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Model PLEB-04

Specifiers Note: All text in blue must be carefully reviewed and edited to meet the requirements. Delete or edit where necessary and must be coordinated with other specifications and drawings.

SECTION 10210 EXTRUDED ALUMINUM PENTHOUSES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Louvered Penthouses
2. Screens
3. Blank-off panels for louvers

- B. Related Sections included the following:

1. Section 033000 – Cast-In-Place Concrete
2. Section 042000 – Unit Masonry
3. Section 051000 – Structural Metal Framing
4. Section 061000 – Rough Carpentry
5. Section 074213 – Metal Wall Panels
6. Section 076000 – Flashings and Sheet Metal
7. Section 079200 – Joint Sealants
8. Section 099100 – Painting

- C. References

1. AAMA 2604 – High Performance Organic Coatings on Architectural Extrusions and Panels.
2. AAMA 2605 – High Performance Organic Coatings on Architectural Extrusions and Panels.
3. AMCA 500-L – Test Methods for Louvers.
4. AMCA 511 – Certified Ratings Program for Air Control Devices.
5. ASCE 7 – Minimum Design Loads for Buildings and Other Structures
6. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
7. ASTM B221 – Standard Specifications for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
8. ASTM D822 – Standard Practice for Filtered Open-Flame Carbon-Arc Exposure of Paint and Related Coatings.
9. ASTM D4214 – Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films.

10. ASTM D2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
11. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference.

1.3 DEFINITIONS

- A. Louver Terminology: Definitions for terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in the Section or in referenced standards.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide louvers capable of withstanding the effects of gravity loads and the following loads and stresses with limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act on vertical projection of louvers.
 1. Wind Loads: Determine loads based on a uniform pressure of (25) lbs./sq. ft., acting inward or outward @ delta L/180 deflection.
- B. Thermal Movements: Provide louvers that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperature by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120 deg. F, ambient 180 deg. F, material surfaces.
- C. Air Performance and Water Penetration: Provide louvers complying with performance requirements indicated, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.5 SUBMITTALS

- A. Submit under provisions of Section 089000
- B. Product Data: For each product to be used, including:
 1. Manufacturer's product data including performance data.
 2. Installation Instructions
 3. Maintenance and Operations Manuals
- C. Shop Drawings
 1. Submit shop drawings indicating materials, construction, dimensions, accessories, and installation details.
- D. Samples
 1. Submit color chip sample for units with factory-applied paint.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:

1. The manufacturer will have implemented the management of quality objectives, continual improvement, and monitoring of customer satisfaction to assure that customer needs and expectations are met.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
- B. Storage: Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.
- C. Handling: Protect materials and finishes during handling and installation to prevent damage
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings.
 - a. Established Dimensions: Where field measurement cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating louvers without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

2.7 PROJECT CONDITIONS

- A. Manufacturer warrants products of its manufacture to be free of defect in fabrication and materials for a period of 1 year. Warranty applies within the 30 day-period after shipment from manufacturing plant or no more than 18 months after shipment.
- B. Manufacturer shall provide a standard 5-year limited warranty on Kynar finishes or 20 year limited warranty for Fluoropolymer-based finish.
 1. Finish Coating will not peel, blister, chip, crack, or check.
 2. Chalking, fading, or erosion of finish when measured by the following tests:
 - a. Finish coating will not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
 - b. Finish coating will not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822
 - c. Finish coating will not erode at a rate in excess of .01 mils/year confirmed by Florida test samples.

PART 2 – PRODUCTS

2.1 WALL LOUVERS

- A. Manufacturer: DOWCO Products Group
1855 So. 54th Ave. Cicero, IL. 60804
Tel. (708) 652-9100 Fax. (708) 652-9158
email: info@safefair-dowco.com

- B. [Other Available Manufacturers – Subject to compliance with requirements stated within.](#)

1. *(List acceptable equals by name)*

2.2 MATERIALS

- A. Aluminum Extrusions: ASTM B 221, alloy 6063-T5 or T52.
- B. Aluminum Sheet: ASTM B 209, alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Aluminum Castings: ASTM B 26/B 26M, alloy 319.
- D. Fasteners: Of same basic metal and alloy as fastened metal or 300 Series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.
 - 1. Use types and sizes to suit unit installation conditions.
 - 2. Use Phillips flat head screws for exposed fasteners, unless otherwise indicated.
- E. Post-installed Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION, GENERAL

