

074216 - INSULATED-CORE METAL WALL PANELS

PART 1 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pre-insulated metal panel cladding where indicated on the drawings.
 - 2. Trims, fasteners and sealants as required for a weathertight installation.
 - 3. Concealed clips and fasteners in the sidejoints of panels shall be secured to the structure.

1.3 DEFINITIONS

- A. Metal Wall Panels: Steel faced factory foamed-in-place profiled panels with compatible joinery. Panels shall be designed for installation in a vertical orientation.
 - 1. Sealants between panels and their intersection.

1.4 RELATED SECTIONS

- A. Section 076200 – Sheet Metal Flashing and Trim
- B. Section 079200 – Joint Sealants

1.5 REFERENCES

- A. AAMA 501.1 – Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
- B. ASTM A 653– Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- C. ASTM A 792 – Standard Specification for Steel Sheet, Aluminum-Zinc Alloy Coated Steel by the Hot-Dip Process.
- D. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- E. ASTM E 72 – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- F. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

- G. ASTM E 283 – Standard Method for Determining the Rate of Air Leakage Through Exterior Window, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- H. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Wall by Uniform Static Air Pressure Difference.
- I. CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.6 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal wall panel assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction
- B. Structural Tests: The design load/deflection criteria shall be verified from tests per ASTM E 72 “Air Bag Method” using a 20 psf (.96 kPa) simulated wind load. A deflection limit of L/180 shall apply to wall panel.
- C. Thermal Transmission: Testing in accordance with ASTM C 518, “measurement of steady state thermal transmission”, the panels shall provide a K-factor of .140 btu/sf/hr/deg. F at 75° F. (24° C) mean temperature (air films are not included).
- D. Vapor Barrier
 - 1. Air Infiltration: Air infiltration shall not exceed .06 cfm per square foot of wall area when tested per ASTM E 283 as a static pressure of 12.0 psf (.576 kPa).
 - 2. Static Water Penetration: There shall be no uncontrolled water penetration through the panel joints at a static pressure of 20.0 psf (.96 kPa) when tested per ASTM E 331.
 - 3. Dynamic Water Penetration: There shall be no uncontrolled water penetration through the panel joints when subjected to a 95 mph (153 kph) slipstream airflow and application of water for a 15 minute period in accordance with AAMA 501.1.
- E. Fire
 - 1. Surface Burning Characteristics: The insulated core shall have been tested in accordance with ASTM E 84 and CAN/ULC S102 for surface burning characteristics. The core shall have a maximum flame spread of 25 and a maximum smoke developed rating of 450.
 - 2. Factory Mutual Research Corporation (FMRC) Standard 4880, 50’ (15.24 m) High Corner Test for Unlimited Height Structures: The panel assembly shall not support a self-propagating fire which reaches any of the limits of the 50’(15.24 m) high corner test structure as evidenced by flaming or material damage of the ceiling of the assembly. Note: Approval is applicable to structures of unlimited height.
 - 3. Factory Mutual Research Corporation (FMRC) Standard 4881, Standard for Class 1 Exterior Wall Systems.

F. Bond Strength

1. Fatigue Test: The panel shall withstand deflection cycling at L/180 to two (2) million alternate cycles with no evidence of delamination, core cracking or permanent bowing.
2. Freeze/Heat Cycling: The panel shall exhibit no delamination, surface blistering or permanent bowing when subjected to cyclic temperature extremes of -20° F (-28° C) to $+180^{\circ}$ F ($+82^{\circ}$ C) for twenty-one (21) eight hour cycles.
3. Humidity Test: The panel shall exhibit no delamination or metal corrosion at interface when subjected to a $+140^{\circ}$ F ($+60^{\circ}$ C) temperature and 100% relative humidity for a total of 1200 hours.
4. Autoclave Test: The panel shall exhibit no delamination of the foam core from metal skins when exposed to 2 psi (.122 kg/sq. cm) pressure at a temperature of $+212^{\circ}$ F ($+100^{\circ}$ C) for a total of 2½ hours.

