SECTION 07600
SHEET METAL FLASHING AND TRIM

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, metal edges, counterflashings, and other items indicated in Schedule and as follows:
   1. Metal edge with continuous cleats.
   2. New reglet mounted counterflashing.
   3. Skirt flashing at curbs.
   4. Gutters.

1.2  RELATED REQUIREMENTS

A. Section 07220 – ROOF INSULATION
B. Section 07310 – ASPHALT SHINGLE ROOFING
B. Section 07550 – MODIFIED BITUMEN.

1.3  REFERENCE STANDARDS

A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
B. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
C. ASTM A792  Steel Sheet, Aluminum-Zinc Alloy-Coated, by the Hot-Dip Process
E. ASTM B486  Paste Solder
J. FS QQ-L-201 Specification for Lead Sheet

1.4  SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.
B. Shop Drawings:  Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
   1. For manufactured and shop fabricated gravel stops, fascia, scuppers, and all other sheet metal fabrications.
   2. Indicate type, gauge and finish of metal.
C. Product data:  Provide manufacturer's specification data sheets for each product:
   1. Metal material characteristics and installation recommendations.
2. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specific can be approved.

D. Manufacturer’s installation instructions for reglets.

E. Samples: Submit two samples 8x10 inch in size illustrating metal finish color.
   1. Submit two samples, 12 x 12 inch in size illustrating typical external corner, internal corner, and valley, junction to vertical dissimilar surface, material and finish.

F. Certification:
   1. Submit roof manufacturer’s certifications that metal fasteners furnished are acceptable to roof manufacturer.
   2. Submit roof manufacturer’s certification that metal furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer’s system warranty.
   3. Submit certification that metal and fastening system furnished is Tested and Approved by Factory Mutual for 1-90 Wind Up-Lift Requirements.

G. Provide approval letters from metal manufacturer for use of their metal within this particular roofing system type.

H. Proof of fabricator and installer qualifications.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements, except as otherwise indicated.

B. Manufacturer's Warranty: Pre-finished metal material shall require a written 20-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D-2244 or chalking excess of 8 units per ASTM D-659. If either occurs material shall be replaced per warranty, at no cost to the Owner.

C. Contractor's Warranty: The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be water-tight and secure for a period of five years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

A. Sheet metal material: 0.040" thickness aluminum, 3105-H14 alloy, smooth as per ASTM B209-96.

   referenced standards for specific applications indicated by IMETCO or approved equal.

2.2 ACCESSORIES

A. Fasteners:
   1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.
2. Fastening shall conform to Factory Mutual 1-90 requirements or as stated on section details, whichever is more stringent.

B. Plastic Cement: ASTM D 4586, Type I.

C. Rust inhibitive primer: Rust-Go Primer by The Garland Company or approved equal.

D. Paint: Rust Go White.

E. Nailers: Douglas fir.

F. Gutter brackets: double thickness of gutter material.

G. Gutter hangers: 0.1” aluminum. Prime and paint to match gutter.

2.3 FABRICATION - GENERAL

A. Fabricate in accordance with referenced standards. Form sections true to shape, accurate in size, square, and free from distortion or defects. Form pieces as recommended by SMACNA standard for conditions required.

1. Provide reinforcements and supports as required for secure anchorage.

2. Make joints rigid. Seams mechanically strong and soldered or sealed to make watertight

3. Fabricate corners in one piece with legs extending 30-inches each way to field joint. Lap, rivet, and solder or seal corner seams watertight.

4. Turn up "end dam" flanges at ends of opening sill flashing pieces, lap with wall flashing and membranes to shed water.

5. Fabricate cleats of same material as sheet, minimum 3/4 inches wide, interlockable with sheet.

6. Hem exposed edges on underside 1/2 inch; miter and seam corners.

7. Solvent clean all sheet metal. Coat surfaces to be in contact with roofing or otherwise concealed with specified asphaltic paint; 0.015-inch minimum uniform thickness.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.

2.4 ROOFTOP EQUIPMENT

A. Sleepers: Portals Plus.

2.5 ROOF-RELATED SHEET METAL AND FLASHINGS

A. Roof-Related Sheet Metal and Flashings: As indicated, as specified in related sections, as required by roofing material manufacturers and referenced standards. Coordinate work of this section with related sections. Provide complete systems without conflict or omission.

