

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
 - a. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - b. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - c. A666, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - d. A924/A924M Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - e. B32, Standard Specification for Solder Metal.
 - f. B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - g. B370, Standard Specification for Copper Sheet and Strip for Building Construction.
 - h. C920, Standard Specification for Elastomeric Joint Sealants.
 - i. C1311, Standard Specification for Solvent Release Sealants.
 - j. D1187/D1187M, Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
 - k. D4586/D4586M, Standard Specification for Asphalt Roof Cement, Asbestos-Free.
2. Federal Specifications (FS): QQ-L-201F(2), Lead Sheet.
3. FM Global (FM): Loss Prevention Data Sheet 1-49, Perimeter Flashing.
4. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): 1013, Architectural Sheet Metal Manual.

1.02 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA 1793. Conform to dimensions and profiles shown, unless more stringent requirements are indicated.

1.03 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
 - a. Show joints, types and location of fasteners, and special shapes.
 - b. Catalog data for stock manufactured items.
2. Samples: Color Samples for items to be factory finished.

B. Informational Submittals:

1. Sustainable Design: In accordance with Section 01 81 13, Sustainable Design Requirements for Non-LEED™ Projects, document sustainability performance for items listed below.
 - a. Product Data for Recycled Materials:
 - 1) A complete list of materials and quantities.
 - 2) Percentages of post-consumer and preconsumer recycled content of all materials.
 - b. Product Data for Low Emitting Materials-Adhesives, and Sealants:
 - 1) A complete list of adhesives and sealants used inside the building envelope during construction.
 - 2) Manufacturer's literature documenting VOC content of each product, and compliance with requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1168.
 - c. Product Data for Low Emitting Materials-Paints and Coatings: A complete list of paints and coatings used inside the building envelope during construction.
2. Manufacturer's literature documenting VOC content of each product and compliance with requirements of Green Seal Standard GS-11, Green Seal Standard GC-03, and South Coast Air Quality Management District (SCAQMD) Rule No. 1113.

1.04 DELIVERY, HANDLING, AND STORAGE

- A. Inspect for damage, dampness, and wet storage stains upon delivery to Site.
- B. Remove and replace damaged or permanently stained materials that cannot be restored to like-new condition.
- C. Carefully handle to avoid damage to surfaces, edges, and ends.
- D. Do not open packages until ready for use.
- E. Store materials in dry, weathertight, ventilated areas until immediately before installation.

1.05 SPECIAL GUARANTEE

- A. Product: Furnish manufacturer's extended guarantee or warranty, with Contracting Officer named as beneficiary, in writing, as Special Guarantee. Special Guarantee shall provide for correction or, at the option of the Contracting Officer, removal and replacement of factory-applied fluoropolymer coating, finish, and accessories found defective during a period of 20 years after date of Substantial Completion. Duties and obligations for correction or removal and replacement of defective Work shall be as specified in General Conditions.
- B. Conditions:
 - 1. Finish: No cracking, blistering, flaking, chipping, checking, chalking, peeling, or fading.
 - 2. All Components: Watertight and weathertight with normal usage.

PART 2 PRODUCTS

2.01 SHEET METAL

- A. Physical Characteristics:
 - 1. Prefinished Galvanized Steel Sheet: ASTM A924/A924M, Grade A or ASTM A653/A653M, G90 zinc coating; 24-gauge (0.02-inch) core steel, shop prefinished with fluoropolymer coating (polyvinylidene fluoride resin (PVDF)) coating; color as scheduled in Exterior Finish Schedule as shown on the Drawings.
- B. Functional Characteristics:
 - 1. Fabrication of Flashing:
 - a. Field measure prior to fabrication.
 - b. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - c. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
 - d. Seams: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - e. Reinforcements and Supports: Provide same material as flashing, unless other material is shown. Steel, where shown or required, shall be galvanized or stainless.
 - f. Rigid Joints and Seams: Make mechanically strong. Solder galvanized and stainless steel metal joints. Do not use solder to transmit stress.

