

SECTION 07 4113
METAL ROOF PANELS

PART 1 GENERAL

1.01 SUMMARY

- A. Project Name: Data Center.
- B. Metal panel Mansard and Aluminum Soffit, including all components specified.
- C. Disposal of demolition debris and construction waste is the responsibility of Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.
- D. Comply with the published recommendations and instructions of the roofing membrane manufacturer, at <http://manual.fsbp.com>.
- E. Commencement of work by the Contractor shall constitute acknowledgement by the Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.

1.02 RELATED REQUIREMENTS

1.03 REFERENCES

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2013.
- C. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; American Society for Testing and Materials; 2011.
- D. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; American Society for Testing and Materials; 1995 (Reapproved 2011).
- E. ASTM E1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems; American Society for Testing and Materials; 2011.
- F. MBMA - Metal Roofing Systems Design Manual; Metal Building Manufacturers Association; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Before start of roofing work, Contractor shall hold a meeting to discuss the proper installation of materials and requirements to achieve the warranty.
 - 1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.
 - 2. Notify Owner well in advance of meeting.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets on each product to be installed and manufacturer's standard detail drawings applicable to this project.
 - 1. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.
- B. Samples: Submit following samples for approval:
 - 1. 12 inch (300 mm) long sample of roof panel.
 - 2. Roof attachment clips.
 - 3. Color chips for selection of finish color and sheen.
 - 4. After selection of finish color, provide two 3 by 5 inch (75 by 125 mm) metal samples finished in color selected.

- C. Shop Drawings: Provide drawings prepared especially for this project for all relevant conditions, including plans and elevations, sections and details, specified loads, flashings, roof edges, terminations, expansion joints, curbs, penetrations, and drainage. Specifically include interfaces with materials not supplied by metal roof panel manufacturer and identify each component and its finish.
- D. Installer Qualifications: Letter from manufacturer attesting that the roofing installer meets the specified qualifications.
- E. Manufacturer's Installation Inspection Reports: Manufacturer may, at its option, inspect the installation at any time to appraise the installing contractor of their compliance with manufacturer's requirements. Typical inspections will include:
 - 1. Prior to the installation of the metal roofing panels to inspect the underlayments. The roofing contractor is responsible for assuring that the substrate is in suitable condition for the installation of the metal roofing components to the substrate.
 - 2. Intermediate inspections to ensure proper installation of the metal roofing panels (if required).
 - 3. At final completion of all metal roofing system work.
 - 4. Submit to Owner, for the project record, a copy of each report of inspection made.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Roofing installer shall have received training from metal panel manufacturer for installation of the specified roof panel system, and:
 - 1. Current Firestone Red Shield licensed installer status.
 - 2. Having and using only equipment authorized and inspected by metal panel manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Exercise extreme care in unloading, storing, and installing metal panels to prevent bending, warping, twisting, and surface damage.
- B. Store products above ground on well-supported platforms that provide minimum of 1:48 slope. Store under waterproof covering or indoors and provide proper ventilation of metal components to prevent condensation build-up between metal components.

1.08 WARRANTY

- A. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.
- B. Manufacturer's warranty is in addition to, and not a limitation of, other rights the owner may have under the contract documents.
- C. Warranty: Firestone Red Shield Limited Warranty covering roof panels and associated metal components, roof sheathing/insulation manufactured by Firestone, and accessories, covering weathertightness, finish, materials, labor, and workmanship.
 - 1. Limit of Liability: No dollar limitation.
 - 2. Scope of Coverage: Repair leaks in the roofing system caused by:
 - a. Ordinary wear and tear of the elements.
 - b. Manufacturing defect in Firestone brand materials.
 - c. Defective workmanship used to install these materials.
 - d. Damage due to winds up to 55 mph (88 km/h).
- D. Painted Finish Warranty: Provide Firestone standard Red Shield non-prorated warranty covering durability of painted finish, to include film integrity, color change, fading, and chalking, unless otherwise indicated below.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer - Metal Roof Panels and Associated Sheet Metal Components: Firestone Building Products LLC, Carmel, IN: www.firestonebpc.com.
 - 1. Provide all components of system supplied or specified by same manufacturer.

2. Roofing systems manufactured by others are acceptable provided the roofing system is completely equivalent in materials and warranty conditions and the manufacturer meets the following qualifications:
 - a. Specializing in manufacturing the roofing system to be provided.
 - b. Able to provide a no dollar limit, single source roof system warranty that is backed by corporate assets in excess of one billion dollars.

