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Specifications for MP-175 Roof Panel and FP-100 Soffit Panel

SECTION 07410 METAL ROOF AND SOFFIT PANELS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Section Includes:
 - 1. Preformed metal roof panel system
 - 2. Preformed metal soffit panel system
 - 3. Associated metal roof flashings, trim, and closures
 - 4. Fasteners and attachment hardware for metal roof

1.2 RELATED SECTIONS

- A. Section 05120: Structural Steel Framing
- B. Section 05310: Steel Roof Deck
- C. Section 06100: Rough Carpentry
- D. Section 07210: Building Insulation
- E. Section 07600: Flashing and Sheet Metal
- F. Section 07714: Gutters and downspout
- G. Section 07900: Sealant

1.3 REFERENCES

- A. American Iron & Steel Institute (AISI) Specification for the Design of Cold-formed Steel Structural Members

- B. American Institute of Steel Construction (AISC) Manual of Steel Construction (Current Addition)
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM A-653 & ASTM A924: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process
 - 2. ASTM A-792: Specification for Sheet Steel, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
 - 3. ASTM A-1680-95: Standard test method for Rate of Air Leakage through Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
 - 4. ASTM A-1646-95: Standard test method for Rate of Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
 - 5. ASTM E-1592-95: Standard test method for Structural Performance of Sheet Metal and Siding Systems by Uniform Static Air Pressure Difference
- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - 1. Architectural Sheet Metal Manual (Current Addition)
- E. Underwriters Laboratories Inc.:
 - 1. Roofing Materials and Systems Directory (Current Edition). Tests for Uplift Resistance of Roof Assemblies, UL580 Test Method.

1.4 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Provide evidence that manufacturers' specified roof system is capable of meeting thermal, wind uplift, and performance requirements specified.
 - 2. Provide continuous, one-piece, preformed, prefinished single length roof panels.

B. Thermal Movement:

1. Complete metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

C. Performance Requirements:

1. Wind Uplift: Roof assembly shall be Class 90, as defined by UL 580 test method. Metal roof panel system must be listed in the current UL Roofing Materials and Systems Directory under the manufacturer and product name.
2. Air Infiltration: Complete roof system shall have a maximum static pressure air infiltration of 0.010 cfm / square foot with 6.24 psf air pressure differential when tested in accordance with ASTM E-1680-95.
3. Water Penetration: Complete roof system shall have no uncontrolled water penetration, other than condensation, when exposed to dynamic rain at 12.0 psf differential static pressure when tested for not less than fifteen minutes in duration in accordance with ASTM E-1646-95.

1.5 SUBMITTALS

A. Product Data Submittals:

1. Submit manufacturer's detailed product literature including the panel profile and dimensions, material gauge, and finish.
2. Submit manufacturer's standard color chart for color selection.
3. Submit manufacturer's installation instructions for roof panel.
4. Submit manufacturer's installation instructions for underlayment.
5. Submit a sample of each type of roof panel, complete with factory finish.

B. Shop Drawing Submittals:

1. Manufacturer of metal roof system shall provide complete shop drawings of installation. Shop drawings shall show roof plan with panel layout and details for all associated metal roof flashings.
 2. Shop drawings shall be prepared by the metal roof manufacturer. Contractor prepared shop drawings are not acceptable.
- C. Performance Test Reports:
1. Submit results indicating compliance with minimum requirements of the following performance tests:
 - a. Air Infiltration: ASTM E-1680-95
 - b. Water Penetration: ASTM E-1646-95
 - c. Wind Uplift: U.L. 90 Classification of panel system listed under the name of the manufacture.
 - d. Structural Performance: ASTM E-1592

1.6 QUALITY ASSURANCE

- A. Manufacturer:
1. Company specializing in Architectural Sheet Metal Products with ten (10) years minimum experience.
 2. Manufacturer shall be specialized in the manufacturing of standing seam metal roof panels and shall not act as installer or be owned by the same entity as installer.
- B. Installer Qualifications:
1. Installer shall have minimum five (5) projects of similar scope and magnitude that have been in service for a minimum of two years with satisfactory performance of the roof system.
 2. Installer shall follow manufacturer's installation instructions and details without exception unless written authorization from the manufacturer and architect are provided.
- C. Product Substitutions:

1. No product substitutions shall be permitted without meeting specifications.
2. Substitutions shall be submitted 10 days prior to bid date and acceptance put forth in an addendum.
3. No substitutions shall be made after the bid date.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt of panels and other materials, installer shall examine the shipment for damage and completeness.
- B. Panels should be stored in a clean, dry place. One end should be elevated to allow moisture to run off.
- C. Panels with strippable film must not be stored in the open, exposed sun.
- D. Stack all materials to prevent damage and to allow for adequate ventilation.

1.8 WARRANTY

- A. **INSTALLERS WARRANTY:** The Contractor shall furnish to the Owner a written guarantee covering the roofing and flashing work including the installation of products furnished by others and installed under this section of the work, against defects in materials and workmanship for a period of two (2) years.
- B. **FINISH WARRANTY:** Furnish to the Owner the Manufacturer's standard twenty (20) year warranty covering the paint finish against cracking, peeling, and fade (not to exceed 5 N.B.S. units).
- C. **SPECIAL WATERTIGHTNESS WARRANTY:** Furnish to the Owner a Manufacturers standard five (5) year watertightness warranty:
 1. Warranty shall be limited to the value of the installed roof assembly.
 2. Warranty shall be signed by the manufacturer of the metal roof system and authorized installer, agreeing to replace or repair defective materials and workmanship as required to maintain the metal roof system in a watertight condition.

3. Warranty shall not exclude any condition such as flashings and/or penetrations.
4. The metal roof system manufacturer shall perform a minimum of two (2) on-site inspections to verify proper installation in accordance with manufacturer's requirements a watertight system.