1.7 SUBMITTALS

A. Product data, including:

1. Preparation instructions and recommendations.
2. Material type, metal thickness and finish.
3. Installation methods.

B. Shop Drawings: Including elevations, fastening patterns, sections of each condition and details as required.

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

D. Panel Sample: Submit 1' (305 mm) high by full width sample panel for each profile specified indicating the metal, texture and finish.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing factory foamed-in-place insulated metal panels with a minimum documented experience of ten (10) years.

1.9 DELIVERY STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products off the ground, with panels sloped for drainage and covered to protect factory finishes from damage.

1.10 PROJECT COORDINATION

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal wall panels to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before metal wall panel fabrication, and indicate measurements on Shop Drawings

1.11 COORDINATION

- A. Coordinate metal wall panel assemblies with rain drainage work, flashing, trim, and construction of girts, and other adjoining work to provide a leakproof, secure, and noncorrosive insulation.

1.12 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal wall panel assemblies that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial
- B. Manufacturer's Warranty: Manufacturer's two (2) year limited warranty that panels are free from defects in materials and workmanship, beginning from the date of shipment of panels, but excluding coil coatings (paint finishes) covered under a separate warranty.
- C. The installation contractor shall issue a separate one (1) year warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.
- D. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. 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 2244.
 - 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.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: Basis of design product:

1. Metl-Span, LLC; 1720 Lakepointe Drive, Suite #101, Lewisville, TX 75057; Toll-Free (877) 585-9969; Fax: (972) 420-9382; E-mail: panel@metlspan.com; Web site: <http://www.metlspan.com>

2.2 PANEL DESIGN

A. Wall Panels:

1. Metl-Span CF Mesa Wall Panel - Roll-formed exterior and interior steel sheet faces chemically bonded to continuously foamed-in-place polyurethane or polyisocyanurate core; laminated panels are not acceptable.
 - a. Exterior & Interior Profile: Mesa Wave Pattern, 1/8" deep
 - b. Module Width: 42"
 - c. Thickness: 2"
2. Exterior & Interior Face: G-90 galvanized stucco embossed painted steel, minimum Grade 33 and AZ-50 Aluminum-Zinc stucco embossed painted steel, minimum Grade 33 in 26ga (0.0187").
3. Foam Core: Non-CFC, Class I, polyurethane.
4. Exterior Finish: One coat 70% polyvinylidene fluoride 0.7 mil (17.5 microns) nominal thickness over 0.2 mil (5 microns) base primer in manufacturer's standard colors in manufacturer's standard colors.
5. Interior Finish: One coat, factory applied Polyester coil coating 0.7 mil (0.02 mm) , nominal thickness, over 0.2 mil (0.005mm) primer, in Igloo White.
6. Fastening: Concealed fastener wall panels with offset double tongue and groove joinery and an extended metal shelf allowing fasteners to penetrate both metal faces with clips concealed in the side joint.

B. Joint Sealants: Shop applied.

PART 3 EXECUTION

1.1 EXAMINATION

- A. Panel installer shall examine all structural steel before beginning installation to ensure that all supporting members are straight, level, plumb, properly braced and satisfactory for panel installation.
- B. Do not begin installation until unsatisfactory conditions are corrected.
- C. Start of installation shall signify structure and adjacent conditions as being proper and acceptable.

1.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations including approved shop drawings, installation guidebook and manufacturer's handbook of construction details.
- B. Install panel as indicated on drawings, accurate in size, square, and free from distortion or defects.
- C. Install flashing and trim true and in proper alignment.
- D. Install sealants where indicated to clean dry surfaces only without skips or voids, to ensure weathertightness and integrity of the vapor barrier.

1.3 DAMAGED MATERIAL

- A. Do not install damaged material. Panels damaged as a result of construction shall be replaced.
- B. Replace damaged panels and other components of work, which cannot be repaired by finish touch-up or similar minor repair.

1.4 CLEANING

- A. Wipe finished surfaces clean of any filings caused by drilling or cutting to prevent rust staining.
- B. Clean all surfaces with mild, environmentally-friendly detergent and pressurized clean water.

END OF SECTION 074216