SECTION 07 42 13
ALUMINUM HONEYCOMB PANEL SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS
A. The drawings and provisions of the General Conditions, Supplementary Conditions and the sections included under Division 1 Specification Sections, apply to this section.

1.2 SUMMARY
A. This section includes aluminum honeycomb panels used as the exterior or interior cladding.

1.3 PERFORMANCE REQUIREMENTS
A. Structural performance: provide exterior/interior wall cladding assemblies capable of withstanding the effects of load and stresses from dead loads, wind loads, snow loads and normal thermal movement without evidence of permanent defects of assemblies or components.
   1. Dead load: As required by applicable building code.
   2. Live Load: As required by applicable building code.
   3. Wind Load: Uniform pressure (velocity pressure) of (Insert Design Criteria) lb/sq ft. (Insert Design Criteria), acting inward or outward.
   4. Thermal Movements: Provide assemblies that allow for thermal movements resulting from the following maximum changes (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components and other detrimental effects:
      a. Temperature Change (range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
B. Sealed joints shall allow free and silent movement of panels during expansion and contraction while preventing uncontrolled penetration of moisture.

C. Manufacturing, installation, and sealing shall prevent deformation of exposed surfaces.

D. Design panel system to accommodate substructure tolerance of +0 to -1/8 inch.

E. Not Permitted: Vibration harmonics; wind whistles; noises caused by thermal movement; thermal movement transmitted to other building elements; loosening, weakening or fracturing of attachments or components of system.

F. Preformed metal panel system to withstand code imposed design loads. Maximum allowable deflection of span: L/175.

G. Air Infiltration: Panel system shall not have air infiltration rate more than 0.06 cfm per sq. ft. of fixed wall area when tested in accordance with ASTM E283 at static air pressure differential of 1.57 psf.

H. Water Penetration: Panel system shall have no water penetration as defined by in test method when tested in accordance with ASTM E331 at inward static pressure differential of not less than 6.24 psf and not more than 12.0 psf.

1.4 SUBMITTALS

A. Product Data: Manufacturer's product literature for the panel specified.

B. Shop Drawings: For exterior/interior wall panel assemblies and accessories. Include plans; elevations; sections and details.

C. Structural Calculations: Submit a comprehensive analysis of design loads, including dead loads, live loads, wind loads and thermal movement.

D. Quality Assurance Submittals: Submit the following:
   1. Certificates: Product certificates signed by manufacturer certifying materials comply with the specified performance characteristics and criteria, and physical requirements.

E. Samples for initial selections: Manufacturer’s color charts showing the full range of colors available for units with factory-applied color finishes.

F. Samples for verification: Provide color samples of selected color. Samples shall involve normal color and texture variations, include sample sets showing the full range of variations expected.

G. Affidavit certifying that the material meets the requirements specified.
1.5 QUALITY ASSURANCE
A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the project is located and who is experienced in providing engineering services of kind indicated.
B. Manufacturer Qualifications: Minimum of 5 years experience in manufacturing wall panels similar to those specified.
C. Installer Qualifications: Acceptable to manufacturer.

1.6 DELIVERY, STORAGE & HANDLING
A. General: Comply with Division 1 Product Requirements Sections.
B. Ordering: Comply with manufacturer’s ordering instructions, and lead-time requirements to avoid construction delays.
C. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.
   1. Store materials in accordance with manufacturer’s recommendations.
   2. Handle materials carefully to avoid damage to materials and finishes.

1.7 PROJECT CONDITIONS
A. Field Measurements: Verify actual supporting and adjoining construction by field measurements before fabrication, and indicate recorded measurements on final shop drawings. Coordinate construction to ensure that wall panel assemblies fit properly to supporting and adjoining construction and coordinate schedule with construction progress to avoid delaying the work.
   1. Established dimensions: where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of wall panel assemblies corresponding to the established dimensions.

1.8 WARRANTY
A. Project warranty refers to Conditions of the Contract for project warranty provisions. Manufacturer’s warranty: submit, for Owner’s acceptance, manufacturer’s standard warranty documents executed by authorized company official. Manufacturer’s warranty is in addition to, and not a limitation of, other rights owner may have under Contract Documents.
B. The Contractor shall warrant the materials to be free of faults and defects in accordance with the General Conditions, except that the warranty shall be extended by paint manufacturer’s standard multi-year warranty. The warranty shall be in writing and shall be signed by the manufacturer.
PART 2 – PRODUCTS

2.1 MANUFACTURER
A. Manufacturers: Subject to compliance with requirements, provide products manufactured by:
   1. Firestone Metal Products, 1001 Lund Blvd., Anoka, MN 55330
      a. Series 10 – Aluminum Honeycomb Wall Panel System
      b. Alternate systems by other manufacturers/fabricators are to be submitted to the architect not less than 7 working days prior bid.

2.2 MATERIALS
A. Aluminum Face Sheet: ASTM B209, Aluminum Association specification sheet [3003-H14/3105-H14 for painted finish][5005-H34 for anodized finish].
C. Core: Aluminum cellular structure fabricated to form a hexagonal-shaped cell when expanded.
   1. Core Thickness: 0.92 inches
   2. Wall Thickness: 3 mm
   3. Cell Size: 3/4 inch
   4. Cell walls shall be perforated and kerfed.
D. Adhesive: Manufacturer’s recommended 2-part, 100 percent solids, epoxy adhesive designed specifically for wall panel laminations.
   1. Adhesive shall produce a semi-elastic bond resistant to heat, cold, and moisture.
   2. Contact adhesives are NOT acceptable.

