

SECTION 13060 - MANUFACTURED INSULATED METAL PANELS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Factory fabricated insulated metal wall panels with concealed fasteners.
 2. Factory fabricated insulated metal ceiling panels.
 3. Factory fabricated insulated metal roof panels.
- B. Related Sections include the following:
1. Division 13 Section 13062 "Vapor Barriers and Flashings."
 2. Division 13 Section 13063 "Cold Storage Doors".
 3. Division 13 Section 13064 "Overhead Dock Doors ".

1.3 PERFORMANCE REQUIREMENTS

- A. Provide manufactured insulated wall panel assemblies complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior.
- B. Air Infiltration: Provide manufactured wall panel assemblies with permanent resistance to air leakage through assembly of not more than 0.01 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 20 lbf/sq. ft.
- C. Water Penetration: Provide manufactured wall panel assemblies with no water penetration as defined in the test method when tested according to ASTM E 331 at a minimum differential pressure of 20 percent of inward acting, wind-load design pressure of not less than 6.24 lb/sq. ft. and not more than 20.0 lb/sq. ft.
- D. Structural Performance: Provide manufactured wall panel assemblies capable of withstanding design wind loads indicated below with deflection no greater than the following, based on testing manufacturer's standard units according to ASTM E 330 by a qualified independent testing and inspecting agency.
1. Wall Panels
 - a) Wind Load Inward = 26 PSF (except corner)
 - b) Wind Load Outward = 26 PSF (except corner)
 - c) Wind Load at Corners = 30 PSF
 - d) Maximum Deflection: L/180 of the span.
 - e) Corner widths are 10% of least building horizontal dimension.
 2. Ceiling panels:
 - a) Ceiling walk-on live load = **20 PSF**

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- b) Maximum Deflection: $L/240$ of the span.
- 3. Roof panels:
 - a) Roof live load = 42 PSF
 - b) Maximum deflection: $L/240$

1.4 SUBMITTALS

- A. Product Data: Include manufacturer's product specifications, standard details, certified product test results, and general recommendations, as applicable to materials and finishes for each component and for total panel assemblies.
- B. Shop Drawings: Show layouts of panels, details of corner conditions, joints, panel profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work.
 - 1. For installed products or systems indicated to comply with certain design loadings, include structural analysis data for each component and attachment design for each component, signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples for Initial Selection: Manufacturer's color charts or chips showing the full range of colors, textures, and patterns available for wall panels with factory-applied finishes.
- D. Product Test Reports: Indicate compliance of manufactured wall panel assemblies and materials with performance and other requirements based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Only installers who have been pre-qualified and pre-approved by the Engineer, may perform this work.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated.
- C. Fire-Test-Response Characteristics: Wall and ceiling panels shall be approved for Class I fire-rated construction, non-bearing, without sprinklers. Panels shall pass the factory mutual full scale corner test (FM 4880) and the Underwriters Laboratories large scale corner test as outlined by UL Subject 1040.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against damage during transportation or handling.
- B. Handling: Exercise care in unloading, storing, and erecting wall panels to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.7 PROJECT CONDITIONS

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- A. Field Measurements: Verify location of structural members and openings in substrates by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, either establish opening dimensions and proceed with fabricating wall panels without field measurements or allow for trimming panel units. Coordinate wall construction to ensure actual locations of structural members and to ensure opening dimensions correspond to established dimensions.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal wall panels within the specified warranty period and agreeing to repair finish or replace wall panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.
- C. Finish Warranty Period: 20 years from date of Substantial Completion.
- D. Vapor-Tight Warranty
 - 1. Contractor shall guarantee in writing a perfect vapor barrier continuity for a period of two years after acceptance. Any frost or dripping water in a refrigerated space is evidence that such continuity does not exist and must be repaired to the Engineer's satisfaction at no cost to the Owner.
 - 2. Insulated panels shall be guaranteed free from delamination for a period of one year whether or not the cause of delamination is from:
 - a) Temperature-caused compressive buckling.
 - b) Defective manufacture.
 - c) Damage in handling during erection.
 - 3. Any delaminated panels for above reasons will require complete panel replacement.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide panels by one of the following:
 - 1. Steel-Faced, Insulated Wall Panels:
 - a) Aluma Shield Industries, Inc., Daytona Beach, Florida.
 - b) Metl-Span Corp., Lewisville, Texas.
 - c) Coldmatic Building Systems, Concord, ON, Canada L4K 2A6
 - d) Galvamet Galvacer Building Systems, Houston, TX

2.2 METALS AND FINISHES

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- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted where called for by the coil-coating process to comply with ASTM A 755 and the following requirements:
1. Galvanized Steel Sheet: ASTM A 653, G90; structural quality.
 2. Surface: Manufacturer's standard stucco-embossed finish.

