

SECTION 07412 – INSULATED METAL WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Foamed insulation core vertical metal wall panel assembly with integral reveals and profiled panels, and related trim and accessories.

1.2 RELATED SECTIONS

- A. Division 7 Section "Sheet Metal Flashing and Trim" for sheet metal copings, flashings, reglets and roof drainage items.
- B. Division 7 Section "Joint Sealants" for field-applied joint sealants.

1.3 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA):
- B. AAMA 501.1 - Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
- C. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7- Minimum Design Loads for Buildings and Other Structures.
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
 - 1. Architectural Sheet Metal Manual.

1.4 PERFORMANCE REQUIREMENTS

- A. Air Infiltration: Maximum 0.06 cfm/sf (0.3 L/s per sq. m) per ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sf (300 Pa), using minimum 10 feet by 10 feet (3050 mm by 3050 mm) test panel that includes horizontal and vertical joints.
- B. Water Penetration:
 - 1. Wall panel system for this application shall perform to ASTM E331 for static pressures and AAMA 501.1 for dynamic pressures at 15psf.
 - 2. Standard horizontal and vertical joints shall perform to ASTM E331 for static pressure at 40 psf on a minimum 10 foot by 10 foot mockup.

3. ~~Horizontal joint design shall demonstrate pressure equalization in accordance with AAMA 508-07, which includes static and dynamic testing with imperfect air barriers.~~
- C. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:
1. Wind Loads: Determine loads based on uniform pressure indicated on Drawings or calculated per IBC 2003 whichever is more stringent.
 2. Deflection Limits: Withstand test pressures of inward and outward wind-load design pressures with maximum deflection of L/180 of the span with no failure.
 3. Secondary Framing: Design secondary framing system according to AISI 'Standard for Cold-Formed Steel Framing - General Provisions.' Provide bearing surface for metal wall panels at the following locations:
 - a. Vertical Panel System: At horizontal stack joints 4 inches minimum (102 mm).
- D. Seismic Performance: Comply with ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets for metal wall panels and accessories.
- B. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
- C. Shop Drawings: Prepared by manufacturer or factory trained authorized dealer. Include elevations showing metal wall panels, and details of each condition of installation and attachment. Indicate coordination dimensions related to structural support system elements. Complete shop drawings including elevations, fastening patterns and sections of each condition shall be submitted and approved prior to fabrication. Shop drawings shall include material type, metal thickness, paint finish, and manufacturer's installation recommendations.
 1. Include structural data indicating compliance with performance requirements.
- 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 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Qualification Information: For Installer firm, proof of installer's manufacturer trained field supervisor.
- G. Warranty: Submit proposed warranty meeting requirements of this Section.

1.6 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide metal wall panel system and panel accessories from a single manufacturer.
- B. Installer Qualifications: Experienced Installer with minimum of 5 successful completed projects of similar materials and scope, approved by manufacturer, and employing workers trained by manufacturer to install specified products.
- C. Calculations supporting structural performance of the wall panels shall be prepared by a professional structural engineer.
- D. Fire-Test-Response Characteristics per ASTM E 84 or UL Standard 723:
 - 1. Flame spread index: 25 or less.
 - 2. Smoke developed index: 450 or less.
- E. Pre-installation Conference: Conduct conference at Project site in compliance with Division 01 requirements.
- F. Substitutions: No substitution will be considered unless the COTR has received a request for approval ~~at least ten days prior to the established bid date~~. Evidence shall be submitted to demonstrate equivalency to the products and performance levels specified. The written request shall include:
 - 1. A complete description of the substitution, including details of all transition conditions at panel termination points.
 - 2. Independent test reports verifying compliance with the performance requirements.
 - 3. A detailed list of each item that does not fully comply with the specifications.
 - 4. A letter indicating that the substitution is a foamed-in-place panel.
 - 5. A letter stating that the manufacturer or wall systems contractor proposing the substitution will pay additional costs incurred by subcontractors affected by the proposed substitution.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect metal wall panels during shipping, handling, and storage to prevent staining, denting, or other visible damage. Deliver, unload, store, and erect metal wall panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.

1.8 WARRANTY

- A. Standard 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.
- B. 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.
- C. Submit exterior paint manufacturer's forty (40) year limited warranty on paint finish against cracking, peeling and blistering. Exterior paint manufacturers twenty (20) year limited warranty on paint finish against chalk and color change.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers listed in other Part 2 articles.
- B Basis of Design: 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 ; Website: <http://www.metlspan.com>
- C. Bidders that are using materials supplied by a manufacturer other than that specified above shall list the material supplier/manufacturer of the metal walls panels, provide a sample of the panel including a complete side joint with clip, and provide a letter signed and sealed by a professional engineer ~~registered in the jurisdiction of the project~~ indicating that the proposed products meet or exceed specified requirements. Manufacturers unable to provide this information ~~prior to the time of bid~~ will not be considered.

2.2 FOAMED INSULATION CORE METAL WALL PANELS

- A. Panel – General Requirements: Metl-Span “Striated Insulated Metal Wall Panel” – Roll-formed exterior and interior steel sheet faces chemically bonded to continuously foamed-in-place polyurethane; laminated panels are not acceptable.
 - 1. Exterior Face: G-90 galvanized stucco embossed painted steel, minimum Grade 33 and/or AZ-50 Aluminum-Zinc stucco embossed painted steel, minimum Grade 33 in 24ga (0.0236”).
 - 2. Interior Face: G-90 galvanized stucco embossed painted steel, minimum Grade 33 and/or AZ-50 Aluminum-Zinc stucco embossed painted steel, minimum Grade 33 in 24ga (0.0236”), unless otherwise indicated.
 - 3. Longitudinal Joint Sealants: Field applied.
 - 4. Foam core shall be continuously foamed-in-place, zero ODP and zero VOC

closed cell polyurethane.

