

SECTION 076100

PREFORMED METAL ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preformed, prefinished metal roofing and flashings.
- B. Miscellaneous trim, flashing, closures, drip flashing, and accessories.
- C. Sealant
- D. Fastening devices.

1.02 REFERENCES

- A. American Iron & Steel Institute (AISI) Specification for the Design of Coldformed Steel Structural Members.
- B. ASTM A-525 Steel Sheet, Zinc-Coated (Galvanized)
- C. ASTM E-1680
- D. ASTM E-1646
- E. ASTM E-1592
- E. Spec Data Sheet - Aluminum Zinc Alloy Coated Steel (Galvalume) Sheet Metal by Bethlehem Corp.
- F. SMACNA - Architectural Sheet Metal Manual.
- G. Building Materials Directory - Underwriter's Laboratories, Test Procedure 580.

1.03 ASSEMBLY DESCRIPTION

- A. The roofing assembly includes preformed sheet metal panels, related accessories, valleys, hips, ridges, eaves, corners, rakes, miscellaneous flashing and attaching devices.

1.04 SUBMITTALS

- A. Submit detailed drawings showing layout of panels, anchoring details, joint details, trim, flashing, and accessories. Show details of weatherproofing, terminations, and penetrations of metal work.
- B. Submit a sample of each type of roof panel, complete with factory finish.
- C. Submit results indicating compliance with minimum requirements of the following performance tests:
 - 1. Air Infiltration ASTM E 1680
 - 2. Water Infiltration ASTM E 1646
 - 3. Wind Uplift - U.L.90

- D. Submit calculations with registered engineer seal, verifying roof panel and attachment method resists wind pressures imposed on it pursuant to applicable building codes.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in Architectural Sheet Metal Products with ten (10) years minimum experience.
- B. No product substitutions shall be permitted without meeting specifications.
- C. Substitutions shall be submitted 10 Days prior to Bid Date and acceptance put forth in an addendum.
- D. No substitutions shall be made after the Bid Date.

1.06 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 to the sun.
- D. Stack all materials to prevent damage and to allow for adequate ventilation.

1.07 WARRANTY

- A. Paint finish shall have a twenty year guarantee against cracking, peeling and fade (not to exceed 5 N.B.S. units).
- B. Galvalume material shall have a twenty year guarantee against failure due to corrosion, rupture or perforation.
- C. Applicator shall furnish guarantee covering watertightness of the roofing system for the period of two (2) years from the date of substantial completion.

PART 2 PRODUCT

2.01 ACCEPTABLE MANUFACTURERS

Basis of Design:

- A. Berridge Manufacturing Company, Houston, Texas.
- B. Substitutions shall fully comply with specified requirements.

2.02 SHEET MATERIALS

- A. Prefinished Metal shall be [Hot-Dipped Galvanized - ASTM A653-07 Grade C G90 Coating A924-08 24 Gauge core steel] or [prefinished Galvalume 24 Gauge core steel - ASTM 792-86 AZ-55].
- B. Unfinished Metal shall be Grade C Aluminum Zinc Alloy Coated Steel ASTM 792-86, AZ 55, "Satin Finish".
- C. Finish shall be [full strength Kynar 500® PVDF resin-based coating] [Copper-Cote][Antique Copper-Cote] [Lead-Cote][Zinc-Cote][Prewathered

Galvalume][Champagne] coating, applied by the manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.70 to 0.80 mil over 0.20 to 0.30 mil prime coat, to provide a total topside dry film thickness of 1.0 plus or minus 0.10 mil. Reverse side shall be coated with primer and wash coat of 0.30 mil plus or minus 0.05 mil. Finish shall conform to all tests for adhesion, flexibility, and longevity as specified by the Kynar 500® PVDF resin-based coating supplier.

- D. Strippable film shall be applied to the top side of the painted coil to protect the finish during fabrication, shipping and field handling. This strippable film must be removed immediately before installation.

2.03 ACCESSORY MATERIALS

- A. Fasteners: Galvanized Steel with washers where required.
B. Sealant: Sealant must be a ultra low modulus, high performance, one-part, moisture curing silicone joint sealant. (do not use a clear sealant or sealants which release a solvent or acid during curing).

Sealant must be resistant to environmental conditions such as wind loading, wind driven rain, snow, sleet, acid rain, ozone, ultraviolet light and extreme temperature variations.

Features must include joint movement capabilities of +100% & -50% ASTM C-719, capable of taking expansion, compression, transverse and longitudinal movement, service temperature range -65°F to 300°F (-54°C to 149°C), Flow, sag or slump: ASTM C-639; Nil, Hardness (Shore A): ASTM C-661; 15, Tensile strength at maximum elongation: ASTM D-412; 200 psi, Tensile strength at 100% elongation: ASTM D-412; 35 psi, Tear strength, (die "C"); ASTM D-624; 40 pli, Peel strength (Aluminum, Glass, Concrete): ASTM C-794; 30 pli

- C. Vinyl Weatherseal Insert.

