# EZ-03 PANEL SPECIFICATIONS

## ALUMINUM COMPOSITE WALL PANEL SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A.The extent of the panel system work is indicated on the drawings and in the specifications.

B.Panel System requirements include the following components

- Aluminum faced composite panels with mounting system. Panel mounting system including anchorages, shims, furring, fasteners, gaskets and sealants, related flashing adapters and massing (as required) for complete watertight installation

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM) B209 - Aluminum and Aluminum-Alloy Sheet and Plate.

B. American Society for Testing and Materials (ASTM) C481 - Laboratory Aging of Sandwich Constructions.

C. American Society for Testing and Materials (ASTM) E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.

D. American Society for Testing and Materials (ASTM) E84 - Surface Burning Characteristics of Building Materials.

E. American Society for Testing and Materials (ASTM) E283 - Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors.

F. American Society for Testing and Materials (ASTM) E289 - Linear Thermal Expansion of Rigid Solids with Interferometry.

G. American Society for Testing and Materials (ASTM) E330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors.

H. American Society for Testing and Materials (ASTM) E331 - Water Penetration for Exterior Windows, Curtain Walls, and Doors.

I. American Society for Testing and Materials (ASTM) D1781 - Climbing Drum Peel for Adhesives.

J. American Society for Testing and Materials (ASTM) - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

K. American Architectural Manufacturers Association (AAMA) 605.2 - Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.

L. American Architectural Manufacturers Association (AAMA) TIR-a11 - Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Design system to accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to temperature and humidity ranges reasonably anticipated.
2. Design system to accommodate tolerances of structure.

B. Performance Requirements:
Submit test data witnessed by an independent testing agency to meet the performance requirements outlined in Section 2.4 of this document.

1.4 SUBMITTALS

A. Panel System Assembly: Two samples of each type of assembly 12" X 12" minimum

B. Product Data : Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Submit shop drawings showing layout, flashings, drainage, ventilation, vapor barriers, vapor retarders, profiles and product components, including anchorage, accessories, finish colors, patterns and textures.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 3 inches (76 mm) by 5 inches (128 mm) representing actual product, color, and patterns.

F. Quality Assurance Submittals: Submit the following:
1. Test reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with proven capable of fabricating ACM rout & return panel systems to precise specifications, providing field service representation during construction, approving acceptable installer and approving application method.

B. Installer Qualifications:
1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project
2. Installer shall use laser technology for precise measurements and auto leveling.
3. Panel Installer shall assume responsibility for all components of the exterior panel system including, but not limited to attachment to sub-construction, panel to panel joinery, panel to dissimilar material joinery, and joint seal associated with the panel system.

C. Panel, Shop Drawings and Testing
1. Maximum deviation from vertical and horizontal alignment of erected panels: 1/4" in 20' non-accumulative.
2. Panel fabricator/installer shall assume undivided responsibility for all components of the exterior panel system including, but not limited to attachment to sub-construction, panel to panel joinery, panel to dissimilar material joinery, and joint seal associated with the panel system.
3. Shop Drawings shall be prepared by the Fabricator of the Cladding systems.
4. Systems shall have been previously tested for Performance criteria specified herein.

D. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store panels horizontally, off-the-ground, in manufacturer's unopened packaging until ready for installation.

B. Examine delivered materials upon receipt to insure that no damage has occurred during shipment. Store metal-faced composite wall panels horizontally, covered with a suitable weather tight and ventilated covering. Store Metal-faced composite wall panels to ensure dryness, with a positive slope for drainage of water. Do not store metal-faced composite wall panels in contact with other materials that might cause staining, denting, or other surface damage. DO NOT allow storage space to exceed 120 degrees F (49 degrees C).

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A SUBMIT IN ACCORDANCE WITH DIVISION 1 – CLOSEOUT SUBMITTALS.

B. WORKMANSHIP WARRANTY:

1. Written warranty signed by manufacturer and installer warranting that portions of the work involving metal panels are of good quality, free from defects, and in conformance with the requirements of the Contract Documents. Further guarantee to repair or replace defective work during a one year period following Substantial Completion of the work.
2. Defective is defined to include failure of the system to meet structural performance requirements and/or permanent deformation resulting from pressures within the design criteria.

C. FINISH WARRANTY:

1. The Aluminum Composite Material manufacturer shall warrant the finish in accordance with AAMA 2605 for 20 years against Max 5 fade based on ASTM D2244 and Max 8 chalk based on ASTM D4212 and de-lamination of the paint finish. Upon notification of defects within the warranty period, make necessary repairs or replacement at the convenience of the owner.
2. The Aluminum Composite material manufacturer shall warrant for a period of 5 years the bond integrity of the sheet material.

