

## **SPECIFICATIONS**

### **METAL COMPOSITE MATERIAL WALL PANELS Cladiators® Calor™ CL-580**

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Exterior cladding consisting of formed metal composite material (MCM) sheet, secondary supports, and anchors to structure, attached to solid backup.
- B. Matching flashing and trim.

##### **1.2 SUBMITTALS**

- A. Wall System Manufacturer Qualifications.
- B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
  - 1. Finish manufacturer's data sheet showing physical and performance characteristics.
  - 2. Storage and handling requirements and recommendations.
  - 3. Fabrication instructions and recommendations.
  - 4. Specimen warranty for finish, as specified herein.
- C. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
  - 1. Physical characteristics of components shown on shop drawings.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions and recommendations.
  - 4. Specimen warranty for wall system, as specified herein.
- D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, method of anchorage, number of anchors, supports, reinforcement, trim, flashings, and accessories.
  - 1. Indicate panel numbering system.
  - 2. Differentiate between shop and field fabrication.
  - 3. Indicate substrates and adjacent work with which the wall system must be coordinated.
  - 4. Include large-scale details of anchorages and connecting elements.
  - 5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.
  - 6. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
- E. Design Data: Submit structural calculations stamped by design engineer, for Architect's information and project record.

- F. Test Report: Submit report of full-size mock-up tests for air infiltration, wind performance, and structural load.
- G. Manufacturer's Field Reports: Provide within 48 hours of field review. State what was observed and what changes, if any, were requested or required.
- H. Maintenance Data: Care of finishes and warranty requirements.
- I. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

### **1.3 QUALITY ASSURANCE**

- A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.
- B. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design of this type of Work and licensed in New Jersey.
- C. Wall System Manufacturer Qualifications: Company specializing in manufacturing products specified in this section.
  - 1. With not less than three years of documented experience.
- D. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.
- E. Mock-Up: Provide a mock-up for evaluation of fabrication workmanship.
  - 1. Locate where directed.
  - 2. Provide panels finished as specified.
  - 3. Mock-up may remain as part of the Work.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
  - 1. Protect finishes by applying heavy duty removable plastic film during production.
  - 2. Package for protection against transportation damage.
  - 3. Provide markings to identify components consistently with drawings.
  - 4. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.
- B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - 1. Store in well ventilated space out of direct sunlight.
  - 2. Protect from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.
  - 3. Store at a slope to ensure positive drainage of any accumulated water.
  - 4. Do not store in any enclosed space where ambient temperature can exceed 120 degrees F.
  - 5. Avoid contact with any other materials that might cause staining, denting, or other surface damage.

## 1.5 WARRANTY

- A. Wall System Warranty: Provide joint written warranty by manufacturer and installer, agreeing to correct defects in manufacturing or installation within a two year period after Date of Substantial Completion.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Metal Composite Material Sheet Manufacturers:
  - 1. 3A Composites USA; Alucobond: [www.alucobondusa.com](http://www.alucobondusa.com)
  - 2. Alcoa, Inc; Reynobond ACM: [www.alcoa.com](http://www.alcoa.com)
  - 3. Alpolic Materials; Mitsubishi Plastics Composites: [www.alpolic-northamerica.com](http://www.alpolic-northamerica.com)
  - 4. Cladiators™: [www.cladiators.com](http://www.cladiators.com)
- B. Wall Panel System Manufacturer: **Estolga® 550 OSCF**  
**[www.estolga.com](http://www.estolga.com) 1-844-227-3977**

### 2.2 WALL PANEL SYSTEM

- A. Wall Panel System: Metal panels, fasteners, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage or failure.
  - 1. Provide panel jointing indicated as a Flat Panel Dry System 2. Anchor panels to supporting framing without exposed fasteners.
- B. Performance Requirements:
  - 1. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F to 180 degrees F without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
  - 2. Wind Performance: Provide system tested in accordance with ASTM E330 without permanent deformation or failures of structural members.
    - a. To withstand a Uniform Structural Load of [\[+105.0 psf\]](#) [\[105.0 psf\]](#) held for 10 seconds.
    - b. Maximum deflection of perimeter framing member of L/175 normal to plane of the wall; maximum deflection of individual panels of L/60.
    - c. Maximum anchor deflection in any direction of 1/16 inch at connection points of framing members to anchors.
  - 3. Air Infiltration: [\[0.42 cfm/sq ft\]](#) of wall area, maximum, when tested at [\[6.24 psf\]](#) in accordance with ASTM E283.

