

SECTION 7A

PROTECTED METAL ROOFING AND SIDING

1. APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

Military Specification (Mil. Spec.):

MIL-S-4174B Steel Sheet and Strip, Flat, Aluminum
Coated Low Carbon

American Iron and Steel Institute (AISI) Publication:

Specification for the Design of Cold-Formed Steel Structural
Members (September 3, 1980, with Errata)

1.3 American Society of Heating, Refrigerating and Air-Conditioning
Engineers, Inc. (ASHRAE) Publication:

Handbook, Fundamentals (1981 and Errata)

American Society for Testing and Materials (ASTM) Publications:

A 428-81 Weight of Coating on Aluminum-Coated Iron
or Steel Articles

A 446-76 Steel Sheet, Zinc-Coated (Galvanized) by
(R 1981) the Hot-Dip Process, Structural (Physical)
Quality

C 612-77 Mineral Fiber Block and Board Thermal
Insulation

E 84-81a Surface Burning Characteristics of
Building Materials

2. GENERAL: Drawings indicate extent and general assembly details of the metal roofing and siding. Members and connections not indicated on the drawings shall be designed by the Contractor. Modification of details will be permitted when approved; however, such approval will not relieve the Contractor from the responsibility for coordination with other portions of the work or from any other responsibility under the contract.

3. SUBMITTALS:

3.1 Samples: Samples of roof and wall covering, fasteners, insulation, sealant, and accessories shall be submitted for approval.

3.2 Shop Drawings: Shop drawings shall be submitted for approval in accordance with the SPECIAL PROVISIONS. Shop drawings shall consist of catalog cuts, design and erection drawings, protective finish specifications, and other data as necessary to clearly describe design,

materials, sizes, layouts, construction details, fasteners, and erection. Shop drawings shall be accompanied by engineering design calculations to demonstrate compliance with the specified requirements. Section modulus and moment of inertia of steel sheet shall be determined in accordance with the AISI publication, Specification for the Design of Cold-Formed Steel Structural Members.

3.3 Manufacturer's Installation Instructions: Manufacturer's installation instructions shall be submitted for approval.

3.4 Certificates of Compliance: Certified laboratory test reports shall be furnished showing that the type of panels being delivered have been tested within the past 12 months and conform to the applicable provisions specified herein. Certificates of compliance shall be submitted in accordance with the SPECIAL PROVISIONS.

4. DELIVERY AND STORAGE: Materials shall be delivered to the site in a dry and undamaged condition and stored out of contact with the ground. Materials shall be covered with weathertight coverings and kept dry. Storage accommodations for roof and wall covering shall provide good air circulation and protection from surface staining.

5. MATERIALS:

5.1 Wall and Roof Covering: Panels shall be protected metal sheets with factory finish meeting the requirements specified herein. Metal panels shall be aluminum-zinc alloy coated steel, coated on both sides, conforming to ASTM A 428 and A 466. Sheet gages shall be manufacturer's standard for span and design load but not thinner than 26 gage for sandwich roof and wall covering and 22 gage for standard roof covering. Panels shall be factory roof and wall sandwich panels formed of two coated metal sheet faces bonded together and uniformly separated with polyurethane poured-in-place foam insulation. Both standard and sandwich roof panels shall have configurations for interlocking standing rib seams with similar profiles. Depth of configurations for roof covering shall be not less than 1-5/8 inch. Wall sandwich panels shall have a tongue and groove design. Fasteners shall be completely concealed within the joint. Sheets shall not exceed 30 feet in length and shall be sufficient to cover the entire length of any unbroken roof slope or the entire height of any unbroken wall surface when such slope or height is 30 feet or less. When length of run exceeds 30 feet, each sheet in the run shall extend over two or more spans. All sheets shall be either square-cut or miter-cut except gable and wall sheets may be cut in the shop to correspond to the roof slope and may have a horizontal joint at the eave line. Terminal pieces of sandwich panels shall be factory cut to fit indicated layout and closed with metal ends.

