

SECTION 074213.23

METAL COMPOSITE MATERIAL (MCM) PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. ALUMINUM COMPOSITE or METAL COMPOSITE MATERIAL (ACM/MCM) PANELS USED AS EXTERIOR OR INTERIOR CLADDING

1.2 RELATED SECTIONS

- A. Division 05 "Cold Formed Metal Framing" as applicable
- B. Division 07 "Thermal Insulation" as applicable
- C. Division 07 "Fluid Applied Air Barriers" as applicable

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA):

- 1. AAMA 501.1 – Standard test method for metal curtain walls for water penetration using dynamic pressure.
- 2. AAMA 508.07 – Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
- 3. AAMA 2605 – Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. American Society of Civil Engineers (ASCE):

- 1. ASCE 7 – Minimum Design Loads for Builders and Other Structures.

C. ASTM International (ASTM):

- 1. ASTM B 117 – Standard Practice for Operating Salt Spray (fog) Apparatus.
- 2. ASTM C 481 – Standard Test Method for Laboratory Aging of Sandwich Constructions.
- 3. ASTM 1233 – Standard Test Methods for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Wall by Cyclic Air Pressure Differential
- 4. ASTM D 1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- 5. ASTM D 1781 – Standard Test Method for Climbing Drum Peel for Adhesives.

6. ASTM D 2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
7. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
8. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
9. ASTM D 3350 – Standard Test Methods of Measuring Adhesion by Tape Test.
10. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
11. ASTM D 4214 – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
12. ASTM E 72 – Standard Test Methods of Conducting Strength Tests Panels for Building Construction.
13. ASTM E 84 – Test Methods for Surface Burning Characteristics of Building Materials.
14. ASTM E 119 – Test Methods for Fire Tests of Building Construction and Materials.
15. ASTM E 283 – Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen.
16. ASTM E 330 – Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
17. ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference

D. Underwriters Laboratories, Inc. (UL):

1. UL 263 – Fire Resistance Tests of Building Construction and Materials.
2. UL 723 – Test for Surface Burning Characteristics of Building Materials.
3. UL Fire Resistance Directory.

1.4 PERFORMANCE REQUIREMENTS

- A. Air infiltration; panel system shall not have air infiltration rate more than 0.12 cfm per sq. ft. of fixed wall area when tested in accordance with ASTM E283 at static air pressure differential of 1.57 psf
- B. Structural – Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses from dead loads, wind loads, snow loads and normal thermal movement without evidence of permanent defects of assemblies or components as tested by ASTM E 330.
 1. Wind Loads: Determine loads based on uniform pressure indicated on Drawings or calculated per IBC 2009, whichever is more stringent
 2. Deflection Limits: Withstand test pressures of inward and outward wind-load design pressures with a maximum deflection of L/60 of the span with no failure

- C. Static Water Penetration: Panel system shall have no water penetration as defined by test method ASTM E331 at inward static pressure differential of not less than 6.24 psf positive static air pressure difference for a 15 minute duration with a water application rate of 5 gallon/ft²/hour.
- D. Dynamic Water Penetration: panel system shall have been tested in accordance with AAMA 501 and shall have passed with no uncontrolled water leakage at 15.0 psf dynamic pressure differential for a 15 minute duration with water application rate of 5 gallons/ft²/hour
- E. Cyclic Air Pressure Differential: provide a panel system capable of pressure cycle testing in accordance with ASTM E1233. Testing shall consist of 100 cycles from 5 psf to 25 psf and system must pressure equalize in 0.08 seconds or less when tested as part of the AAMA 508-07 test protocol.
- F. Pressure Equalized Rainscreen Performance: provide a panel system designed to have no streaming water or droplets/mist on more than 5% of the cavity moisture barrier, when tested to AAMA 508-07 which include static and dynamic testing with imperfect air barriers.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of involved components and profiles, and finishes for each type of metal-faced composite wall panel and accessory.
- B. Shop Drawings: Submit shop drawings detailing plan, elevation and section views as necessary to determine proper fabrication and installation methods. Coordinate locations with those found in contract drawings.
- C. Selection Samples: For each finish product specified, submit color charts representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 4x6 inches, representing the actual product, color, and patterns.
- E. Engineering: Calculations supporting structural performance of the wall panels shall be prepared by a professional structural engineer.
- F. Warranties: Samples of special warranties.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years' experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope specified.
- C. Provide metal wall panels tested per ASTM E 84 or UL 723. Provide ASTM E 119 testing as required by prevailing code.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store and dispose of hazardous materials, and materials contaminated by hazardous

materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

A. The panel system manufacturer shall warrant that the system it supplies will be free from defects in materials and workmanship for a period of (2) years.

B. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

- a. Color fading more than 5 Hunter units when tested according to ASTM D 244.
- b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
- c. Cracking, checking, peeling or failure of paint to adhere to bare metal.

C. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 SYSTEM FABRICATOR

Acceptable Fabricator: East Coast Metal Systems | P.O. Box 217 | 407 53rd Street | Bellaire, OH 43906 | Phone Number 740-676-2400

A. Aluminum Composite or Metal Composite Material Flat Sheet Manufacturers:

1. Larson
2. Reynobond, or
3. Alucobond, or
4. Alpolic, or
5. Vitrabond or
6. Citadel

2.2 WALL PANEL

A. Panel Materials: (2) sheets aluminum sandwiching a solid core extruded thermoplastic material formed in continuous process. The core material must be free of voids and/or air spaces and not contain foamed insulation material.

1. Alloy: Aluminum AA3000 Series.
2. Panel Thickness: 4mm, 6mm, 8mm
3. Core: Standard PE (FR Core as required)
4. Tolerances:

- a. Panel Bow: Maximum 0.8 percent of any 1828mm (72inch) panel dimension.
- b. Panel Flatness: Maximum deviation less than 1/8 inch (3mm) in 5 feet (1524mm) on Panel in any direction for assembled units.

2.3 WALL SYSTEM FABRICATION

A. System Type: EC-200 Dry Joint AAMA 508-07 Pressure Equalized Rainscreen System, fabricated by East Coast Metal Systems, Inc.

1. Extruded horizontal and vertical tongue and groove extrusion system.
2. Reveal joint is open dry joint AAMA 508-07 rain screen tested,
3. Perimeter extrusions reinforce and encapsulate panel returns, eliminating any exposed cut edges.

2.4 FINISHES

A. Finish Type

1. Coating Thickness: 1.0 mil (0.2 mil primer plus 0.8 mil color).
2. Coats: Two (2) Coat Finish.
3. Color: Custom color(s) to match samples contained in the Contract Documents,

PART 3 EXECUTION

3.1 FIELD MEASURING

A. Field verify all dimensions prior to fabrication.

3.2 EXAMINATION

A. Do Not Begin installation until substrates have been properly prepared.

B. If Substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.3 PREPARATION

A. Clean surfaces using the methods recommended by the manufacturer for achieving the best results for the substrate under the project conditions.

3.4 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.5 PROTECTION

A. Protect installed products until completion of project.

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

END OF SECTION