

MANUFACTURER
Firestone Metal Products
1001 Lund Boulevard
Anoka, MN 55303-1089

Series 1000UC
UNA-CLAD Panel

SECTION 07 42 43

ALUMINUM COMPOSITE 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 composite 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. Design the system to affect a positive mechanically fastened assembly to substructure, not dependent on adhesives.
- F. 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.
- G. Structural Performance / Uniform Load Deflection Test: Provide panel system that has been tested in accordance with ASTM E330 at a design pressure of 60 psf without deformation or failures of structural members. Maximum allowable deflection of span: $L/60$.
- H. 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.
- I. Static 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.
- J. Dynamic Water Penetration: Panel system shall have been tested in accordance with AAMA 501 and shall have passed with no uncontrolled water leakage at 10.00 psf dynamic pressure differential, with water application rate of 5 gallons/hr/sqft.
- K. State of Florida Building Code Product Approved Panel System

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 exterior 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 can not 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 1000 - Aluminum Composite Wall Panel System with UNA-CLIP

- 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. Panels shall be 4mm PE core, aluminum composite material.
- B. Composite panels shall have a Class "A" building material rating when tested in accordance with ASTM E84 (Steiner Tunnel Test) and shall exhibit a flame spread of 15 and a smoke developed rating of 120, with a center panel joint.
- C. Panels shall have passed the ASTM E108 modified test.

2.3 FABRICATION, GENERAL

- A. Composition
 - 1. Aluminum composite material shall be composed of a thermoplastic core sandwiched between two aluminum sheets formed in a continuous process with no applied glues or adhesives.
 - 2. 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 .020" of 3105 H25 aluminum alloy.
- C. Tolerances
 - 1. Panel bow shall not exceed 3.8% of panel overall dimension in width or length.
 - 2. Panel dimensions shall be such that there will be an allowance for field adjustment and thermal movement.
 - 3. Panel lines, breaks and curves shall be sharp, smooth and free from warps or buckles.
- 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.

2.4 ACCESSORIES

- A. Panel attachment clips: provide UNA-CLIP at pre-engineered installation locations. UNA-CLIP to field hook and snap in to pre-punched slot in panel return flange. UNA-CLIP to be fabricated from extruded aluminum material – panel clips to ship loose for field installation.
- B. Fasteners: As recommended by the panel manufacturer.
- C. All hidden fasteners shall be Climaseal coated or stainless steel.
- D. Flashing: Aluminum, same finish as for aluminum panel where exposed; secured with concealed fastening method.

- E. 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

Note to Specifier: Select paragraphs A and B below for painted finish.

A. Panel Finishes:

1. Coating shall be Spray-Applied Fluorocarbon Resin utilizing 70% Kynar 500 resins. Color as selected by owner/consultant from manufacturer's standard colors.

Note to Specifier: Verify number of coats with manufacturer, dependent on color selection.

2. Number of Coats: 2-coat [3-coat][4-coat]. 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.)
3. Relevant to the color selected, material to be painted in accordance with either AAMA specification 2605 or 2604.
4. Provide factory applied strippable plastic film for protection during fabrication and installation

B. Finish Performance:

1. Pencil Hardness – ASTM D3352-74
2. Shall be HB-H minimum (Eagle Turquoise).
3. Impact Adhesion – ASTM D294-84
 - a. Coating shall show no cracking and no loss of adhesion
4. Cure Test – NCCA 11-18
 - a. Coating shall withstand 50+ double rubs of MEK.
5. Humidity Resistance – ASTM D2247-87
 - a. Coating shall show no blisters after 3000 hours of 100% humidity at 95` F.
6. Salt Spray Resistance – ASTM B117-85
 - a. After 3000 hours of exposure to 5% salt fog, at 95` F, scored sample shall show none or few #8 blisters, and less than 1/8" average creepage from scribe.
7. Weatherometer Test – ASTM D882-86/G23-88 Coating shall show no cracking, peeling, blistering or loss of adhesion after 2000 hours.
 - a. Chalking Resistance – ASTM D659-86

- b. No chalking greater than #8 after 10 years Florida exposure at 45` S.
 - c. Color Change – ASTM D2244-74
 - d. Color change shall not exceed 5 NBS units after 10 years Florida exposure at 45` S.
 - e. After 5000 hours in Atlas Weatherometer coating shall show no objectionable chalking or color change.
8. Abrasion Resistance – ASTM D968-81 Coating shall resist 65+/- 15 liters/mil minimum of falling sand.
- C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical finish: non-specular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.
- D. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical finish: non-specular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I integrally colored or electrolytic ally 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.
 - 2. Color: Match Architect's sample.

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 finish with air-dried coating that matches color and gloss, and is compatible with, factory-applied finish coating.

END OF SECTION