

SECTION 07610 - SHEET METAL ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Field formed double lock standing-seam metal roofing and associated flashing.
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry" for roof deck wood structural panels.
 - 2. Division 7 Section "Sheet Metal Flashing and Trim" for flashings and other sheet metal work not part of roofing.

1.3 PERFORMANCE REQUIREMENTS

- A. Install sheet metal roofing capable of withstanding normal thermal movement, wind loading, structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior. Sheet metal roofing shall comply with system design for wind uplift per ASTM E-1592.
- B. Wind-Uplift Resistance: Provide sheet metal roof assemblies that meet requirements of UL 580 for Class 90 wind-uplift resistance.

1.4 SUBMITTALS

- A. General: Make submittals in accordance with Section 01330.
- B. Product Data: For each product indicated. Include details of construction relative to materials, dimensions of individual components and profiles, and finishes.
- C. Shop Drawings: Show details for forming, joining, and securing metal roofing, and for pattern of seams. Show details and waterproof connections to adjoining work and at obstructions and penetrations. Show attachment of panels and clips, spacing, type and number of fasteners, as recommended by the manufacturer for the design loads specified.
 - 1. Submit certification that standing seam roof attachment is designed to for indicated wind uplift-resistance and snow loads retained by snow guard system.
- D. Samples for Verification: 6-inch-square specimens of metal roofing material with specified finishes applied. Where finishes involve normal color and texture variations, include Sample sets of 2 or more units showing the full range of variations expected.
- E. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed sheet metal roofing similar in material, design, forming method, and extent to that indicated for this Project and with a record of successful in-service performance for ten years.
- B. Industry Standard: Unless otherwise shown or specified, comply with the Sheet Metal and Air Conditioning Contractors

National Association's (SMACNA) "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver metal coils, panels, and other roofing materials so they will not be damaged or deformed. Package roofing materials for protection from damage during transportation and handling.
- B. Handling: Exercise care in unloading, storing, and erecting roofing materials to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store metal roof coils and panels to ensure dryness. Do not store coils or panels in contact with other materials that might cause staining, denting, or other surface damage.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal roof panels to be performed according to manufacturers' written instructions and warranty requirements.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Weathertight Warranty: Submit a written warranty executed by the installer agreeing to repair or replace sheet metal roofing that fails to remain weathertight within the specified warranty period.
 - 1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel Sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755.
 - 1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality, 24 gauge (0.0276 inch) coated metal thickness.
 - 2. Surface: Smooth, flat finish.
- B. Finish: Fluoropolymer 2-Coat Coating System, manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2605.
 - 1. Topside Finish: .8 to .9 mil top coat over .2 to .3 mil primer.
 - 2. Backside Finish: .2 to .3 mil primer.
 - 3. Color: Match color of existing roofing at Shaw's.

2.2 UNDERLAYMENT MATERIALS

- A. Rosin Paper: Minimum 5 lb/100 sq. ft., rosin sized.
- B. High-Temperature Roof Underlayment: 30 to 40 mils thick minimum, cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber adhesive with a disposable silicone-coated release sheet. Provide an embossed, slip resistant surface on the polyethylene.

1. Product: Vycor Ultra; W. R. Grace & Company.

2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and accessory items as required for a complete roofing system and as recommended by sheet metal manufacturer and fabricator for metal roofing work, unless otherwise indicated.
- B. Joint Sealant: For hooked-type expansion joints, which must be free to move, provide nonsetting, nonhardening, nonmigrating, heavy-bodied polyisobutylene sealant.
- C. Sheet Metal Roofing Accessories: Provide components matching sheet metal roofing in finish and material that are required for a complete roofing system, including the following:
 1. Trim, flashings, closure strips.
 2. Anchor clips shall be non-magnetic stainless steel or aluminum-coated with nylon or galvanized steel base to minimize wear from thermal movement. Fasteners in supports and screws installed in clips shall be fully recessed so that no sharp edges come in contact with roof material. Clips shall be designed to allow for expansion and contraction of roof relative to the structure throughout temperature range specified. Fasteners shall be non-corrosive screws, quantity and spacing to meet specified wind requirements.
 3. Fasteners installed in preservative treated wood shall be stainless steel.
 4. Provide exposed fasteners with heads matching metal panel finish.
- D. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- E. Elastomeric Joint Sealant: ASTM C 920, of base polymer, type, grade, class, and use classifications required to produce joints in roofing that will remain weathertight and as recommended by the roofing manufacturer for installation indicated.
- F. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat, unless otherwise indicated. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.4 FABRICATION