5.2 Accessories: Flashing, trim, molded closure strips, caps, gutters, downspouts, and similar metal accessories shall be not less than 22-gage minimum thickness. Molded closure strips shall be bituminous-saturated fiber, closed-cell or solid-cell synthetic rubber or neoprene, or polyvinyl chloride premolded to match configuration of the covering.

5.3 Fasteners: Fasteners shall be corrosion-resisting steel, type and size specified below or as otherwise approved for the applicable

requirements. Exposed fasteners shall be gasketed or have gasketed washers of a material compatible with the covering to waterproof the fastener penetration. Gasketed portion of fasteners or washers shall be neoprene or other elastomeric material approximately 1/8-inch thick. Fasteners used for structural connectors may be the same fasteners used for holding laps, except that they shall provide both tensile and shear strength of not less than 750 pounds per fastener.

5.3.1 Screws shall be not less than No. 14 diameter if self-tapping type and not less than No. 12 diameter if self-drilling and self-tapping type.

5.3.2 Automatic end-welded studs shall be shouldered type with a shank diameter of not less than 3/16 inch and cap or nut for holding covering against the shoulder.

5.3.3 Fasteners for use with explosive actuated tools shall have a shank diameter of not less than 0.145 inch with a shank length of not less than 1/2 inch for fastening panels to steel and not less than 1 inch for fastening panels to concrete. Fasteners for securing wall panels shall have threaded studs suitable for attaching approved color-coated nuts or caps.

5.3.4 Blind rivets shall be stainless steel with 1/8-inch nominal diameter shank. Rivets shall be threaded stem type if used for other than the fastening of trim, and rivets with hollow stems shall have closed ends.

5.3.5 Bolts shall be not less than 1/4-inch diameter, shouldered or plain shank as required, with proper nuts.

5.4 Insulation Materials for Wall and Roof Sandwich Panels and Standard Roof Panels: Insulation shall be of sufficient thickness to provide a coefficient of heat transmission or U-value Btu per hour per square foot per degree Fahrenheit temperature difference through the completed construction air-to-air, not in excess of 0.15 for walls and 0.10 for roof when determined for winter conditions in accordance with recognized methods in agreement with the ASHRAE Handbook, Fundamentals. Insulation shall have a flame spread not in excess of 25 and a smoke-developed rating not in excess of 50 when tested in accordance with ASTM E 84. Rigid or semirigid board insulation for use with standard roof panels shall conform to ASTM C 612, Class 1 or Class 2.

5.5 Sealant: Sealant shall be as recommended by the roofing and siding manufacturer.

6. INSTALLATION:

6.1 General: Installation shall be in accordance with the approved erection instructions and drawings. Molded closure strips shall be installed wherever covering sheets terminate in open end configurations, exclusive of flashings. Exposed surfaces and edges shall be kept clean and free of foreign materials. Stained, discolored, or damaged sheets shall be removed from the site. Sheets with improper or mislocated drill holes shall be considered damaged and removed from the site.

6.2 Wall and Roof Covering: Wall covering shall be applied with the longitudinal configurations in the vertical position. Roof covering shall be applied with the longitudinal configurations in the direction of the roof slope. Laps shall be made over framing members with fasteners into framing members approximately 2 inches from the end of the overlapping sheet. Spacing of fasteners shall be as recommended by the manufacturer. Method of joint sealing shall conform to manufacturer's recommendation. Fasteners shall be installed in a concealed manner as recommended by the manufacturer of the sheet being used. Accessories shall be fastened into framing members, except as otherwise approved. Scratched, chipped, or otherwise abraded surfaces shall be touched up as necessary with the manufacturer's recommended touch-up paint.

6.3 Insulation: Insulation shall be installed as indicated. Exposed rigid or semirigid insulation shall be fastened securely without loose joints.