2.3 FABRICATION, GENERAL
A. Composition
   1. Aluminum honeycomb panels shall be composed of an aluminum honeycomb core sandwiched and laminated with epoxy adhesive between two aluminum sheets.
      a. Bond integrity per ASTM D1781-76 and ASTM C481 Cycle B, shall be a minimum of 40 in-lb.in. (Peel Strength)
B. Aluminum face sheets
   1. Thickness: 0.040" for coil coated or coil anodized finish [0.063" for spray painted or batch anodized finish].

C. Tolerances
   1. Panel bow shall be a maximum 0.5 percent of panel dimension in width and length.
   2. Panel dimension shall allow for field adjustments, as recommended by manufacturer, where final dimensions cannot be established by field measurement before completion of panel manufacturing.
   3. Panel lines, breaks, and angles shall be sharp and true, and surfaces shall be free from warp or buckle.

D. Panel surfaces shall be free of scratches or marks caused during fabrication.

E. Ensure that entire project is manufactured from single color coil paint run to ensure color uniformity.

F. If a metallic color is selected ensure that panel grain is maintained. Under no circumstances are panel blank sizes to be rotated even if material waste is increased.

G. Condensation: Fabricate panels for control of condensation, including vapor inclusion of seals and provisions for breathing, venting, weeping and draining.

2.4 ACCESSORIES
A. All fasteners shall be concealed, non-corrosive type, as recommended by the panel manufacturer.

B. Flashing: Aluminum, same finish as for aluminum panel where exposed; secured with concealed fastening method.

C. Panel System Subgrits: Provide G90 galvanized steel of gauge and spacing required for panel system structural requirements, as recommended by panel manufacture and in accordance with approved shop drawings. To avoid galvanic reaction, separate dissimilar metals.

2.5 FINISHES, GENERAL
A. Comply with NAAMM’s Metal Finishes Manual for architectural metal products recommendations for applying and designating finishes.

2.6 ALUMINUM FINISHES
A. Panel Finishes:
   1. Coating shall be a fluoropolymer coating utilizing 70% Kynar 500 resins.
   2. Color as selected by owner/consultant from manufacturer’s standard colors.
3. Coating shall be factory applied on a continuous process paint line. Coating shall consist of a 0.2 mil prime coat, a 0.75 mil barrier coat, a 0.75 mil metallic/color coat containing 70% Kynar resins, and a 0.5 mil clear coat containing 70% Kynar resins (Note mil thickness is approximate.)

B. Pencil Hardness – ASTM D3352-74
C. Shall be HB-H minimum (Eagle Turquoise).
D. Impact Adhesion – ASTM D294-84
   1. Coating shall show no cracking and no loss of adhesion
E. Cure Test – NCCA 11-18
   1. Coating shall withstand 50+ double rubs of MEK.
F. Humidity Resistance – ASTM D2247-87
   1. Coating shall show no blisters after 3000 hours of 100% humidity at 95°F.
G. Salt Spray Resistance – ASTM B117-85
   1. After 3000 hours of exposure to 5% salt fog, at 95°F, scored sample shall show none or few #8 blisters, and less then 1/8” average creepage from scribe
H. Weatherometer Test – ASTM D882-86/G23-88 Coating shall show no cracking, peeling, blistering or loss of adhesion after 2000 hours.
   2. No chalking greater than #8 after 10 years Florida exposure at 45° S.
   3. Color Change – ASTM D2244-74
   4. Color change shall not exceed 5 NBS units after 10 years Florida exposure at 45° S.
   5. After 5000 hours in Atlas Weatherometer coating shall show no objectionable chalking or color change.
I. Abrasion Resistance – ASTM D968-81 Coating shall resist 65+/− 15 liters/mil minimum of falling sand.
J. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.
K. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 606.1 or AAMA 608.1.
   1. Color: As selected by Architect from the full range of industry colors and color densities.
PART 3 – EXECUTION

3.1 PREPARATION
A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation. Panel substructure shall be level and plumb. Panel substructure shall be structurally sound as determined by that subcontractor’s engineer. Panel substructure shall be free of defects detrimental to work and erected in accordance with established building tolerances. Coordinate delivery of such items to project site.

3.2 INSTALLATION
A. Erect panels level and plumb, in proper alignment in relation to substructure framing and established lines.
B. Panels shall be erected in accordance with approved shop drawings.
C. Panel anchorage shall be structurally sound and per engineering recommendations.
D. Where aluminum materials come in contact with dissimilar materials, an isolation shim or tape shall be installed at fastening locations.
E. Locate and place wall panels’ level, plumb, and at indicated alignment with adjacent work.

3.3 CLEANING AND PROTECTING
A. Clean exposed surfaces of wall panels that are not protected by temporary covering to remove fingerprints and soil during construction period.
B. Clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
C. Protect wall panels from damage during construction. Use temporary protective coverings where needed as approved by the wall panel manufacturer.
D. Clean and touch up minor abrasions in finished with air-dried coating that matches color and gloss, and is compatible with, factory-applied finish coating.

END OF SECTION