

## SECTION 07 42 13 METAL WALL PANELS

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section Includes: Composite fire-retardant metal panels.
  - 1. Applications of composite fire-retardant metal panels include:
    - a. Exterior installation of composite metal panels on walls and soffits.
- B. Related Sections: Section(s) related to this section include:
  - 1. Sheet Metal Flashing and Trim: Division 07 Flashing and Trim Section.
  - 2. Joint Sealers: Division 07 Joint Treatment Section.
  - 3. Architectural cast stone Division 04.

#### 1.02 REFERENCES

- A. ASTM International:
  - 1. ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives.
  - 2. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics.
  - 3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 4. ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings.
  - 5. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
  - 6. ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - 7. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  - 8. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Wall, and Doors by Uniform Static Air Pressure Difference.
- B. American Architectural Manufacturers Association (AAMA):
  - 1. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
  - 2. AAMA 508 Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
- C. National Fire Protection Association (NFPA)
  - 1. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

#### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide composite metal panels that have been manufactured, fabricated and installed to withstand loads from deflection and thermal movement and to maintain performance criteria stated by manufacturer without defects, damage or failure.
- B. Deflection and Thermal Movement: Provide systems that have been tested and certified to conform to the following criteria under wind loading of [specify loading psf (kPa)] inward and [specify loading psf (kPa)] outward:
  - 1. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.

2. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
3. Thermal Movements: Allow for free horizontal and vertical thermal movement due to expansion and contraction of components over a temperature range from [specify temperature range in degrees F (degrees C)].
  - a. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
  - b. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.
- C. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
  1. Pressure Equalized Rain Screen Systems.
- A. Fire Performance: Provide composite fire rated panels that have been evaluated and are in compliance with regulatory code agency requirements specified herein.

#### 1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA sheet, for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.
  1. Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets, and location and configuration of joints necessary to accommodate thermal movement.
- D. Samples: Submit selection and verification samples for finishes, colors and textures.
  1. Selected Samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and patterns available for composite metal panels with factory applied finishes.
  2. Verification Samples:
    - a. Structural: 12 inches × 12 inches (305 × 305 mm) sample composite panels in thickness specified from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches × 24 inches (610 × 610 mm) showing 4-way joint.
    - b. Include separate sets of drawdown samples on aluminum substrate, not less than 3 inches × 5 inches (76 × 127 mm), of each color and finish selected for color approval. Larger samples of standard colors are available with production-applied coatings.
- E. Quality Assurance Submittals: Submit the following:
  1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties, or a third party listing documenting compliance to a comparable code section.
  2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
  3. Manufacturer's Instructions: Manufacturer's installation instructions.
  4. Manufacturer's Field Reports: Manufacturer's field reports.
- F. Closeout Submittals: Submit the following:
  1. Warranty: Warranty documents specified.

#### 1.05 QUALITY ASSURANCE

##### A. Qualifications:

1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.
  - a. Certificate: When requested, submit certificate indicating qualification.
2. Manufacturer Qualifications: Company with a minimum of 5 years of continuous experience manufacturing panel material of the type specified:
  - a. Able to provide specified warranty on finish.
  - b. Able to provide a list of 5 other projects of similar size, including approximate date of installation and name of Architect for each.
  - c. Able to produce the composite material without outsourcing of the coating or laminating process.
  - d. Able to provide a certificate of registration to ISO 9001-2015.
3. Fabricator Qualifications: Company with at least 3 years of experience on similar sized metal panel projects and qualified by panel material manufacturer. Capable of providing field service representation during construction.

##### B. Regulatory Code Agencies Requirements: Provide composite fire rated panels which have been evaluated and are in compliance with the following:

1. International Code Council (ICC).

##### C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color (drawdown samples to be used for color approval of nonstandard coil coated colors), texture and pattern and workmanship standard. Comply with Division 01 Quality Control, Mock-Up Requirements Section.

1. Mock-Up Size: 4ftx 4ft.
2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

##### D. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 01 Project Management and Coordination, Project Meetings Section.

#### 1.06 DELIVERY, STORAGE & HANDLING

##### A. General: Comply with Division 01 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. Protection: Protect finish of panels by applying heavy-duty removable plastic film during production.
2. Delivery: Package composite wall panels for protection against transportation damage. Provide markings to identify components consistently with drawings.
3. Handling: Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

##### D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperatures recommended by manufacturer.

1. Storage: Store panels in well-ventilated space out of direct sunlight.
  - a. Protect panels from moisture and condensation with tarpaulins or other suitable weather tight

- covering installed to provide ventilation.
  - b. Slope panels to ensure positive drainage of any accumulated water.
  - c. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
2. Damage: Avoid contact with any other materials that might cause staining, denting or other surface damage.

#### 1.07 PROJECT CONDITIONS

- A. Substrate Tolerances: The General Contractor is responsible for providing a substrate with a tolerance of 1/4 inch in 20.0 feet (6mm in 6m), on level, plumb, and location control lines as indicated and within 1/8 inch (3mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative.
- B. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to fabrication of MCM System. Indicate measurements on the "As Built Shop Drawings". Field measurements to be taken once all substrate materials and adjacent materials are installed.
- C. Project Schedule: Provisions in the project schedule must accommodate the time interval between field measurements and fabrication/installation.