2.3 WALL PANEL ASSEMBLIES

- A. Insulated Wall Panels: Provide factory-assembled, wall panel units consisting of a specified core material continuously foamed-in-place chemically bonded to metal interior and exterior face sheets. Fabricate panel face sheets to the profile or configuration indicated; and of the material, finish, and thickness indicated. Design joints between panels to form vaportight seals.
1. Metlspan III – CF Mesa wall panel or approved equal with a thickness as shown on the building plans.
 2. Exposed Finish for Exterior Face: 26 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 finish coat of full strength 70% PVF2 fluoropolymer in color selected by the owner.
 3. Exposed Finish for Interior Face: 26 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 mil siliconized polyester coating. Color is Polar White.
- B. Core Materials:
1. Poured-in-Place Polyisocyanurate Foam: Modified isocyanurate foam with at least 92% closed-cell structure and the following characteristics:
 - a) Density: minimum 2.0 lb/cu. ft.
 - b) Compressive Strength: 22 psi minimum.
 - c) Tensile Strength: 33 psi minimum.

2.4 CEILING PANEL ASSEMBLIES

- A. Insulated Ceiling Panels: Provide factory-assembled, mechanically closed standing seam roof panel units consisting of a specified core material continuously foamed-in-place chemically bonded to metal interior and exterior face sheets. Fabricate panel face sheets to the profile or configuration indicated; and of the material, finish, and thickness indicated.
1. Metlspan III – CF Mesa wall panel or approved equal with a thickness of 4".
 2. Exposed Finish for Exterior (top) Face: 24 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 finish coat of full strength 70% PVF2 fluoropolymer in color selected by the owner.
 3. Exposed Finish for Interior (bottom) Face: 26 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 mil siliconized polyester coating. Color is Polar White.
- B. Core Materials:
1. Poured-in-Place Polyisocyanurate Foam: Modified isocyanurate foam with at least 90 percent closed-cell structure and the following characteristics:

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2. Poured-in-Place Polyisocyanurate Foam: Modified isocyanurate foam with at least 92% closed-cell structure and the following characteristics:
 - a) Density: minimum 2.0 lb/cu. ft.
 - b) Compressive Strength: 22 psi minimum.
 - c) Tensile Strength: 33 psi minimum.

2.5 ROOF PANEL ASSEMBLIES

- A. Insulated Roof Panels: Provide factory-assembled, mechanically closed standing seam roof panel units consisting of a specified core material continuously foamed-in-place chemically bonded to metal interior and exterior face sheets. Fabricate panel face sheets to the profile or configuration indicated; and of the material, finish, and thickness indicated. Design joints between panels to form vaportight seals.
 1. Metlspan III – SLR-45 Panel or approved equal with a thickness of 4”.
 2. Exposed Finish for Exterior (top) Face: 24 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 finish coat of full strength 70% PVF2 fluoropolymer in color selected by the owner.
 3. Exposed Finish for Interior (Bottom) Face: 26 ga. stucco embossed G-90 galvanized steel with a Mesa pattern treated with a 0.2 mil base primer, followed by a nominal 0.7 mil siliconized polyester coating. Color is Polar White
- B. Core Materials:
 1. Poured-in-Place Polyisocyanurate Foam: Modified isocyanurate foam with at least 92% closed-cell structure and the following characteristics:
 - a) Density: minimum 2.0 lb/cu. ft.
 - b) Compressive Strength: 22 psi minimum.
 - c) Tensile Strength: 33 psi minimum.

2.6 MISCELLANEOUS MATERIALS

- A. Fasteners: Self-tapping screws, expansion fasteners and other suitable approved fasteners designed to withstand design loads.
 1. Use cadmium-plated or stainless-steel screw fasteners for exterior and interior applications.
 2. Provide exposed fasteners with heads matching color of panel by means of factory-applied coating.
 3. Expansion fasteners for attaching wall panels to structural members shall be 5/16” diameter Fab-Lok fasteners as manufactured by Fabco Fastening Systems. Use FSS-10-4, FSS-10-8, and FSS-10-12 as appropriate for grip range and penetration length required for each condition.
- B. Accessories: Unless otherwise specified, provide components required for a complete wall panel assembly including trim, copings, fascia, sills, corner units, clips, flashings, sealants, fillers, closure strips, and similar items. Match materials and finishes of panels.
 1. Insulated Panel Sealant Type # 1 (IP-1) - Two -part, self leveling, elastomeric polyurethane. For use in sealing panels to the base channel and where noted on the drawings . Urexpan NR200 by Pecora Corporation or approved equal. Color as selected by Owner from manufacturer's standard colors.