- A. General: Fabricate sheet metal roofing to comply with details shown, with metal roofing manufacturer's written instructions, and with recommendations of SMACNA's "Architectural Sheet Metal Manual" and NRCA's "Steep-Slope Roofing Manual" that apply to the design, dimensions (pan width and seam height), geometry, metal thickness, and other characteristics of installation indicated.
 1. Standing-Seam Roofing: Finished pan width shall match width of existing roofing at Shaw's. Finished seam height of 1-1/2 inches.
 2. Panels shall be one-piece full length of panel from eave to ridge. No horizontal splices permitted.
- B. Fabricate sheet metal to allow for expansion in running work sufficient to prevent leakage, damage, and deterioration of the Work. Form exposed sheet metal work to fit substrates without excessive oil canning, buckling, and tool marks, true to line and levels indicated, and with exposed edges folded back to form hems.
- C. Sealant Joints: Where movable, nonexpansion-type joints are indicated or required to produce weathertight seams, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- D. Sealant Tape: Provide continuous sealant tape full length of standing seams.
- E. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with bituminous coating or other permanent separation as recommended by manufacturer or fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, sheet metal roofing supports, and other conditions affecting performance of work.
 - 1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate metal roofing with rain drainage work, flashing, trim, and construction of adjoining work to provide a leakproof, secure, and noncorrosive installation.
- B. Promptly remove protective film, if any, from exposed surfaces of metal roofing. Strip with care to avoid damage to finish.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment over entire roof, wrinkle free, on roof sheathing under sheet metal roofing. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply over entire roof, in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.
- B. Install flashings to cover underlayment to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."
- C. Apply rosin paper over underlayment before installing sheet metal roofing. Rosin paper not required where standing seam clips prevent underside of sheet metal from coming in contact with self-adhering sheet underlayment.

3.4 INSTALLATION, GENERAL

- A. General: Install roofing to comply with the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Architectural Sheet Metal Manual" and NRCA's "Steep-Slope Roofing Manual" for standing seam roofing and requirements specified. Comply with sheet metal roofing manufacturer's written instructions for UL wind-uplift class indicated. Provide sheet metal roofing of full length from eave to ridge.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by fabricator of sheet metal roofing or manufacturers of dissimilar metals.
- C. Form and fabricate sheets, seams, strips, cleats, ridges, edge treatments, integral flashings, and other components of metal roofing to profiles, patterns, and drainage arrangements shown and as required for leakproof construction. Provide for thermal expansion and contraction of the Work. Seal joints as shown and as required for leakproof construction. Shop fabricate materials to greatest extent possible.
 - 1. Field form double lock (180 degree) standing seams.
 - 2. Standing seams shall be equidistant and shall align for corners, hips, ridges, and similar intersections.
 - 3. Secure panels to substrate in a manner capable of supporting full design snow loads over the entire roof area.
- D. Sealant-Type Joints: Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1/2 inch into sealant. Form joints to completely conceal sealant. When ambient temperature is moderate, between 40 and 70 deg F, at time of installation, set joint members for 50 percent movement either way. Adjust setting proportionately

for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F. Comply with requirements of Division 7 Section "Joint Sealants" for handling and installing sealants.

- E. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks, considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant. Fold back sheet metal to form a hem on concealed side of exposed edges, unless otherwise indicated.
- F. Conceal all fasteners and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

3.5 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Replace panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.6 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensure metal roofing is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 07610