#### 1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
  - 1. Warranty Period:
    - a. Panel Integrity: 10 years commencing on Date of Substantial Completion.
    - b. Finish: [Specify number of years] commencing on Date of Substantial Completion.

### PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

#### 2.01 COMPOSITE METAL PANELS

- A. Manufacturer: Mitsubishi Chemical America, Inc. ALPOLIC Division
  - 1. Contact: 401 Volvo Parkway, Chesapeake, VA 23320; Telephone (800) 422-7270; Fax: (757) 436-1896; E-mail: [info@alpolic.com](mailto:info@alpolic.com); website: [www.alpolic-america.com](http://www.alpolic-america.com).
- B. Proprietary Product: ALPOLIC Composite Metal Panels.
  - 1. ALPOLIC/fr composite fire-retardant metal panels.

#### 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

#### 2.03 COMPOSITE METAL PANEL MATERIALS

- A. Composite Metal Panels:

1. Core: Thermoplastic material that meets performance characteristics specified when fabricated into composite assembly.
2. Face Sheets: Aluminum alloy 3105 H14, 0.020 inch (0.51 mm) thick and as follows:
  - a. Coil coated with a fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
  - b. Coil coated with specified finish [Less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>) quantities].
  - c. Thermally bonded in a continuous process, under tension, to the core material.
3. Bond Integrity: Tested for resistance to delamination as follows:
  - a. Peel Strength (ASTM D1781): 22.5 in-lb/in (100 N-m/m) minimum.
4. Fire Performance:
  - a. Flame spread (ASTM E84): Class A (4 and 6 mm).
  - b. Smoke Developed (ASTM E84): Class A (4 and 6 mm).
  - c. Surface Flammability (Modified ASTM E108): Pass (4 and 6 mm).
  - d. Ignition Temperature:
    - 1) Flash, ASTM D1929: 716 degrees F (380 degrees C).
    - 2) Ignition: 752 degrees F (400 degrees C).
  - e. Flammability, Exterior, Non-load-bearing wall assemblies and panels, NFPA 285: Pass.
5. Product Transparency:
  - a. Provide a Product Transparency Declaration (PTD) for the Composite metal panels

B. Production Tolerances:

1. Width: +/- 2 mm.
2. Length: +/- .012" per ft (1 mm/meter).
3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
5. Bow: Maximum 0.5% length or width.
6. Squareness: Maximum 0.2 inch (5 mm).
7. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.

C. Panel Thickness: 4 mm

2.04 ACCESSORIES

- A. General: Provide fabricator's standard accessories, including fasteners, clips, anchorage devices and attachments for specific applications indicated on contract documents.

2.05 RELATED MATERIALS

- A. General: Refer to other related sections in Related Sections paragraph specified herein for related materials, including cold-form metal framing, flashing and trim, joint sealers, aluminum windows, glass and glazing and curtain walls.

2.06 FABRICATION

- A. General: Shop fabricate to sizes and joint configurations indicated on drawings.
  1. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator.

2. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
3. Fabricate with sharply cut edges and no displacement of aluminum sheet or protrusion of core.

#### 2.07 FINISHES

- A. Factory Finish: Lumiflon-based fluoropolymer resin coating that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
  1. Color: [TBD].

#### 2.08 SOURCE QUALITY

- A. Source Quality: Obtain composite panel products from a single manufacturer.

### PART 3 EXECUTION

#### 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

#### 3.02 EXAMINATION

- A. Substrate Tolerances: The General Contractor is responsible for providing a substrate with a tolerance of 1/4 inch in 20.0 feet (6mm in 6m), on level, plumb, and location control lines as indicated and within 1/8 inch (3mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative.
- B. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to fabrication of MCM System. Indicate measurements on the "As Built Shop Drawings". Field measurements to be taken once all substrate materials and adjacent materials are installed.
- C. Project Schedule: Provisions in the project schedule must accommodate the time interval between field measurements and fabrication/installation.

#### 3.03 PREPARATION

- A. Surface Preparation: [Specify applicable product preparation requirements for installation of composite metal panels].

#### 3.04 INSTALLATION

- A. General:
  1. Install panels plumb, level and true in compliance with fabricator's recommendations.
  2. Anchor panels securely in place in accordance with fabricator's approved shop drawings.
  3. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
  4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.
- B. Related Products Installation Requirements: Refer to other sections in Related Sections paragraph herein for installation of related products.

#### 3.05 FIELD QUALITY REQUIREMENTS

- A. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.
- B. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.
  1. Site Visits: [Specify number and duration of periodic site visits].

3.06 ADJUSTING

A. Adjusting:

1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3 m).
2. Remove and replace panels damaged beyond repair.
3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.

3.07 CLEANING

- A. 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.

3.08 PROTECTION

- A. Protection: Protect installed product's finish surfaces from damage during construction.
1. Institute protective measures as required to ensure that installed panels will not be damaged.

**END OF SECTION**