- A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field bolted assembly with close fitting joints in jambs and mullions, reinforced with splice plates.
 - 1. Continuous Vertical Assemblies. Fabricate units without interrupting blade-spacing pattern.
- C. Maintain equal louver blade spacing to produce uniform appearance.
- D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
 - 1. Frame Type: Channel, unless otherwise indicated in the drawings.
- E. Include supports, anchorages and accessories required for complete assembly.
- F. Provide vertical mullion of type and at spacing indicated, but not more than recommended by manufacturer, or 60 inches (1524) oc, whichever is less.
 - 1. Where indicated in the drawings, provide visible mullions at required location or invisible mullions fully recessed behind louver blades. Where length of louver exceeds fabrication and handling limitation, fabricate with close fitting blade splices designed to permit expansion and contraction.
- G. Where indicated, provide subsill made of same material as louvers or extended sill for recessed louvers.
- H. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer, concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.4 LOUVERED PENTHOUSE

- A. Basis-Design Product:
Dowco Products Group Model PLEB-04
 - 1. Louver Depth: 4 inches (102mm)
 - 2. Blade Angle and Spacing: 45 degrees and 4-1/2" (114mm) oc.
 - 3. Frame and Blade Nominal Thickness: As required to comply with structural performance requirements, but not less than .081 inch (2.1mm)
 - 4. Corners: [Mitered or post corner](#)

5. Supports: 2" x 2" x 1/4" (51mm x 51mm x 6.35mm) aluminum vertical angle support concealed from view
6. Roof: .063" (1.6mm) thick formed aluminum, alloy 3003-H14 undercoated with black tar.
7. Roof Supports: 2" x 2" x 1/4" (51mm x 51mm x 6.35mm)
8. Performance Requirements:
 - a. Free Area: Not less than 7.92 sq. ft on 48" x 48" (1219mm x 1219mm) louver (50%)
 - b. Water Penetration: 879 FPM (268) velocity through free area
 - c. Static Pressure Loss: Not more than .185" (4.7mm) water gauge (0.01kPa) at an airflow of 1,000 FPM (5.08m/s) velocity through free area

2.5 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 1. Screen Location for Fixed Louvers: Interior face.
 2. Screening Type: Bird screening.
- B. Secure screens to louver frames with stainless steel machine screw, spaced a maximum of 6 inches (152mm) from each corner and at 12" oc. (305mm)
- C. Louver Screen Frames: Provide rewireable framed removable screen.
 1. Metal: Same kind and form of metal as the louvers.
 2. Finish: Same finish as louver frame to which louver screens are attached.
 3. Type: U-shaped frame extruded aluminum.
- D. Louver Screening for Aluminum Louvers:
 1. Bird Screen:
 - a. Aluminum: Aluminum, 3/4inch by 0.050 inch (19 mm by 1.27 mm), expanded, flattened.
 - b. Aluminum: Aluminum, 1/2inch by 0.050 inch (12.7 mm by 1.27 mm), expanded, flattened.
 - c. Aluminum: Aluminum, 1/2 inch by 0.063 inch (12.7 mm by 1.6 mm), wire screen
 - d. Stainless Steel: Stainless Steel, 1/2 in by 19 ga. (12.7 mm x 1.02 mm), welded
 - e. Stainless Steel: Stainless Steel, 1/2 in by 16 ga. (12.7 mm x 1.6 mm), welded
 - f. Galvanized Steel: Galvanized Steel, 1/2 in by 19 ga. (12.7 mm x 1.02 mm), welded
 - g. Galvanized Steel: Galvanized Steel, 1/2 in by 16 ga. (12.7 mm x 1.6 mm), welded
 2. Insect Screen:
 - a. 18 x 14 aluminum mesh 0.011 inch (0.28 mm) diameter wire.
 - b. 18 x 18 mesh stainless steel 0.009 inch (0.23 mm) diameter wire.