PART 3 EXECUTION

3.1 EXAMINATION

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

B. Verify roofing termination and base flashings are in place, sealed, and secure.
C. Beginning of installation means acceptance of existing conditions.
D. Field measure site conditions prior to fabricating work.

3.2 PREPARATION
A. Install starter and edge strips, and cleats before starting installation.
B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.3 INSTALLATION
A. Install work watertight, without waves, warps, buckles, fastening stress, or distortion, allowing for expansion and contraction. Conform to referenced standards. Make metal joints watertight.
B. Fastening of metal to walls and wood blocking shall comply with SMACNA Architectural Sheet Metal Manual, Factory Mutual 1-90 wind uplift specifications and/or manufacturer's recommendations whichever is of the highest standard.
C. All accessories or other items essential to the completeness of sheet metal installation and water tight envelope of the building, whether specifically indicated or not, shall be provided.
D. Reglets: Install in accordance with manufacturer’s installation instructions.
E. Metal fascia and copings shall be secured to wood nailers at the bottom edge with a continuous cleat. Cleats shall be at least one gauge heavier than the metal it secures.
F. Install Sheet Membrane Waterproofing at closure flanges, under metal copings, caps and platforms; fully adhered, free of voids, blisters and buckling; roll as soon as practical following layout. Minimize exposure time to that period recommended by the manufacturer.
G. Flashing: Joints at 10-foot maximum spacing and at 2-1/2-feet from corners. Butt joints with 3/16-inch space centered over matching 8-inch long backing plate with sealer tape in laps.
H. Flanged flashings and roof accessories: Set on continuous sealer tape. Nail flanges through sealer tape and at 3-inch maximum spacing.
I. Isolate metal from dissimilar metal with 2 coats of specified asphaltic paint, sealer tape or other approved coating, specifically made to stop electrolytic action. Use only stainless steel fasteners to connect isolated dissimilar metals.
J. Joints, fastenings, reinforcements and supports: Sized and located as required to preclude distortion or displacement due to thermal expansion and contraction. Conceal fastenings wherever possible.
K. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
L. Flexible Flashing Installation:
1. Prime substrates as recommended by flexible flashing manufacturer, allow to dry.
2. Install flexible flashings in maximum feasible lengths to minimize lap joints.
3. Peel release paper from roll to expose rubberized asphalt and position flashing to center over joint location before applying. Move along opening or joint, being careful to put flashing as evenly as possible over the opening. Avoid fishmouths.
4. Press flashing firmly into place with heavy hand pressure. Ensure continuous and intimate contact with substrate.
5. If wrinkles develop, carefully cut out affected area and replace as outlined above.
M. Apply plastic cement compound between metal flashings and felt flashings.
N. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
O. Seal prefinished metal joints watertight.

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P. Solder other metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

Q. Connect downspouts and rain water leaders to storm sewer system. Seal connection watertight.

3.4 FIELD QUALITY CONTROL

A. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

B. Tolerances
   1. Exposed surfaces: Free of dents, scratches, abrasions, or other visible defects; clean, ready for painting.
   2. Set flashings and sheet metal to straight, true lines with exposed faces aligned in plane as indicated.

3.5 SHOP FABRICATED SHEET METAL

A. Installing Contractor shall be responsible for determining if the sheet metal systems are in general conformance with roof manufacturer's recommendations.

B. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.

C. Hem exposed edges.

D. Angle bottom edges of exposed vertical surfaces to form drip.

E. All corners for sheet metal shall be lapped with adjoining pieces fastened and set in sealant.

F. Joints for gravel stop fascia system, cap flashing, and surface-mount counterflashing shall be formed with a 1/4" opening between sections. The opening shall be covered by a cover plate or backed by an internal drainage plate formed to the profile of fascia piece. The cover plate shall be embedded in mastic, fastened through the opening between the sections and loose locked to the drip edges.

G. Install sheet metal to comply with Architectural Sheet Metal manual, Sheet Metal and Air Conditioning Contractor's National Associations, Inc.

END OF SECTION