5. Exterior Finish: One coat 70% polyvinylidene fluoride (PVDF) coil coating, nominal 0.7 mil (0.02 mm), over 0.2 mil (0.005 mm) primer; color as selected by Architect from manufacturer's standard colors.
 6. Interior Finish: One coat factory applied Polyester coil coating nominal 0.7 mil (0.02 mm) in Igloo White, 0.2 mil (0.005 mm) primer.
 7. Panel width: 36".
 8. Panel thickness: 2-1/2" minimum thickness.
 9. R-value: 18.5 minimum.
- B. Metl-Span Striated Insulated Metal Wall Panel: Concealed fastener wall panels with offset double tongue and groove joinery.

2.3 ACCESSORIES

A. Metal Wall Panel Accessories:

1. Provide complete metal wall panel assembly including trim, copings, fascia, parapet caps, soffits, sills, inside and outside corners, jambs, and miscellaneous flashings. Include required fasteners, gaskets, closure strips, and sealants.
2. Fabricate accessories listed above from aluminum extrusions, 6063-T5 unless noted otherwise on the Drawings.
3. Finish exposed trim and extrusions to match panels.
4. Provide extrusions with thermal breaks.

2.4 MISCELLANEOUS MATERIALS

- A. Sealant: Synthetic non-skinning butyl rubber sealant, as recommended by panel manufacturer, for metal wall panel assemblies to remain watertight.
- B. Fasteners: Self-tapping screws, bolts, nuts, and other acceptable fasteners recommended by panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal wall panels by means factory-applied coating.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine metal wall panel supports, substrates, and conditions for compliance with requirements for installation tolerances and other conditions affecting work.
1. Verify that structural panel support members and anchorage have been installed within

the following tolerances:

- a. Plus or minus 1/4 inch (6.35 mm) in 20 feet (6096 mm).
 - b. Plus or minus 1/2 inch (12.7 mm) across building elevation.
 - c. Plus or minus 1/8 inch (3.17 mm) within 5 feet (1524 mm) of any change in plane.
- B. Correct out of tolerance work and deficient conditions prior to proceeding with metal wall panel installation.

3.2 PREPARATION

- A. Install miscellaneous framing and anchorage according to ASTM C 754, metal wall panel manufacturer's written recommendations, and approved shop drawings.

3.3 METAL WALL PANEL INSTALLATION

- A. Install metal wall panels and accessories in accordance with manufacturer's standard written recommendations and approved shop drawings.
- B. Tear-off work shall be accomplished at night and night crew shall provide cover with EPDM draping to protect the interior of the building(s). New siding shall be applied during the day. Remove no more siding than can be replaced during the next day's work. Maintain weather-proofing at all times.
- C. General: Install metal wall panels in orientation, sizes, and locations indicated. Anchor metal wall panels and other components securely in place. Provide for thermal and structural movement.
1. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as approved by manufacturer.
 2. Field cutting of metal wall panels is not permitted.
 3. Fasten metal wall panels to supports with concealed clips at each joint at location, spacing, and with fasteners recommended by manufacturer. Install clips to supports with self-tapping fasteners.
 4. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- D. Fasteners for Steel Wall Panels:
1. Exterior: Stainless-steel.
 2. Interior: Carbon steel.
- E. Metal Protection: Provide metal wall panel manufacturer's recommended permanent separation material where dissimilar metals will contact each other or corrosive substrates.

- F. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required or recommended by manufacturer for weatherproof performance of metal wall panel assemblies.
 - 1. Seal metal wall panel end laps to supports or back-up flashing sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer. Do not install sealant in locations that will interfere with drainage of pressure-equalized panel chambers.
 - 2. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.4 ACCESSORY INSTALLATION

- A. General: Install metal wall panel accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install related flashings and sheet metal trim per requirements of Division 07 Section "Sheet Metal Flashing and Trim."
 - 2. Install components required for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 - 3. Comply with performance requirements and manufacturer's written installation instructions.
 - 4. Provide concealed fasteners except where noted on approved shop drawings.
 - 5. Contractor shall coordinate with the wall panel manufacturer all fasteners that penetrate, and supports that are in contact with, the new wall panel system to ensure material compatibility and minimize damage to new wall panel finish. Follow wall panel manufacturer's standard recommendations for fastening to and through the new insulated wall panels.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: An independent testing and inspecting agency acceptable to COTR to perform field tests and inspections and to prepare test reports.
- B. Water-Spray Test: After completing portion of metal wall panel assembly including accessories and trim, test 2-bay area selected by COTR for water penetration, according to AAMA 501.2. Wall areas should be tested as a routine QA procedure. Areas erected by each crew should be checked at various stages of erection.
- C. Manufacturer's Field Service: Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation. Submit written report. Correct deficiencies noted in report.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Clear weep holes and drainage channels of obstructions, dirt, and sealant. Maintain in a clean condition during construction.
- B. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

END OF SECTION