2.04 FABRICATION

- A. All exposed adjacent flashing shall be of the same material and finish as the roof panels.
B. Hem all exposed edges of flashing on underside, 1/2 inch.

2.05 PREFORMED METAL PANELS, SHINGLES, ETC. (PICK APPROPRIATE STYLE)

A. BERRIDGE STANDING SEAM TEE-PANEL

1. Panels shall have 12 3/4" on-center seam spacing with a seam height of 1" and shall have no exposed fasteners.
2. Panels shall be site-formed with the Berridge Model SS-14 Portable Roll Former in continuous lengths from eave to ridge or factory fabricated to 40' max.
3. Snap-on seams shall be 1" in height and shall contain the Berridge factory-applied Extruded Vinyl Weather Seal Insert (Patent No. 4641475) to prevent siphoning of moisture through the standing seam.

4. Concealed anchor clips shall be spaced as required to meet uplift loads (maximum of 24" on center).
5. When required, Panel assembly shall bear Underwriter's Laboratories Label UL90, pursuant to Construction Number 296 and applicable Fire Ratings.
6. Certification shall be submitted, based on independent testing laboratory, indicating no measurable water penetration or air leakage beyond allowable tolerances through the system when tested in accordance with ASTM E-1680 and E-1646.

G. BERRIDGE ZEE-LOCK STANDING SEAM PANEL

1. 2" high vertical legs shall be spaced at 16" on-center and shall have no exposed fasteners.
2. Panels shall be site-formed with the Berridge Model SP-21-X Portable Roll Former in continuous lengths from ridge to eave or factory-formed to 40' max.
3. Continuous Zee Rib shall be 1-3/8" wide and 2-1/8" in height. Rib shall be connected to purlin with two #12-14 x 1" self-drilling/tapping fasteners [Zee Clips spaced at 3'-0"].
4. Optional Vinyl Weatherseal (U.S. Patent 5134825) to be factory-installed over Continuous Zee Rib.
5. Sidelap to be mechanically seamed with a powered seamer.
6. When required, panel assembly to bear Underwriters Laboratories Label UL90, pursuant to Construction Number 312 for open framing conditions, either uninsulated or with blanket insulation; 335 or 335 (mod.) with rigid board insulation or 403 over solid substrate and applicable Fire Ratings.
7. Certification shall be submitted, based on independent testing laboratory, indicating no measurable water penetration or air leakage through the system when tested in accordance with ASTM E-1680 and E-1646.

STANDING SEAM PANEL

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2. Panels shall be site-formed with the Berridge Model SP-21-X Portable Roll Former in continuous lengths from ridge to eave or factory-formed to 40' max.
3. Continuous Zee Rib shall be 1-3/8" wide and 2-1/8" in height. Rib shall be connected to purlin with two #12-14 x 1" self-drilling/tapping fasteners [Zee Clips spaced at 3'-0"].
4. Optional Vinyl Weatherseal - N.A.
5. Sidelap to be mechanically seamed with a powered double-lock seamer.
6. When required, panel assembly to bear Underwriters Laboratories Label UL90, pursuant to Construction Number 312 for open framing conditions, either uninsulated or with blanket insulation; 335 or 335 (mod.) with rigid board insulation or 403 over solid substrate and applicable Fire Ratings. Also available: FM 1-60 & FM 1-120.
7. Certification shall be submitted, based on independent testing laboratory, indicating no measurable water penetration or air leakage through the system when tested in accordance with ASTM E-1646 and E-1680.

T. BERRIDGE VEE-PANEL

1. Panels shall have 10-7/8" exposure, 3/8" deep vee grooves at 3-5/8" on center, with concealed fasteners and interlocking sidelap.
2. Panels shall be formed in continuous lengths per [wall][fascia] (or) [soffit] length (40' max) and shall have no exposed fasteners.
3. Attachment to metal supports with #8 x 12" TEKS screws at maximum spacing of 2'-0" on center or per local code, whichever is greater.
4. Optional Vented Vee-Panel shall have a Net Free Vent Area (NFVA) of 10.5 square inches per lineal foot of panel (11.59 square inches for square foot of panel).

Note: Berridge Manufacturing Company does not recommend this product in applications subject to aggressive atmospheres, marine environments or high humidity due to the corrosive nature of these environments on raw edges of steel.

PART 3 EXECUTION

3.01 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', and properly sloped to [valleys] (or) [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. [Flutes in steel deck to be clean and dry] or [joints in wood deck to be solidly supported and nailed].

3.02 INSTALLATION

- A. Comply with manufacturers standard 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 standard 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. Do not allow traffic on completed roof. If required, provide cushioned walk boards.
- 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.

3.03 CLEANING

A. Clean any grease, finger marks or stains from the panels per manufacturer's recommendations.

B. Remove all scrap and construction debris from the site.

END OF SECTION 076100