D. WARRANTY SHALL SPECIFICALLY INCLUDE THE APPLICABLE WORK OF THE FOLLOWING SECTIONS OF THE SPECIFICATIONS.

1. Section 07600 - Flashing and Sheet Metal.
2. Section 07900 - Joint Sealants.

PART 2 PRODUCTS

2.1 PANELS

A. Composite Aluminum EZ-03 Panel system as manufactured by Creative Metal Contractors, Inc., 870 Route 530 Unit 12, Whiting, NJ 08759 Website: http://www.creativemetalcontractors.com/

B. Items of the same function & performance, which have received prior approval from the architect, shall be allowed for this project. Approval shall be based on documentation submitted showing the adequacy of the material with document test results

C. Panel Frame:

1. Aluminum extrusions are factory assembled with the face skins to make up a panel unit.
2. Panels are made with a rout & return system.

D Intermediate panel stiffeners, where required by design loads applied to the panels, shall be structurally fastened directly to the continuous extruded frame and shall be secured to the rear face of the composite panel with silicone of sufficient size and strength to maintain panel flatness. Stiffener material and/or finish shall be compatible with the silicone.

E Panel fasteners: Stainless Steel or Cadmium plated fasteners for panel attachment in size and spacing as dictated by structural requirements.

F Anchorage system: Shall be designed so that panels are secure yet free floating to accommodate thermal expansion and contraction. Attachment clips will be designed to slide into and mate with panel frame members. Clips are pre-punched and spaced to accommodate structural design requirements.

G For Dry Systems, panel joints will be sealed in the field with a rubberized gasket insert that provides a permanent watertight seal. A bead of commercial silicone will be applied to the reveal prior to inserting the gasket.

H Panel facing: Panel face skins will be mechanically pattern cut and bend lines back-routed using CNC programmable equipment which will replicate tolerances down to .040" max.

2.2 Materials

A GENERAL:

1 Facing Material shall be selected from one of the following ***(Select one thickness only)***:

a. 4mm thick (.158") Polyethylene core aluminum composite material made up of an interior and exterior skin of .020" thick coated aluminum sheets chemically bonded to a polyethylene core as supplied by:

1) Alucobond® as manufactured by Alcan Composites USA

2) Alpolic as manufactured by Mitsubishi Chemicals.

b. 6mm thick (.237") Polyethylene core aluminum composite material made up of an interior and exterior skin of .020" thick coated aluminum sheets chemically bonded to a polyethylene core.

2- Physical characteristics of the facing material are as follows:

a. Bond Integrity: When tested for bond integrity, in accordance with ASTM D 1781 (simulating resistance to panel de-lamination), there shall be no adhesive failure of the bond a) between the core and the skin nor b) cohesive failure of the core itself below the following values:

b. Peel Strength:

100 N·mm/mm (22.5 in·lb/in) as manufactured

100 N·mm/mm (22.5 in·lb/in) after 8 hours in water at 200°F (93°C)

100 N·mm/mm (22.5 in·lb/in) after 21 days soaking in water at 70°F (21°C)

c. Fire Performance:

1) ASTM E 84: Flame spread 0, Smoke developed 0

2) ASTM E 162: No surface flaming

3) UBC 17-5: No flame spread along interior face or penetration through the wall assembly.

B COMPOSITION:

Two sheets of aluminum sandwiching a solid core of extruded thermoplastic material formed in a continuous process with no glues or adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Products laminated sheet by sheet in a batch process using glues or adhesives between materials shall not be acceptable.

C ALUMINUM FACE SHEETS:

Thickness: 0.5mm (0.019") nominal
Alloy: AA3105 H25 Series (Painted material)

D PANEL WEIGHT:

1 4mm (0.158"): 5.47 kg/m² (1.12 lb/ft²)

2 6mm (0.236"): 7.28 kg/m² (1.49 lb/ft²)

E TOLERANCES:

1 Panel Bow: Maximum 0.8% of any 1828mm (72") panel dimension.

2 Panel Dimensions: Field fabrication shall be allowed where necessary, but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible.

3 Panel lines, breaks, and angles shall be sharp, true, and surfaces free from warp and buckle.

4 Maximum deviation from panel flatness shall be 1/8" (3.2mm) in 5'0" (1.52m) on panel in any direction for assembled units. (Non-accumulative - No Oil Canning)

2.3 ACCESSORIES

A. Manufacturer's Sealants and Accessories: Provide manufacturer's recommended sealants and accessories for product installation.