2.02 ROOFING SYSTEM DESCRIPTION

- A. Roofing System: Standing seam metal roof panels and other components, together forming a watertight assembly having the following characteristics:
 1. Warranty: 20 years.
 2. Panel Seam Type: Self-locking; not requiring field seaming.
 3. Panel Material: Steel, 24 gage (0.61 mm), with fluoropolymer finish, over G90 hot-dipped galvanized coating.
 4. Aluminum Soffit .32 gauge with fluoropolymer finish, over aluminum
 5. Color: To be selected from manufacturer's standard colors.
 6. Water Leakage: No uncontrollable water leakage at pressure differential of 2.86 psf (137 Pa), when tested in accordance with ASTM E1646.
 7. Impact Resistance: Minimum of Class 4, when tested in accordance with UL 2218.
 8. Provide all necessary members and connections, whether indicated in the manufacturer's standard detail drawings or not.
 9. Accessories and Their Fasteners: Capable of resisting the specified design wind uplift forces and allowing for thermal movement of the roof panel system, not restricting free movement of the roof panel system resulting from thermal forces except at designed points of roof panel fixity.
- B. Roof System Components: In order from the top down:
 1. Metal roofing panels, soffit and trim.
 2. Underlayment: Self-adhering underlayment over entire roof; material as specified.

2.03 ROOF PANELS AND SHEET METAL FABRICATIONS

- A. Roof Panels: Firestone UNA-CLAD UC-4 No-Clip Standing Seam Roofing; roll formed roofing panels produced in a permanent factory environment with fixed-base roll-forming equipment.
 1. Seam Height: 1-1/2 inches (38 mm).
 2. Seam Spacing (Panel Width): 17.75 inches (451 mm).
 3. Profile: Flat, no ribs or striations.
 4. Texture: Smooth.
 5. Provide factory applied integral seam sealant in leg of panel.
 6. Form roofing panels in longest practical lengths, true to shape, accurate in size, square, and free from distribution or manufacturing defects.
 7. Provide factory applied strippable plastic film for protection during fabrication and installation.
- B. Aluminum Soffit: Firestone Una-Clad UC-500, vented.
- B. Steel Sheet: ASTM A653/A653M, lock-forming quality, extra smooth, tension-leveled, galvanized/galvannealed steel, minimum spangle.
- C. Fluoropolymer Coating: 70 percent full strength Kynar 500/Hylar 5000.
 1. Exposed Surface: 1.0 mil (0.25 mm) plus/minus 0.1 mil (0.025 mm) total dry film thickness.
 2. Concealed Surface: 0.2 to 0.3 mils (0.05 to 0.08 mm) total dry film thickness.
 3. Color: To be selected from manufacturer's standard colors.
 4. Number of Coats: 2 coats.
- D. Sheet Metal Components Associated with Metal Roof Panels: Made by same manufacturer and compatible with roof panels; of not less than minimum thickness required by roof panel manufacturer.

1. Fabricate trim, flashing, and accessories to roofing manufacturer's specified or approved profiles.
2. Exposed metal components of same finish as panels.
3. Provide the following formed sheet metal components:
 - a. Eave.

2.04 ACCESSORY MATERIALS

- A. Self-Adhered Underlayment: Rubberized sheet waterproof membrane complying with ASTM D 1970/D1970M, self-adhering.
 1. Resistance to Direct Exposure: At least 90 days.
 2. Minimum High Temperature Resistance: 230 degrees F (110 degrees C).
 3. Water Vapor Permeance: 0.1 perm (5.7 ng/(Pa s sq m)), maximum.
 4. Provide one of the following:
 - a. Firestone CladGard SA.
 - b. Other product approved by metal roof panel manufacturer.
- B. Fasteners: In strict accordance with metal roof panel manufacturer's requirements; minimize exposed fasteners.
 1. Fasteners Exposed to Weather: Sealed or with sealed washers on exterior side of covering to waterproof fastener penetration; washer material compatible with screw head; minimum 3/8 inch (9.5 mm) diameter washer for structural connections; gasket portion of fasteners or washers made of EPDM, neoprene, or other equally durable elastomeric material.
 2. Fasteners Exposed to View: Head of color matching panel or component in which installed.
- C. Molded Closure Strips: Non-absorptive closed-cell or solid-cell synthetic rubber or neoprene or polyvinylchloride, or metal pre-molded to match configuration of the covering; configuration to prevent retention of water.
- D. Bulk Sealant: Approved by roof panel manufacturer.

END OF SECTION