

**SECTION 07 40 00
ROOFING AND SIDING PANELS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies uninsulated metal wall and roof panels and composite metal wall systems as shown.

1.2 RELATED WORK

- A. Sealant: 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 and roof panels and composite metal wall and roof systems shall be products of a manufacturer regularly engaged in the fabrication and erection of metal panels and composite metal wall and roof systems 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 and roof panels, showing details of construction and installation. Collateral steel framing thickness and kind of material, closures, flashing, fastenings and related components and accessories.
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.

1.5 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extend referenced. The publications are referenced in the text by the basic designation only.
B. American Society for Testing and Materials (ASTM):
A653/A653M-10 Steel Sheet, Zinc-Coated (Galvanized), or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
A463-10 Steel Sheet, Cold-Rolled, Aluminum-Coated, by the Hot-Dip Process
A924/A924M-10 Steel Sheet, Metallic Coated by the Hot-Dip Process

A1008/A1008M-10	Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy
B209/209M-07	Aluminum and Aluminum Alloy Sheet and Plate
C1396-11	Standard Specification for Gypsum Board
C553-08	Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
C591-09	Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
C612-10	Mineral Fiber Block and Board Thermal Insulation
E119-10	Fire Test of Building Construction and Materials

PART 2 - PRODUCTS

2.1 SHEET STEEL

- A. Minimum 0.8mm thick for wall and roof panels.
- B. Steel, Sheet, Galvanized: ASTM A653/A653M, Structural.
 - 1. Grade 40, galvanized coating conforming to ASTM A924/A924M, Class Z 275 G-90.

2.2 ALUMINUM PLATE AND SHEET

- A. ASTM B209/209M

2.3 FASTENERS

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

2.4 GYPSUM BACKING BOARD

- A. ASTM C1396, Type X, Plain face, Square edge.

2.5 THERMAL INSULATING MATERIALS

- A. Urethane or isocyanurate Board: ASTM C591, Type I.
- B. Mineral Fiber Blankets: ASTM C553, Type I.
- C. Mineral Fiber Board: ASTM C612, Class I.

2.6 FABRICATION

- A. Uninsulated metal wall panels shall be single sheets, of approximate overall depth and configuration shown on drawings. Connection between panels shall be by interlocking joints filled with sealing compound as specified in Section 07 92 00, JOINT SEALANTS. Furnish wall panels in one continuous length for full height or at least one story height with no horizontal joints, except at openings. Furnish roof panels in one continuous length of roof span and provide cut-outs as required for

passage of pipes, conduits, vents and the like. Construct panels as follows:

1. Corrugated Wall panels:
 - a. 26 gauge thick factory finished corrugated steel.
 - b. Rib height: 5/8" Rib spacing: 2.67" o.c.
2. Accessories and flashing shall be the same material as the panels. Thickness and installation of accessories and flashing shall be as recommended by the panel manufacturer.

B. Flashings

1. Fabricate flashing from aluminum sheet in matching color; where exposed to view finish to match adjacent panels. Provide lap strip under flashing at abutted conditions; with lapped surfaces sealed with a full-bed of non-hardening sealant.

2.7 FABRICATION

- A. Fabricate panel units to dimensions indicated on the drawings based on an assumed design temperature of 70 degrees F.
- B. Fabricate panels in sizes shown using composite aluminum panel material and perimeter extrusion so that the panel thickness at the joinery is as required by design. Completed panel shall be properly fabricated and designed so that no restraints can be placed on the panel, which might result in compressive skin stresses. The installation detailing shall be such that the installed panels shall remain flat due to temperature changes. Oil canning of panel surface is not acceptable.
- C. Shop fabricate units ready for erection. If not shop assembled, pre-fabricate components at the shop as required for proper and expeditious field assembly.
- D. Design, fabricate, assemble, and erect wall panel units.
- E. Where drawings indicate, factory curve panels to required radius. Special considerations for design required by manufacturer.
- F. If required, provide stiffeners adhered to rear face of panels and mechanically fastened to perimeter extrusion members, with spacing as required by specific job wind loading.

2.8 FINISH - CORRUGATED METAL PANELS

- A. For steel face sheets, the finishes shall be as follows:
 1. Fluorocarbon finish, consisting of a prime coat and a polyvinylidene fluoride finish coat of 1.0 mil minimum dry film thickness on one side, and a wash coat of 0.5 mil minimum dry film thickness applied to reverse side.
 2. Color - custom color selected by architect.

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. Corrugated Wall Panels: Apply panels with the configuration as shown. Provide panels in the longest obtainable lengths, with end laps occurring only at structural members full heights from base to eave with no horizontal joints except at the junctions of door frames, window frames, louver panels, and similar locations. 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. Flashing will not be required where approved "self-flashing" panels are used.
- C. Composite Wall Panels: Apply panels with the configuration as shown. Install according to manufacturer's recommendations.
- D. 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.
- E. 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 ISOLATION OF ALUMINUM

- A. Isolate aluminum in contact with or fastened to dissimilar metals other than stainless steel, white bronze, or other metal compatible with aluminum by one of the following:
 - 1. Painting the dissimilar metal with a prime coat of Zinc-Molybdate followed by two coats of aluminum paint.
 - 2. Placing a non-abrasive tape or gasket between the aluminum and the dissimilar metal.
- B. Paint aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of alkali-resistant bituminous paint.
- C. Paint aluminum in contact with wood or other absorptive materials, that may become repeatedly wet, with two coats of bituminous paint, or two coats of aluminum paint. Seal joints with caulking material.

3.3 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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