

**SECTION 07 40 00
SIDING PANELS**

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies insulated metal wall panels as shown.

1.2 RELATED WORK

- A. Sealant between panels and other materials: Section 07 92 00, JOINT SEALANTS.
- B. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 MANUFACTURER'S QUALIFICATIONS

- A. Metal wall panels shall be products of a manufacturer regularly engaged in the fabrication and erection of metal panels of the type and design shown and specified.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Metal panel, 150 mm (six inch) square, showing finish, each color and texture.
- C. Shop Drawings: Wall panels, showing details of construction and installation. Shop Drawings to show the following:
 - 1. Profile.
 - 2. Gauge of both exterior and interior sheet.
 - 3. Location, layout and dimension of panels.
 - 4. Location and type of fasteners.
 - 5. Shape and method of attachment of all trim and edges.
 - 6. Locations and type of sealants.
 - 7. Installation sequence.
 - 8. Coordination Drawings: Provide elevation drawings and building sections which show panels in relationship to required locations for structural support. Include panel details and details showing attachment to structural support.
 - 9. Other details as may be required for a weathertight installation.
- D. Manufacturer's Literature and Data: Wall and roof panels
- E. Fire Test Report: Report of fire test by recognized testing laboratory for fire rating specified, showing details of construction.
- F. Warranty: Provide the three (3) warranties listed below:

1. Limited Warranty: Standard form in which manufacturer agrees to repair or replace items that fail in materials or workmanship within specified warranty period. The items covered by the warranty include structural performance including bond integrity, deflection and buckling.
 - a. Warranty Period: Two (2) years from date of Substantial Completion, or 2 years and 3 months from the date of shipment from manufacturer's plant, whichever occurs first.
2. Finish Warranty: Standard form in which manufacturer agrees to repair or replace metal panels that evidence deterioration of fluropolymer finish, including flaking or peeling from approved primed substrate, chalk in excess of 8 when tested in accordance with ASTM D4214, Method A, and/or color fading in excess of $\Delta 5$ E Hunter units on panels when tested in accordance with ASTM D2244.
 - a. Warranty Period: Twenty (20) years from date of Substantial Completion.
3. Weathertight Warranty: Additional warranty coverage form in which manufacturer and installing contractor agree to repair or replace items that fail to remain weathertight within specified warranty.
 - a. Warranty Period: Five (5) years from date of Substantial Completion.

1.5 DESIGN REQUIREMENTS

- A. Structural Performance: Engineer, fabricate, and erect insulated metal wall panels to withstand design loads within limits and under conditions required.
 1. Design the connections of the panels to develop the flexural capacity of the panel in the inward direction. For the rebound (i.e. suction) direction, 85% of the inward reaction can be utilized.
 2. Connection Safety Factors (SF):
 - a. SF = 1 shall be allowed for connection elements that provide a ductile mode of failure (e.g. bolt bearing, tensile yielding, etc.)
 - b. SF = 1.5 shall be used for connection elements that provide a non-ductile mode of failure (e.g. weld fracture, concrete cone failure due to anchor bolt pull-out, etc.)

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A653/A653M-07..... Steel Sheet, Zinc-Coated (Galvanized), or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - A463-06..... Steel Sheet, Cold-Rolled, Aluminum-Coated, by the Hot-Dip Process
 - A924/A924M-07..... Steel Sheet, Metallic Coated by the Hot-Dip Process
 - A1008/A1008M-07..... Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy
 - B209/209M-07..... Aluminum and Aluminum Alloy Sheet and Plate
 - E119-08..... Fire Test of Building Construction and Materials

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

- A. Kingspan Designwall 2000, or equal

2.2 SHEET STEEL

- A. 20 gauge face sheet, 0.889 mm (.035 inch) thick.
- B. 24 gauge liner sheet, 0.584 mm (.023 inch) thick.

2.3 FASTENERS

- A. Fasteners for steel panels shall be galvanized or cadmium plated steel.
- B. Fasteners of size, type and holding strength as recommended by manufacturer.

2.4 THERMAL INSULATING MATERIALS

- A. Polyisocyanurate Core: ASTM C591, Type IV.