PART 2 PRODUCT

2.1 ACCEPTABLE MANUFACTURERS

- A. ***Metal Panel Systems, Inc. 800-554-6126***
- B. Substitutions shall fully comply with specified requirements.

2.2 SHEET MATERIALS

- A. Pre-finished metal shall be Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ-50 coating, Grade C or Hot Dipped Galvanized Steel ASTM A446-85 Grade C, G-90 Coating ASTM A653-94 and A924-94
 1. Gauge: 24 gauge (0.024")
- B. Unfinished metal shall be Galvalume Plus clear acrylic coated Galvalume ASTM 792, Class AZ-55 coating, Grade C.
 1. Gauge: 24 gauge (0.024")
- C. Finish shall be full strength Kynar 500 Fluoropolymer coating, applied by the manufacturer on a continuous coil coating line, with a topside dry film thickness of 0.70 to 0.90 mil over 0.25 to 0.35 mil prime coat, to provide a total dry film thickness of 0.95 to 1.25 mil. Bottom side shall be coated with primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesion, flexibility, and longevity as specified by the Kynar 500 finish supplier.
- D. Finish color shall be selected by the architect from the manufacturer's current standard color selection guide. Unless otherwise noted, all prefinished metal components shall be of the same finish and color.

2.3 PREFORMED METAL PANEL SYSTEM

A. Preformed Metal Roof Panels:

1. Product Name: MP-175 Panel
2. Seam Type: Integral snap lock
3. Seam Height: 1-3/4"
4. Seam Spacing: 18"
5. Texture: Smooth
6. Surface Pattern: (*choose one*) Striated, Flat, 2 Pencil Rib

B. Preformed Metal Soffit Panels:

1. Product Name: FP-100 Panel
2. Seam Type: Flush interlocking joint
3. Depth: 1"
4. Width: 12"
5. Texture: Smooth
6. Surface Pattern: 2 pencil ribs equally spaced

C. Standing seams of roof panels shall incorporate a factory injected sealant as required to meet requirements of ASTM E-1680-95 Air Leakage and E-1646-95 Water Penetration tests specified within this section.

D. Panel clips shall be supplied and installed as recommended by the manufacturer to meet performance criteria of this specification.

E. All exposed adjacent flashing shall be of the same material and finish as the roof panels.

F. Fasteners:

1. Concealed fasteners for anchor clips and flashing attachment to wood substrate shall be #10-12 x 1" long pancake head wood screw.
2. Pop rivets shall be stainless steel, rivet and mandrel, 1/8" diameter 1/4" grip range painted to match roof system.
3. There shall be no exposed fasteners except to fasten flashings, at fixing points, or as indicated on the shop drawings.

G. Field applied sealants shall be either Dow790 or Tremco Spectrum One silicone. Butyl sealants will not be acceptable unless approved by manufacturer.

2.4 FABRICATION

- A. Panels shall be fabricated in manufacturer's permanent fabrication facilities in continuous lengths as required. No horizontal end lap joints will be accepted.
- B. Panels may be fabricated on portable roll-forming machinery only in the case where long panel lengths prohibit shipping of prefabricated panels.
- C. Fabricated roofing and related sheet metal work in accordance with reviewed shop drawings and applicable standards set forth in the Sheet Metal and Air Conditioning Contractors National Association – Architectural Sheet Metal Manual (current addition).
- D. All roofing and sheet metal flashings shall be fabricated in minimum 10'-0" lengths except as noted otherwise. All flashings shall have a minimum 1/2" hemmed edge in exposed locations. Provide field fabrication miters for components that change direction on the project.

PART 3 EXECUTION

3.1 INSPECTION

- A. Substrate:
 - 1. Examine plywood or metal deck to ensure proper attachment to framing.
 - 2. Inspect roof deck to verify deck is clean and smooth, free of depressions, waves, or projections, level to +/- 1/4" in 20 feet, and properly sloped to valleys and eaves.
 - 3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
 - 4. Verify deck is dry and free of snow or ice.
- B. Underlayment
 - 1. Verify #30 unperforated asphalt saturated roofing felt underlayment has been installed over solid sheathing and fastened in place.

2. Ensure felt is installed horizontally, starting at eave to ridge with a 6" minimum overlap and 18" end laps.
3. Ensure that all nail heads are totally flush with the substrate. Nails shall be galvanized roofing nails.
4. Install manufacturer approved membrane underlayment as required to meet warranty conditions set forth in this section. Membrane underlayment must be non-granulated, minimum 40 mils thick, and high temperature resistant.

3.2 INSTALLATION

- A. Comply with manufacturer's standard installation instructions and conform to standards set forth in the Architectural Sheet Metal Manual published by SMACNA, in order to achieve a watertight installation.
- B. Install panels in such a manner that horizontal lines are true and level and vertical lines are plumb.
- C. Install starter and edge trim before installing roof panels.
- D. Remove protective strippable film prior to installation of roof panels.
- E. Attach panels using manufacturer's required clips and fasteners, spaced in accordance with approved shop drawings.
- F. Install sealants for preformed roofing panels as approved on shop drawings.
- G. Do not allow panels or trim to come into contact with dissimilar materials.
- H. Minimize traffic on completed roof.
- I. Protect installed roof panels and trim from damage caused by adjacent construction until completion of installation.
- J. Remove and replace any panels or components which are damaged beyond successful repair.

3.3 CLEANING

- A. Clean any grease, finger marks or stains from the panels per manufacturer's recommendations.
- B. Immediately remove metal filings produced from drilling and cutting to prevent rust from staining paint finish.
- C. Remove all scrap and construction debris from the site.
- D. Touch up minor abrasions and scratches with manufacturer approved touchup paint.

END OF SECTION