- g. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.
- h. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
- i. Fabricate sheet metal in 10-foot maximum lengths, unless otherwise indicated.
- j. Provide watertight closures at exposed ends of counterflashing.
- k. Fabricate corners in one-piece with legs extending 30 inches each way to field joint. Lap, rivet, or solder corner seams watertight. Apply sealant if necessary.
- l. Neutralize soldering flux.
- m. Solvent clean sheet metal. Surfaces to be in contact with roofing or otherwise concealed shall be coated with isolation paint.
- n. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.
- o. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
 - 1) Thickness: As recommended by SMACNA 1013 and FM Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

C. Performance Characteristics:

- 1. General: Sheet metal flashing and trim shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- 2. Wind Zone 1: For velocity pressures of 21 pounds to 30 pounds per square foot, 60 pounds per square foot perimeter uplift force, 90 pounds per square foot corner uplift force, and 30 pounds per square foot outward force.
- 3. Thermal Movements:
 - a. Provide sheet metal flashing and trim that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures for preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
 - 1) Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.
 - b. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements.

- c. Base engineering calculation on surface temperatures of materials as a result of both solar heat gain and nighttime-sky heat loss.
- 4. Water Infiltration: Provide sheet metal flashing and trim that does not allow water infiltration to building interior.

2.02 REGLETS AND COUNTERFLASHING

A. For Concrete:

- 1. Manufacturers and Products:
 - a. Cheney Flashing Co.; Type A reglet and Snap Lock Cap Flashing.
 - b. Or equal.
- 2. Physical Characteristics: Stainless steel, 0.015 inch thick.
- 3. Functional Characteristics: None.
- 4. Performance Characteristics: None.

B. For Masonry:

- 1. Manufacturers and Products:
 - a. Cheney Flashing Co.; Type B reglet and Snap Lock Cap Flashing.
 - b. Or equal.
- 2. Physical Characteristics: Galvanized steel, 0.029 inch thick, with polyvinylidene fluoride (PVDF) finish in color to match adjacent sheet metal or as selected by Contracting Officer.
- 3. Functional Characteristics: None.
- 4. Performance Characteristics: None.

C. Surface Mounted:

- 1. Manufacturers and Products:
 - a. Cheney Flashing Co.; Type D reglet and Snap Lock Cap Flashing.
 - b. Or equal.
- 2. Physical Characteristics: Galvanized steel, 0.029 inch thick, with polyvinylidene fluoride (PVDF) finish in color to match adjacent sheet metal or as selected by Contracting Officer.
- 3. Functional Characteristics: None.
- 4. Performance Characteristics: None.

2.03 PREFABRICATED METAL SYSTEMS

A. Manufacturers and Products:

- 1. Johns Manville; Presto Lock Coping System.
- 2. Or equal.

B. Physical Characteristics:

1. Coping System:
 - a. Snap-on system, stucco embossed pattern aluminum, 0.050-inch minimum thickness.
 - b. Include ancillary items, such as mitered and welded corners, and end caps, where shown and as required for complete system.
2. Finish: Factory finished with full strength fluoropolymer coating in color as indicated in Exterior Finish Schedule as shown on the Drawings.

C. Functional Characteristics: For use with membrane roofing as part of a waterproof assembly.

D. Performance Characteristics:

1. FM Global 1-90 approved.
2. Meets criteria for ANSI-SPRI ES-1 Wind Design, standard for Edge System Used with Low-Slope Roofing Systems.

2.04 DOWNSPOUTS, GUTTERS, SCUPPERS, AND CONDUCTOR HEADS

A. Digester Facility: Same metal and thickness as flashing.

2.05 ANCILLARY MATERIALS

A. Physical Characteristics:

1. Solder: ASTM B32, alloy composition Sn 50 and Sn 60 for stainless steel.
2. Soldering Flux: ASTM B32, Type RA.
3. Burning Rod for Lead: Same composition as lead sheet.
4. Sealing Tape: Polyisobutylene sealing tape.
5. Isolation Paint: As specified in Section 09 90 00, Painting and Coating.
6. Isolation Tape: Butyl or polyisobutylene, internally reinforced, or 20-mil thick minimum polyester.
7. Plastic Roof Cement: ASTM D4586/D4586M, Type II.
8. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
9. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
10. Fasteners:
 - a. Galvanized Steelwork: Steel, galvanized per ASTM A153/A153M or stainless steel fasteners.

- b. Zinc or Aluminum Work: Stainless steel or aluminum; reglet fasteners may be galvanized or cadmium-plated steel.
- c. Stainless Steelwork: Stainless steel.
- d. Nails: Roofing nailhead, 10-gauge spiral or ring shank, lengths as required to penetrate wood at least 3/4 inch.

B. Functional Characteristics: None.

C. Performance Characteristics:

- 1. Sealants and Sealant Primers:
 - a. Meet the following requirements:
 - 1) Volatile Organic Compound (VOC) Content: Comply with the following limits for VOC content when calculated according to South Coast Air Quality Management District Rule 1168.
 - a) Sealants:
 - (1) Architectural: 250 g/L.
 - (2) Nonmembrane Roof: 300 g/L.
 - (3) Other: 420 g/L.
 - b) Sealant Primers:
 - (1) Architectural – Nonporous: 250 g/L.
 - (2) Architectural – Porous: 775 g/L.
 - (3) Modified Bituminous: 500 g/L.
 - (4) Other: 750 g/L.

2.06 FABRICATION OF DOWNSPOUTS, GUTTERS, SCUPPERS, AND CONDUCTOR HEADS AT DIGESTER FACILITY

- A. Form downspouts and gutters in maximum lengths as practicable to sizes and shapes indicated on the Drawings:
 - 1. Telescope end joints 1-1/2 inches and lock longitudinal joints of downspouts.
 - 2. Provide elbows at bottom where downspouts empty onto splash blocks.
- B. Form scuppers and conductor heads to shapes and sizes indicated on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set and cant strips and reglets in place.

- B. Verify nailing strips and blocking are properly located.
- C. Verify membrane termination and base flashings are in place, sealed, and secure.

3.02 INSTALLATION

A. Flashing:

1. General:
 - a. Install sheet metal roof flashing and trim to comply with performance requirements and SMACNA 1793.
 - b. Provide concealed fasteners where possible, set units true to line, and level as indicated.
 - c. Install work with laps, joints, and seams that will be permanently watertight.
2. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
 - a. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 16-inch centers.
3. Isolate metal from wood and concrete and from dissimilar metal with isolation tape or two coats of isolation paint.
4. Use only stainless steel fasteners to connect isolated dissimilar metals.
5. Joints: 10-foot maximum spacing and 2-1/2 feet from corners, butted with 3/16-inch space centered over matching 8-inch long backing plate with sealing tape in laps.
6. Set flanges of flashings and roof accessories on continuous sealing tape or in plastic roof cement on top of envelope ply of roofing. Nail flanges through sealing tape and at 3-inch maximum spacing. Touch up isolation paint on flanges.
7. Joints, Fastenings, Reinforcements, and Supports: Sized and located as required to preclude distortion or displacement as a result of thermal expansion and contraction.
8. Provide continuous holddown clips at counterflashing and gravel stops.
9. Conceal fastenings wherever possible.
10. Set flashing and sheet metal to straight, true lines with exposed faces aligned in proper plane without bulges or waves.
11. At vents through roof turn down lead flashing minimum 2 inches inside vent pipe.

B. Prefabricated Metal Systems:

1. Follow system manufacturer's printed instructions.
2. Place color variations in pieces so no extremes are next to each other.

- C. Downspouts, Gutters, Scuppers, and Conductor Heads: Anchor downspouts to wall with straps of same material as downspouts. Install gutters, scuppers, and conductor heads as indicated on the Drawings.

3.03 FINISH

- A. Exposed Surfaces of Flashing and Sheet Metalwork: Free of dents, scratches, abrasions, or other visible defects, and clean and ready for painting where applicable.

3.04 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

