frame, miter and reinforce frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.
- H. Double weatherstrip operable units.
- I. Factory glaze window units. Install glass and infill panels in accordance with Section 08 80 00, to glazing method required to achieve performance criteria.

2.5 SHOP FINISHING

- A. Finish Coatings: Conform to AAMA 611.
- B. Exterior Surfaces: Clear anodized.
- C. Interior Surfaces: Clear anodized finish.
- D. Clear Anodized Aluminum Surfaces: AA-M12C22A41 non-specular as fabricated mechanical finish, medium matte chemical finish, and Architectural Class I 0.7 mils (0.018 mm) clear anodized coating.
- E. Locks, Operators, and Exposed Hardware: Enameled to match window finish.
- F. Pull Handles: Color as selected.
- G. Screens: Gray color.
- H. Apply coat of bituminous paint on concealed aluminum surfaces in contact with cementitious or dissimilar materials.
- I. Shop and Touch-Up Primer for Steel Components: SSPC Paint 25 red oxide.
- J. Concealed Steel Items: Galvanized to ASTM A123/A123M; minimum 1.2 oz/sq ft coating thickness; galvanize after fabrication.
- K. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this section.

3.2 INSTALLATION

- A. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- B. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent Work.
- C. Install sill and sill end angles.
- D. Install thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- E. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.
- F. Install operating hardware.

3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.4 ADJUSTING

- A. Section 01 70 00 - Execution Requirements: Testing, adjusting, and balancing.
- B. Adjust hardware for smooth operation and secure weathertight closure.

3.5 CLEANING

- A. Section 01 70 00 - Execution Requirements: Final cleaning.
- B. Remove protective material from factory finished aluminum surfaces.
- C. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
- D. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

3.6 SCHEDULES

- A. As indicated on Drawings.

END OF SECTION