2.5 FABRICATION

- A. Insulated metal wall panels shall consist of an insulating core enclosed between two metal face sheets, of configuration shown on drawings. Construct panels by pressing members together to form a structural unit with closed ends. Overall thickness of panels is shown on drawings. Connection between panels shall be by interlocking male

and female joints per manufacturer's standard detail. Work shall include all closures, fasteners, trims, gaskets, sealants, and related components and accessories. Construct panels as follows:

1. Exterior face of wall sheet:
 - a. 20 gauge face sheet, 0.889 mm (.035 inch) thick galvanized steel.
2. Interior liner face of wall sheet:
 - b. 24 gauge liner sheet, 0.584 mm (.023 inch) thick galvanized steel.
3. Accessories and fastenings shall be the same material and finish as the panels. Thickness and installation of accessories and flashing shall be as recommended by panel manufacturer.

2.6 ACCESSORIES

- A. Window Parts: Provide manufacturer's integrated window head and sill adapter extrusions.
- B. Fasteners: Fasteners as recommended by manufacturer.
- C. Clips: Zinc-plated C1050 annealed spring steel, heat-treated to nominal 150 ksi yield strength.
- D. Perimeter Trim:
 1. Fabricated perimeter trim and metal flashing: Same gauge, material and coating color as exterior face of insulated metal wall panel.
 2. Extruded perimeter trim: Extruded aluminum 6063-T5 alloy with spray applied PVF coating in same color as exterior face of insulated metal wall panel.
- E. Roof Copings:
 1. Fabricated roof copings and profiles: Same gauge, material and coating color as exterior face of insulated metal wall panel.
 2. Extruded roof copings and profiles: Extruded aluminum 6063-T5 alloy with spray applied PVF coating in same color as exterior face of insulated metal wall panel.
- F. Butyl Weather Barrier Sealant: Non-skidding butyl tube sealant per panel manufacturer's recommendations compliant with AAMA 809.2.

2.7 FINISH

- A. For steel face sheets, the finishes shall be as follows:
 1. 1.0 mil Fluoropolymer (PVDF) Two Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70%) MICA coat.
- B. Aluminum alloy used for color coating shall be as required to produce specified color. Color shall be as specified in Section 09 06 00,

SCHEDULE FOR FINISHES. Color for sheet aluminum shall not deviate more than the colors of extrusion samples.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install panels in accordance with the manufacturer's approved erection instructions and diagrams, except as specified otherwise. Panels shall be in full and firm contact with supports and with each other at side and end laps. Where panels are cut in the field, or where any of the factory applied coverings or coatings are abraded or damaged in handling or installation, they shall, after the necessary repairs have been made with material of the same type and color as the weather coating, be approved before being installed. All cut ends and edges, including those at openings through the sheets shall be sealed completely. Correct defects or errors in the materials in an approved manner. Replace materials which cannot be corrected in an approved manner with nondefective material. Provide molded closure strips where indicated and whenever sheets terminate with open ends after installation.
- B. Wall Panels: Apply panels with the configuration in a horizontal position. Seal side and end laps with joint sealing material. Flash and seal walls at the base, at the top, around windows, door frames, framed louvers, and other similar openings. Install closure strips, flashings, and sealing material in an approved manner that will assure complete weather tightness.
- C. Flashing: All flashing and related closures and accessories in connection with the preformed metal panels shall be provided as indicated and as necessary to provide a watertight installation. Details of installation, which are not indicated, shall be in accordance with the panel manufacturer's printed instruction and details, or the approved shop drawings. Installation shall allow for expansion and contraction of flashing.
- D. Fasteners: Fastener spacings shall be in accordance with the manufacturer's recommendations, and as necessary to withstand the design loads indicated. Install fasteners in valleys or crowns as recommended by the manufacturer of the sheet being used. Install fasteners in straight lines within a tolerance of 13 mm (1/2-inch) in the length of a bay. Drive exposed penetrating type fasteners normal to the surface, and to a uniform depth to seat gasketed washers properly, and drive so as not to damage factory applied coating. Exercise

extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered in valleys, or crowns, as applicable. After drilling, remove metal filings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners shall not exceed that recommended by the manufacturer. Remove panels deformed or otherwise damaged by over-torqued fastenings, and provide new panels. Remove metal shavings and filings from roofs on completion to prevent rusting and discoloration of the panels.

3.2 PROTECTION AND CLEANING

- A. Protect panels and other components from damage during and after erection, and until project is accepted by the Government.
- B. After completion of work, all exposed finished surfaces of panels shall be cleaned of soil, discoloration and disfiguration. Touch-up abraded surfaces of panels.

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