

DMC 250T

SECTION 07 41 13

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 05 12 00 - Structural Steel Framing
 - 2. Section 05 20 00 - Metal Joists
 - 3. Section 05 21 00 Steel Joist Framing
 - 4. Section 07 60 00 - Flashing and Sheet Metal
 - 5. Section 07 62 00 – Sheet Metal Flashing and Trim

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 Materials (ASTM)
 - a. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - 2. American Society for Testing and Materials (ASTM)

- a. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process
- 3. Sheet Metal and Air Conditioning Contractors National Association
 - a. SMACNA Architectural Sheet Metal Manual, 1993 edition
- 4. American Iron and Steel Institute (AISI)
 - a. AISI Cold Formed Steel Design Manual
- 5. Aluminum Association
 - a. Aluminum Design Manual
- 6. Metal Construction Association
 - a. Preformed metal Wall Guidelines
- 7. Code References
 - a. ASCE, Minimum Loads for Buildings and Other Structures
 - b. International Building Code (IBC)

1.4 QUALITY ASSURANCE

- A.** Drexel Metals products establish a minimum of quality required.
 - 1. Drexel Metals, 1005 Tonne Rd. Elk Grove Village, IL 60007; Phone: (888) 321-9630. Fax: (502) 690-6174. E-mail: info@drexelmetals.com.
 - 2. Basis of Design Product: Subject to compliance with requirements provide Drexel Metals DMC 250T Metal Roof Panel.
- B.** Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- C.** Panels shall be factory or field produced by manufacturer owned roll- forming equipment.

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: **Specifier Note: Choose from the below based on required gauge:**
 - 1. ASTM A792/A792M Standard Specification for Sheet Steel, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip process - **24 GA or 22 GA**
 - 2. Material to comply with ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate - **.032 or .040**

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 International 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 and panel system shall be ASTM 1592 Tested and approved
3. UL 2218 - Impact Resistance rated.
4. ASTM E 2140 - Standard Test Method for Water Penetration

1.8 WARRANTIES

- A.** Weathertight warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
 1. Warranty Period: 35-Years from date of Substantial Completion
- B.** 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: 35-Years from the date of substantial completion
- C.** 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, drawn to scale, 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 manufacturer'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
- E. 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.
- F. Protect strippable protective coating on any metal coated product from
- G. 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 inside laps. Include clips, cleats, pressure plates and accessories required for a weathertight installation.
- B. Roof panels shall be standing seam DMC 250T, in (Specifier choose from) 18" or 16" width with 2 5/8" nominal seam height from the substrate. The seam cap is to be mechanically seamed in the field.
- C. Seam Covers to be Factory produced with 2 beads of sealant
- D. Panels to be produced: . Specifier note: Choose from panel conditions below:
 - With Striations - Note this is factory standard if other not indicated
- E. Smooth (Consult with factory before selecting smooth panels)

- F. 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.
- G. Forming: Use continuous end rolling method. No end laps on panels.

2.2 ACCEPTABLE MANUFACTURERS

- A. This project is detailed around the DMC 250T Panel of Drexel Metals.

2.3 MATERIALS AND FINISHES

- A. Preformed roofing panels shall be fabricated of (Specifier Note - choose from) 24 GA or 22 GA Galvalume Steel, .032 or .040 Aluminum
- B. Color shall be Drexel _____ (Specifier - choose finish from available colors shown by gauge on Drexel color chart)
- C. 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.
- D. 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 12 feet. Trim shall be formed only by the manufacturer or their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings.
- E. 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.
- F. Accessories/Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates. Accessories and their fasteners shall be capable of resisting the specified design wind uplift forces and shall allow for thermal movement of the roof panel system. Exposed fasteners shall not restrict free movement of the roof panel system resulting from thermal forces, except at designed points of roof panel fixity
- G. Substrate shall be: (Specifier: choose from)
 - Plywood
 - ISO
 - Nailbase
 - Open Framing
- H. Roofing Underlayment
 1. On all surfaces to be covered with roofing material, furnish and install a 40 mil "Peel & Stick membrane", required as outlined by metal panel manufacturer. Membrane to be a minimum of 40 mil thickness, smooth, non-granular, high temperature.
 2. **Basis of design:** Carlisle WIP 300HT High Temperature Protection Self Adhering Roofing Underlayment.

3. Underlayment shall be laid in horizontal layers with joints lapped toward the eaves a minimum of 6" and well secured along laps and at ends as necessary to properly hold the felt in place. All underlayment shall be preserved unbroken and whole.
 4. Peel and Stick Underlayment shall lap all hips and ridges at least 12" to form double thickness and shall be lapped 6" over the metal of any valley or built-in gutters and shall be installed as required by the Standing Seam Panel Manufacturer to attain the desired 20 Year Weathertightness Warranty.
- I. 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
- C.** conditions detrimental to performance of the Work.
- D.** Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FASTENERS

- A.** Secure units to supports
 1. 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
- C.** with approved shop drawings and as may be required for a weather-tight installation.
- D.** 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