

**SECTION 07410**  
**PREFORMED METAL STANDING SEAM ROOFING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. This section covers the pre-finished, pre-fabricated Architectural standing seam roof system. All metal trim, accessories, fasteners, insulation and sealants indicated on the drawings as part of this section.
- B. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 01 Specifications, apply to this section.
- C. Related Work Specified Elsewhere
  - 1. Roof Deck structural steel, flat roof systems, perimeter edge systems. Roof hatches, firestopping not included in this section.

**1.2 SUMMARY**

- A. Section Includes
  - 1. Factory formed Standing Seam metal roof panels
- B. Related work specified elsewhere. (Note: select from the below or add appropriate sections)
  - 1. Section 05100 - Structural Steel
  - 2. Section 05200 or 05400 - Steel Joists
  - 3. Section 07600 - Flashing and Sheet Metal

**1.3 DEFINITIONS**

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weathertight roofing system.
- B. References:
  - 1. American Society for Testing and Materials (ASTM)
    - a. ASTM A 653: Steel Sheet, Zinc Coated by the Hot Dip Process
    - b. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process
    - c. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate
    - d. ASTM B370 Standard Specification for Copper Sheet and Strip for Building Construction
  - 2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
    - a. SMACNA Architectural Sheet Metal Manual, 1993 edition
  - 3. American Iron and Steel Institute (AISI)
    - a. AISI Cold Formed Steel Design Manual
  - 4. Aluminum Association
    - a. Aluminum Design Manual

5. Metal Construction Association
  - a. Preformed metal Wall Guidelines
6. Code References
  - a. ASCE, Minimum Loads for Buildings and Other Structures
  - b. BOCA National Building Codes
  - c. UBC Uniform Building Code
  - d. SBC Standard Building Code

#### **1.4 QUALITY ASSURANCE**

- A. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.

#### **1.5 SUBSTITUTIONS**

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.

#### **1.6 SYSTEM DESCRIPTION**

- A. Material to comply with:
  1. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvalume) by the Hot-Dip Process

#### **1.7 ROOF SYSTEM PERFORMANCE TESTING**

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet Standard Building Code Wind Load requirements.
- C. Panels to meet:
  1. Water Penetration: When tested per ASTM E-283/1680 and ASTM E-331/1646 there shall be no uncontrolled water penetration or air infiltration through the panel joints.
  2. Roof System shall be designed to meet a UL Class 90 wind uplift in accordance with UL standard 580.

#### **1.8 WARRANTIES**

- A. Finish warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace standing seam metal roof panels that show evidence of deterioration of factory-applied finish within specified warranty period.
  - 1. Exposed Panels Finish - deterioration includes the following:
    - a. Color fading more than 5 hunter units when tested according to ASTM D 2244
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214
    - c. Cracking, checking, peeling or failure of a paint to adhere to a bare metal.
  - 2. Warranty Period: 30 Years from the date of substantial completion
- B. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight condition.

## **1.9 SUBMITTALS**

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide finish samples of all colors specified.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels, metal wall panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Roof plans on which the following are shown and coordinated with each other, based on input from installer of the items involved:
  - 1. Roof panels and attachments
  - 2. Metal trusses, bracings and supports
  - 3. Roof-mounted items including snow guards and items mounted on roof curbs.
- E. LEED Submittals
  - 1. Product Test reports for Credit SS 7.2. For roof panels, indicating that the panels comply with Solar Reflective Index requirement
  - 2. Product data for Credit MR 4.1 and credit MR 4.2: Indicating the percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.

## **1.10 DELIVERY, STORAGE AND HANDLING**

- A. Ordering: Comply with manufacture's ordering instruction and lead time requirements to avoid construction delays.

- B. Deliver components, sheets, metal roof panels and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- C. Unload, store and erect metal roof panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

### **1.11 PROJECT CONDITIONS**

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

### **1.12 COORDINATION**

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leakproof, secure and noncorrosive installation.

## **PART 2 - PRODUCTS**

### **2.1 PANEL DESIGN**

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates and accessories required for a weathertight installation.
- B. Roof panels:
  - 1. Panel: MRS System 1000
  - 2. Width: 12", 14", 16", 18", and 20" widths available
  - 3. Seam Height: 1 1/2"
  - 4. Material: (22 ga.), (24 ga) Galvalume Steel; AZ50 Aluminum-Zinc Alloy-Coated Steel with ©Kynar 500 finish.  
Materials: (.032 ga) Aluminum with © Kynar 500 finish.
- C. Panels to be produced Smooth/Striations/Stiffening Ribs - Factory Standard.

- D. Panels to be designed for attachment with concealed fastener clips, spaced as required by the manufacturer to provide for both positive and negative design loads, while allowing for the expansion and contraction of the entire roof system resulting from variations in temperature.
- E. Forming: Use continuous end rolling method. No end laps on panels. No portable rollforming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.

## **2.2 ACCEPTABLE MANUFACTURERS**

- A. This project is detailed around the roofing product of Metal Roofing Systems, Inc. 7687 Mikron Drive Stanley, North Carolina, MRS System 1000.

## **2.3 MATERIALS AND FINISHES**

- A. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
- B. If Strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- C. Trim: Trim shall be fabricated of the same material and finish to match the profile, and will be press broken in lengths of 10 to 20 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded or clinched material to match the sheeting.
- D. Closures: use composition or metal profiled closures at the top of each elevation to close ends of the panels. Metal closures to be made in the same material and finish as face sheet.
- E. Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates.
- F. Substrate shall be Plywood or Metal Deck.
- G. Sealants
  - 1. Provide two-part polysulfide class B non-sag type for vertical and horizontal joints or
  - 2. one part polysulfide not containing pitch or phenolic extenders or
  - 3. Exterior grade silicone sealant recommended by roofing manufacturer or
  - 4. One part non-sag, gun grade exterior type polyurethane recommended by the roofing manufacturer.

## **2.4 FABRICATION**

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

## **PART 3 - EXECUTION**

### **3.1 INSPECTION**

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 FASTENERS**

- A. Secure units to supports
- B. Place fasteners as indicated in manufacturer's standards.

### **3.3 INSTALLATION**

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.
- B. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation.
- C. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.

### **3.4 DAMAGED MATERIAL**

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

END OF SECTION