### 2.3 MATERIALS

- A. Metal Composite Material (MCM) Sheet: 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; core material free of voids and spaces; no foamed insulation material content.
  - 1. Overall Sheet Thickness: 4 mm.
  - 2. Face Sheet Thickness: 0.019 inches, minimum.
  - 3. Alloy: Manufacturer's standard, selected for best appearance and finish durability.
  - 4. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F.

5. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
  6. Flammability: Self-ignition temperature of 650 degrees F or greater, when tested in accordance with ASTM D1929.
- B. Metal Framing Members: Include all sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
    1. Provide material strength, dimensions, configuration as required to meet the applied loads applied and in compliance with applicable building code.
    2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
    3. Stainless Steel Sheet Components: ASTM A480/A480M.
  - C. Flashing: Sheet aluminum; 0.040 inch thick, minimum; finish and color to match MCM sheet.
  - D. Finishing Caps: Aluminum 6063-T5 alloy fabricated to securely fit the attachment joints and painted with Kynar™ finish to the customer specified color. Secured to panel installation with Thermal Washers, supplied by wall panel manufacturer.
  - E. Anchors, Clips and Accessories: Use one of the following:
    1. Stainless steel complying with ASTM A480/A480M, ASTM A276 or ASTM A666.
    2. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A153/A153M.
    3. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A123/A123M Coating Grade 10.
  - F. Fasteners:
    1. Exposed fasteners: Stainless steel; permitted only where absolutely unavoidable and subject to prior approval of the Architect.
    2. Screws: #6 1-1/2" Self-drilling or self-tapping stainless steel or zinc-alloy steel hex head and #6 1-1/2" Self-drilling or self-tapping stainless steel or zinc-allow steel pan head.
    3. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.
  - G. Thermal-Break Pads:
    1. Polyamide material in pre-fabricated forms to be installed between the aluminum attachments or channels and the building substrate, supplied as an option by Cladiators. Additional thermal break performance can be gained by adding Cladiators thermal break extension pads. Supplied by manufacturer.
  - H. Insulated channels
    1. Hat Channel and Z-Furring Channels made of 6063-T5 Aluminum Alloy, and are available in heights of 1", 1.5", 2", 2.5", and 3". When specified, the channels will be completely filled with insulation by the manufacturer.
  - I. Provide panel system manufacturer's and installer's standard corrosion resistant accessories, including fasteners, clips, anchorage devices and attachments.

### 3.1 EXAMINATION

- A. Verify dimensions, tolerances, and interfaces with other work.
- B. Verify substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturers written instructions.

- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- D. Notify Architect in writing of conditions detrimental to proper and timely completion of work. Do not proceed with erection until unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Protect adjacent work areas and finish surfaces from damage during installation.

### **3.3 INSTALLATION**

- A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.
- B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

- C. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.
- D. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.
- E. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.
- F. Separate dissimilar metals; use fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.
- G. Install flashings as indicated on shop drawings at flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.
- H. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
  - 1. Variation From Plane or Location: 1/2 inch in 30 feet of length and up to 3/4 inch in 300 feet, maximum.
  - 2. Deviation of Vertical Member from True Line: 0.1 inch in 25 feet run, maximum.
  - 3. Deviation of Horizontal Member from True Line: 0.1 inch in 25 feet run, maximum.
  - 4. Offset from True Alignment between Two Adjacent Members Abutting End To End, In Line: 0.03 inch, maximum.
- I. Replace damaged products.
  - 1. Exception: Field repairs of minor damage to finishes are permitted only when approved in writing by Owner, panel manufacturer, and fabricator.
  - 2. Field Repairs to Finishes: Using materials and methods sufficient that repairs are not discernible when viewed at distance of 10 feet under all typical light conditions experienced at the project.

### **3.4 FIELD QUALITY CONTROL**

- A. Wall System Manufacturer's Field Services: Provide field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with instructions.

### **3.5 CLEANING**

- A. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.
- B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.
- C. Remove temporary coverings and protection of adjacent work areas.
- D. Clean installed products in accordance with manufacturer's instructions.

### **3.6 PROTECTION**

A. Protect installed panel system from damage during construction.

**END OF SECTION**