B. Flashing: Fabricate flashing materials from 0.030 inch (0.76 mm) minimum thickness aluminum sheet painted to match the adjacent curtain wall/panel system where exposed. Provide a 12 inch (305 mm) wide lap strap under the flashing at abutted conditions and seal lapped surfaces with a full bed of non-hardening sealant.

2.4 FABRICATION

A. Panels shall be fabricated and finished as required to provide material construction and performance as specified and as required by manufacturer to comply with warranty provisions.
1.Tolerances: Length and Width: plus or minus 1/16 inch (1.6mm). Squareness (Diagonals): equal within 1/8 inch (3.2mm).
2.System Type: Rout & Return Rain Screen, Dry or Wet
3.System Performance:
a) Wind Load:
Panels shall be designed to withstand the Design Wind Load based upon the local building code, but in no case less than 20 psf and 30 psf on parapet and corner panels. Wind load testing shall be performed in accordance with ASTM E330 to obtain the following results.
(Loads held for 60 seconds)

| Title of Test | Results |
|---|---|
| Uniform Load Deflection 130.0 psf (positive) | 0.02" |
| Uniform Load Deflection 140.0 psf (negative) | 0.03" |
| Uniform Load Structural 195.0 psf (positive) | 0.01" |
| Uniform Load Structural 210.0 psf (negative) | 0.02" |

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b) Air/Water System Test:
- Air Infiltration – When tested in accordance with ASTM E283, air infiltration at 15.0 psf must not exceed 0.01 cfm/sq ft or wall area
- Water infiltration – Water infiltration is defined as uncontrolled water leakage through the exterior face of the assembly. Systems not using a construction sealant at the panel joints shall be designed to drain any water leakage occurring at the joints. No water infiltration shall occur in any system under a differential static pressure of 25.0 psf after 15 minutes of exposure in accordance with ASTM E331

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Examine substrates, areas, and conditions, with substrate installer present, for compliance with requirements for structural soundness, installation tolerances, metal panel supports, and other conditions affecting performance of work.
   1. Examine primary and secondary wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances listed below.
      a. 1/4 inch (6 mm) in any 20 feet (6 m) length vertically or horizontally.
      b. 1/2 inch (12 mm) in any building elevation.
   2. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required.
   3. For the record, prepare written report, endorsed by panel installer and substrate installer, listing remedy for conditions detrimental to performance of work.

C. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before metal panel installation.

D. Proceed with installation only after all unsatisfactory conditions have been corrected.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

A. Comply with manufacturer's installation guides and product data including product technical bulletins, product catalog installation instructions, and product carton instructions for installation type selected.

B. Work shall be done and completed in a thorough and workmanlike manner by mechanics skilled in their various trades.

C. Install metal composite panels in accordance with approved drawings and manufacturer's instructions.

D. Do not install component parts that are observed to be defective, including warped, bowed, dented and broken members.

E. Use an auto leveling laser device to install the starter J extrusion straight & plum

F. Erect metal work square, plumb, straight and true, accurately fitted with tight joints and intersections. Install insulation using adhesive to ensure continuous thermal barrier in conjunction with air/vapor barrier formed by liner sheet.

G. Install panel system to internal [sub-girts] [girts] with [concealed] fasteners. Provide alignment bars, brackets, clips, inserts, shims as required to securely fasten wall system to building structure.

H. Anchor panels securely in accordance with approved shop drawings using concealed non-corrosive fasteners of type and location recommended by manufacturer.

I. Anchorage system shall allow for necessary thermal movement and structural support.

J. Protect metal services in contact with concrete, masonry mortar, plaster or other cementious surface with a protective film coating.

K. Allow for free and noiseless vertical and horizontal thermal movement due to expansion and contraction. Buckling of panels, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement is not permitted

L. Use a laser to confirm precise dimensions in order to prevent oil canning

M. Do not cut, trim, weld or braze component parts during erection in a manner that would damage finish, decrease strength, or result in visual imperfection or failure in performance.

N.Return component parts that require alteration to shop for re-fabrication, if possible, or for replacement with new parts.

O.Separate dissimilar metals and use [gasketed fasteners] [isolation shim] [isolation tape] where needed to eliminate possibility of corrosive or electrolytic action between metals.

P.Caulk between work of this section and work of other sections to meet specified requirements and to provide a watertight installation.

Q.Upon complete installation of cladding system, owner shall be provided with proper cleaning and maintenance instructions.

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3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.4 CLEANING AND PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

B. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

C. Protect installed products until completion of project.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION