

**SECTION 07 62 00
SHEET METAL FLASHING**

PART 1 - GENERAL

1.01 SCOPE:

- A. Provide all of the labor, materials, equipment, and services to furnish and install the flashing and sheet metal.
- B. All sheet metal items are not necessarily individually described. The most important parts and those requiring detailed description are usually mentioned. Other work as indicated or necessary shall be provided unless specifically excluded from the work of this Section.
- C. Related sections:
 - 1. Through-wall flashing: See Section 07 65 13, Laminated Sheet Flashing.
 - 2. Flashing, trims and gutters and downspouts: See Section 07 41 13, Metal Roof Panels.

1.02 QUALITY ASSURANCE:

- A. In addition to complying with all pertinent codes and standards, comply with all pertinent recommendations of:
 - 1. "Architectural Sheet Metal Manual", latest edition. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
- B. Performance requirements:
 - 1. Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.
- C. Perform work in accordance with SMACNA requirements:
 - 1. Copings: Figures 3-1 (flat lock seam), 3-4 through 3-10.
 - 2. Formed Fascia: Figure 2-1. Conductor heads: Figures 1-25 and 1-26.
- D. High performance fascia/gravel stop shall be certified by the manufacturer to comply with ANSI/SPRI Standard ES-1-98. Fascia shall meet performance design criteria according to the following test standards:
 - 1. ANSI/SPRI ES-1-98 Test Method RE-1 Test for Roof Edge Termination of Single-ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum 100 lbs./ft in accord with the ANSI/SPRI ES-1-98 Test Method RE-1. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 - 2. ANSI/SPRI ES-1-98 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1-98 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 - 3. FMRC Loss Prevention Data Sheet 1-49 "Perimeter Flashing". The fascia product shall be listed in current Factory mutual Research Corporation Approval Guide approved for the zone in which the work is being accomplished.
- E. High performance coping shall be certified by the manufacturer to meet performance design criteria according to the following test standards:
 - 1. ANSI/SPRI ES-1-98 Test RE-3 for Coping : Wind Design Guide for Edge Systems Used with Low Slope Roofing Systems (current edition). The coping system shall be tested simultaneously on horizontal and vertical surfaces and shall exceed horizontal and

vertical design wind pressure as calculated in accord with the ANSI/SPRI ES-1-98 Test RE-3. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

2. FMRC Loss Prevention Data Sheet 1-49 "Perimeter Flashing". The coping product shall be listed in current Factory Mutual Research Corporation Approval Guide approved for the zone in which the work is being accomplished.

F. Installers:

1. For actual installation of roofing and flashing, use only competent and skilled roofers completely familiar with the products and the manufacturer's currently recommended methods of installation.
2. Work associated with flashing including (but not limited to) membrane roofing and roof deck insulation shall be performed by and be the responsibility of a single installer. Coordinate with Section 07 53 23.

1.03 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:

1. Complete and fully descriptive manufacturer's literature for all factory fabricated items naming all materials, dimensions, finishes and accompanying accessory items.
2. Complete shop drawings and erection drawings for each product named which shall include a material schedule, details, profiles, gauges, dimensions, layout, anchorage and joint details.
3. Physical samples - full range of finishes and coloration.

1.04 PROJECT CONDITIONS:

- A.** Coordinate work with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance, durability of work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.01 ALUMINUM SHEET:

- A.** Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength durability of alloy and temper designated below:

1. Factory painted aluminum sheet:
 - a. Counterflashing: 0.0320".
 - b. Other items: ASTM B209, 3003-H14, with a minimum thickness of 0.040", unless otherwise indicated.

- 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% polyvinylidene fluoride resin by weight; complying with AAMA 605.2.

1. Color and gloss: As selected by the Architect from the manufacturer's full range of standard and custom colors and gloss.
2. Items shall be finished after fabrication.

2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES:

A. Fasteners:

1. Same metal as sheet metal flashing or other non-corrosive metal as recommended by sheet metal manufacturer.

2. Match finish of exposed heads with material being fastened.
- B. Asphalt mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15 mil dry film thickness per coat.
- C. Mastic sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.
- D. Elastomeric sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants.
- E. Epoxy seam sealer: 2 part, non-corrosive, aluminum seam cementing compound, recommended by aluminum manufacturer for exterior and interior non-moving joints, including riveted joints.
- F. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- G. Paper slip sheet: 5 lb./square red rosin, sized building paper conforming to FS UU-B-790, Type I, style 1b.
- H. Polyethylene underlayment: ASTM D4397, minimum 6 mil thick black polyethylene film, resistant to decay when tested according to ASTM E154.
- I. Metal accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed; non-corrosive; size and thickness required for performance.

2.03 FABRICATION:

- A. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- B. Form exposed sheet metal work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- C. Seams: Fabricate non-moving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- D. Expansion: Space movement joints at maximum of 10' with no joints allowed within 24" of corner or intersection. Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed with joints).
- E. Sealed joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- F. Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by the manufacturer.
- G. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- H. Fabricate cleats and attachment devices from same material as sheet metal component being

anchored or from compatible, non-corrosive metal recommended by sheet metal manufacturer.

1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.04 CAULKING (SEALANT):

- A. Product:
1. One part polysulfide.
 2. An approved equal.

2.05 OTHER MATERIALS:

- A. All other materials, not specifically described but required for a complete and proper installation of flashing and sheet metal, shall be new, first quality of their respective kinds, and subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 MEASUREMENTS:

- A. Verify all dimensions shown on the Drawings by taking field measurements, proper fit and attachment of all part is required.

3.02 WORKMANSHIP - GENERAL:

- A. Unless specifically detailed or specified otherwise, all work shall be in accordance with the recommendations of the SMACNA Manual.
- B. Form all sheet metal accurately to the dimensions and shapes required, finishing all molded and broken surfaces with true, sharp, and straight lines and angles and, where intercepting other members, coping to an accurate fit and soldering securely.
- C. Reinforcement, fasteners and expansion provisions shall be wholly concealed within the finished assembly.
- D. Turn exposed edges back ½".
- E. General:
1. Install exposed sheet metal work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- F. Seams/Waterproofing:
1. Finish watertight and weathertight.
 2. Make all lock seam work flat and true to line
 3. Make all flat and lap seams in direction of flow.
 4. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- G. Joints:
1. Join parts with rivets or sheet metal screws where necessary for strength or stiffness.
 2. Provide suitable watertight expansion joints for all runs of more than 40 feet, except where closer spacing is indicated on the Drawing or required for proper installation.
 3. Joints and corners shall be accurately machined, filed and fitted, and rigidly framed

together and connected. All components shall be matched to produce perfect continuity of line and design. Joints and connections in exterior face metal shall be made watertight. Face of metal shall have hairline joints.

4. Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.

- a. Use joint adhesive for non-moving joints specified not to be soldered.

H. Nailing:

1. Whenever possible, secure metal by means of clips or cleats without nailing through the metal.
2. In general, space all nails, rivets, and screws not more than 8" apart and, when exposed to the weather, use lead washers.

- I. Expansion:** Provide for thermal expansion of exposed sheet metal work. Space movement joints at maximum of 10' with no joints allowed within 24" of corner or intersection. Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

- J. Separations:** Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
2. Bed flanges of work in a thick coat of roofing cement where required for waterproof performance.

- K. Embed all metal in connection with roofs in a solid bed of caulking.**

- L. Finishes shall be factory applied. Shapes shall be formed in the field. Do not break or crack the finishes during field forming and installation.**

3.03 COUNTER OR CAP FLASHING:

- A. Flashing shall be provided with all base flashings. The flashing shall be formed of sheets not longer than 10'-0" and shall be built into the masonry approximately 4" with the inner edge terminating in a 1/4" hook dam or, alternately, turning up 1" behind the first masonry course. The apron shall be of sufficient width to overlap the base flashing not less than 3". Ends of adjacent lengths of flashing shall overlap not less than 3" and the built-in horizontal portion of the joint shall be set in elastic cement. The flashing shall have a layer of mortar above and below the horizontal flange in the wall.**

3.04 COPING COVERS:

- A. Flat seam coping covers shall be formed of sheets as long as possible per SMACNA, joined by 1" loose lock seams that are filled with sealant.**

B. Walls topped with wood plate:

1. Provide a continuous edge strip, formed of sheets of the longest lengths possible per SMACNA, secured along the front edge with nails spaced 4" apart.
2. The coping cover shall be hooked over the edge strip with a 3/4" loose lock seam. The inner edge of the coping shall lock into the top of the base flashing with a 3/4" loose lock seam.
3. Where base flashing is not provided, it shall hook over an edge strip as specified for the

front edge or, alternately, it shall be secured by cleats spaced not more than 2'-0" apart. Cleats shall be secured to the wood plate with two nails.

- C. Where the height of the coping above the roof deck is less than 6":
 - 1. Provide a one-piece combination coping cover.
 - 2. The inner edge of the flashing shall extend onto the previously place roofing 4" and shall be nailed along its outer edge with nails spaced 3" apart.
 - 3. The horizontal flange shall then be stripped into the roofing.
- D. Where the height of the coping above the roof deck is more than 6":
 - 1. Provide a one-piece combination coping cover.
 - 2. The inner edge of the coping cover shall lock into the base flashing or be secured by cleats spaced not more than 2'-0" apart.
 - 3. The horizontal flange shall then be stripped into the roofing.

3.05 GRAVEL STOP/FASCIA/EDGE STRIPS:

- A. See Drawings.
- B. Form from sheets as long as possible per SMACNA. The horizontal flange shall extend onto the roofing not less than 4" and shall be secured through the roofing and onto the deck with nails not more than 3" apart.
- C. The metal shall be bent to form a gravel stop not less than 3/4" high and the outer edge shall extend down as a fascia.
 - 1. Fascias 4" or less in depth: The lower edge shall be hemmed not less than 1/2" and turned out 3/4" at an angle of 45 deg. to form a drip.
 - 2. Fascias more than 4" in depth: The lower edge shall hook 3/4" over a previously placed continuous edge strip.
 - 3. Where depths of fascias vary from 8" to 16": Provide longitudinal steps or ridges shall be formed in the fascia to minimize waviness. Steps or ridges shall be at least 1/2" high and proportionally spaced not more than 6" apart.
- D. End joints shall be made using a back-up plate and top cover plate. The 12" long back-up plate shall be nailed in place before the gravel stop is installed. 1/4" opening shall be left between the ends of the gravel stop sections. This opening shall be covered by a 6" wide top cover plate. The cover plate shall be embedded in mastic and fastened through the opening between the sections.
- E. Edge strips shall be continuous and shall be formed of sheets as long as possible per SMACNA. Ends of adjacent lengths shall lap at least 1". The lower edge shall be turned out 45 deg. to form a drip. Edge strips shall be fastened to wood with nails spaced 4" apart, or to masonry with screws in expansion sleeves spaced 10" apart.

3.06 VERTICAL WALL AND CURB FLASHING:

- A. Cured EPDM membrane shall be used to flash all vertical surfaces except when flashing inside and outside corners or other details that require the flashing to be molded.
- B. All loose or unsecured existing flashings shall be removed. Excessive asphalt shall also be removed to provide a smooth surface. Aluminum coated flashings shall be removed or covered with an appropriate rigid substrate. New substrate shall be sufficiently attached to provide a rigid surface.

- C. Coordinate with Section 07 53 23, Elastomeric Membrane Roofing.

3.07 SCUPPERS, CONDUCTOR HEADS AND DOWNSPOUTS:

- A. Scupper and conductor head:
1. Attach conductor head to wall with masonry fasteners. Overflow openings in conductor head shall be provided.
 2. A closure flange shall be locked to the scupper and soldered at the top. The juncture between the top of the closure flange and masonry wall shall be sealed.
 3. From the roof side a flange shall be formed and soldered to the scupper prior to its insertion into the wall.
- B. Downspouts:
1. Form to size and shape indicated. Longitudinal joints shall be locked. End joints shall telescope 1-1/2".
 2. Support leaders in position clear of wall by 1/8" x 3" red brass or copper straps no more than 10' apart. Prongs 1/2" high by 3/4" long shall be punched from the strap to hold leader 3/4" from wall, or a red brass rod 1/4" dia. shall extend through the strap back of the leader. Extend straps on wall surface 2" on each side of leader and secure to masonry with bronze expansion shields and bronze machine bolts of the cinch bolt type. Attachment to wood shall be with bronze lag screws. Provide a shoulder of solder on each side of leader above each strap to carry weight of leader.
 3. Provide elbows at bottom where leaders empty onto splash blocks.

- END OF SECTION -