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2. Insulated Panel Sealant Type # 2 (IP-2) - One-part, non sag, moisture curing, polyurethane based synthetic rubber sealant. For use in sealing panel joints and elsewhere as noted on the drawings. Dynatrol I by Pecora Corporation or approved equal. Color as selected by Owner from manufacturer's standard colors.
 3. Insulated Panel Sealant Type # 3 (IP-3) - One-part, non-sag, medium modulus, neutral cure, silicone sealant. For use in back-caulking panel joints and at locations as indicated on the drawings. Pecora 895 Silicone Sealant or approved equal. Color - translucent unless noted otherwise.
 4. Insulated Panel Sealant Type # 4 (IP-4) - Sealing Tape: Pressure-sensitive, permanently elastic, nonsag, nontoxic, nonstaining tape. 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Size: 2" X 1/8". For use in securing vapor flashings and as indicated elsewhere on the drawings. #214 Uniseal tape.
 5. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam flexible closure strips. Cut or premold to match configuration of panels. Provide closure strips only where indicated or necessary to prevent slumping of vapor barrier caulking.
- C. Vapor-Barrier Flashing: Vapor barrier flashings at wall corners, intersections, wall/roof junctures and elsewhere as noted on the drawings or required for vapor barrier continuity, shall be 60 mil EPDM sheet elastomer by Firestone, Goodyear or Carlisle Syntec. See Section 13062.
- D. Foam-in-Place Insulation:
1. Froth Pak by Insta-Foam Products, Inc.
 2. Versifoam by Universal Foam Systems, Inc.

2.7 FABRICATION

- A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Fabricate panel joints with tongue and groove joints that provide a vapor-tight seal using field installed joint sealant.

2.8 SECONDARY FRAMING

- A. Panel Anchorage: Provide channels or angles as detailed and anchors.
1. Base Channel or Sill Angles: Fabricate from 12 gauge thick, cold-formed, galvanized steel sections.
 2. Use power actuated fasteners to anchor base channels or angles to substrate.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements indicated for conditions affecting performance of metal panel walls.

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1. Panel Supports and Anchorage: Examine wall framing to verify that girts, angles, and other secondary structural panel support members and anchorage have been installed to meet requirements of panel manufacturer.
2. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate metal panels with rain drainage work; flashing; trim; and construction of soffits, roofing, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
- B. Promptly remove protective film, if any, from exposed surfaces of metal panels. Strip with care to avoid damage to finish.

3.3 PANEL INSTALLATION

- A. General: Comply with panel manufacturer's written instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Field cutting panels by torch is not permitted.
 2. Install panels with concealed fasteners installed from the exterior.
 3. Install panels with exposed interior fasteners.
 4. Locate and space exposed fasteners in true vertical and horizontal alignment. Use proper tools to obtain controlled, uniform compression for positive seal.
- B. Accessories: Install components required for a complete panel assembly including trim, copings, fascia, sills, corner units, clips, flashings, sealants, fillers, closure strips, and similar items.
- C. Joint Sealers: Install vapor-barrier flashings and sealants where indicated and where required for vapor-proof performance of wall panel assemblies. Provide types of flashings and sealants indicated.
 1. Install sealants to prevent air and vapor penetration. Flash and seal panels at ends and intersections with rubber vapor-barrier flashings as detailed.
- D. Wall Panels: Apply elastomeric sealant tape continuously between metal base channel or angle and concrete, and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up according to sealant manufacturer's written instructions.
 1. Align bottom of wall panels and fasten with self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 2. Install screw fasteners with power tools having controlled torque adjusted to prevent damage to screw threads or panels. Install screws in predrilled holes.
 3. Provide vapor-barrier flashings around all pipe and conduit penetrating walls.
- E. Separate dissimilar metals by painting each metal surface in area of contact with a bituminous coating or by other permanent separation as recommended by manufacturers of dissimilar metals.

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- F. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4 inch in 20 feet on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.4 FOAM-IN-PLACE

- A. Wall Penetrations shall be reinsulated by filling ALL voids around pipe, conduits, steel framing members and others. The cutting of the opening for pipe or conduit is the responsibility of the Contractor installing the pipe. The foaming of the void in the wall panel and resealing the vapor barrier is the responsibility of this Contractor.
- B. Wall corners and intersections shall be foamed to provide insulation to insulation contact and continuity around the entire insulation envelope.

3.5 CLEANING AND PROTECTING

- A. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- B. Cleaning: Remove temporary protective coverings and strippable films, after each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

END OF SECTION 13060