2.6 BLANK-OFF PANELS

1. Non-Insulated Blank Off Panels factory installed with removable screws and foam tape gaskets:
 - a. 0.040 inch (1 mm) aluminum sheet
 - b. 0.050 inch (1.3 mm) aluminum sheet
 - c. 0.060 inch (1.5 mm) aluminum sheet
 - d. 0.080 inch (2 mm) aluminum sheet
 - e. 0.125 inch (3.2 mm) aluminum sheet
2. Insulated Blank Off Panels factory installed with removable screws and foam tape gaskets:
 1. 1 inch (25 mm) thick and to be faced on both sides with 0.032 inch (0.81 mm) thick aluminum sheet. Panels to be fabricated with rigid fiberboard core having an R-Value of 4. Panel perimeter frame to be a 0.063 inch (1.6 mm) thick extruded aluminum Z shape. Panels to be finished to match louvers on one side only.
 2. 2 inch (51 mm) thick and to be faced on both sides with 0.032 inch (0.81 mm) thick aluminum sheet. Panels to be fabricated with rigid fiberboard core having an R-Value of 8. Panel perimeter frame to be a 0.063 inch (1.6 mm) thick extruded aluminum Z shape. Panels to be finished to match louvers on one side only.

2.7 FABRICATION

A. Fabrication Requirements:

1. Performance: Fabricate as required for optimum performance with respect to water penetration, strength, durability, and appearance.
2. Size: Fabricate louvers in walls to meet dimensions indicated on Contract Documents.
3. Field Measurement: Verify size, location, and placement of louvers before fabrication.
4. Shop Assembly:
 - a. Fabricate to minimize field adjustments, splicing, mechanical joints and field assembly of units.
 - b. Preassemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling.
 - c. Clearly mark units for reassemble and coordinated installation.
5. Accessories: Include supports, anchorages and accessories required for complete assembly.
6. Vertical Mullions: Provide vertical mullions of type and spacing indicated but not further apart than recommended by the manufacturer.
7. Horizontal Mullions: Provide horizontal mullions at horizontal joints between louver units except where continuous vertical assemblies are indicated.
8. Connections: Join frame and blade members to one another by mechanical fastener, except where field bolted connections between frame members are made necessary by size of louvers.
9. Spacing: Maintain equal blade spacing to produce uniform appearance.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish louver after assembly.

2.9 ALUMINUM FINISHES

General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory. Protect finishes on exposed surfaces prior to shipment. Remove scratches and blemishes from exposed surfaces that will be visible after completing finishing process. Provide color as indicated or, if not otherwise indicated, as selected by architect.

B. Standard mill finish.

C. Prime Coat:

1. Apply alkyd prime coat following chemical cleaning and pretreatment.
2. Primer preparation for field painting

D. Fluorocarbon Two Coat Coating

1. Coating will conform to AAMA 2605.
2. Louvers to be finished with a minimum 1.0 mil (0.025 mm) thick full strength 70% resin, 2 coat Fluoropolymer system.
3. All aluminum will be thoroughly cleaned, etched, and given a chromatic conversion pretreatment before application of coating.

E. Fluorocarbon Three Coat Coating

1. Coating shall conform to AAMA 2605.

2. Louvers to be finished with a minimum 1.4 mil (0.035 mm) thick full strength 70% resin, 3 coat Fluoropolymer system.
 3. All aluminum shall be thoroughly cleaned, etched, and given a chromatic conversion pretreatment before application of coating.
- F. Clear Anodize
1. Class I Clear Anodize
 - a. Comply with Aluminum Association AA-C22A41. Clear anodized finish 215-R1.
 - b. Apply finish following chemical etching and pretreatment
 - c. Minimum thickness: 0.7 mils (0.018 mm).
 2. Class II Clear Anodize
 - a. Comply with Aluminum Association AA-C22A31. Clear anodized finish 204-R1
 - b. Apply finish following chemical etching and pretreatment
 - c. Minimum thickness: 0.4 mils (0.01 mm)
- G. Color Anodize
1. Class I Bronze Anodize
 - a. Light, Medium, Dark, Champagne
 - b. Comply with Aluminum Association AA-C2242 or AA-C2244.
 - c. Apply finish following chemical etching and pretreatment
 - d. Minimum thickness: 0.7 mils (0.018mm).
 2. Class I Black Anodize
 - a. Comply with Aluminum Association AA-C2242 or AA-C2244.
 - b. Apply finish following chemical etching and pretreatment
 - c. Minimum thickness: 0.7 mils (0.018mm).

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates and roof curb openings, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screw where required to protect metal surfaces and to make a weather tight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alteration, and refinish entire unit or provide new units.
- F. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic reaction by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.

- G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weather tight louver joints are required. Comply with Section 7 Section "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
 - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.