SECTION 07 60 00

FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials, tools and equipment and perform all work necessary for and incidental to providing flashing and sheet metal as shown on the Drawings and specified herein; in accordance with the provisions of the Contract Requirements - Division 0, General Requirements - Division 1 and completely coordinated with the Work of all other trades.

B. Work included but not limited to:
   1. Flashing
   2. Miscellaneous accessories.

C. Related work specified elsewhere:
   1. Section 07 14 13 - Hot Fluid-Applied Rubberized Asphalt Waterproofing
   2. Section 07 95 10 - Sealants

1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
   1. ASTM International
      a. A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
      b. B 32 - Standard Specification for Solder Metal.
      c. C 920 - Standard Specification for Elastomeric Joint Sealants.
      d. C 1311 - Standard Specification for Solvent Release Sealants.

1.3 QUALITY ASSURANCE

A. Use skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

B. Contractor's Qualifications: Have installations of the specified materials in the local area for a minimum period of five years. Foreman, who is fluent in English, to be on site at all times during the Work.

C. Standards: Except as modified by the Drawings and Specifications, the following documents, or applicable portions thereof, govern the work.
   1. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) “Architectural Sheet Metal Manual” - Latest Edition.

D. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation
   1. Provide full size, mock-up showing profile, typical splice, inside and outside corner configurations (where applicable), and end dams or terminations of the following:
      a. Flashings under copings.

b. Other flashing/flange assemblies associated with waterproofing replacement
2. If Architect/Engineer or Owner's Representative determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
3. Approved mockups will be standard for judging completed Work.
4. Approved mockup may become part of completed Work.

1.4 WORK SEQUENCE

A. Conduct all work under temperature and climatic conditions as recommended by standard practice and manufacturer's recommendations.

B. Do not install new sheet metal when precipitation is imminent.

C. Installation of new sheet metal and flashing shall be coordinated with the Work of all other trades.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 30 00:
1. Manufacturer's Literature: Materials description and installation instructions for manufactured items.
2. Shop Drawings: Details of fabrication, installation, anchorage, splices and interface of the work of this Section and the work of adjacent trades.

B. Required prior to the commencement of work:
1. Detailed shop drawings or approved full-sized mockups of all new sheet metal.

C. Installer Qualifications: Submit evidence that Installer's company has minimum of 5-years continuous experience in fabrication and installation of architectural sheet metal. Submit list of at least three completed projects of similar scope and size.

1.6 PRODUCT DELIVERY, HANDLING, AND STORAGE

A. All materials shall be delivered to the job site in manufacturer's sealed packaging and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

B. Verify existing dimensions and details prior to installation of materials. Notify Architect/Engineer of conditions found to be different than those indicated in Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.

C. Environmental Limitations: Apply sheet metal members when existing and forecast weather conditions permit sealants, coatings, and miscellaneous materials to be installed according to sealant, coating, or miscellaneous material manufacturer's written instructions and warranty requirements.

D. Install materials in strict accordance with safety requirements required by waterproofing manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.

1.7 ARCHITECT'S OBSERVATIONS

A. All flashing repairs are to be observed by the Architect/Engineer prior to installing materials and/or systems (e.g., storefront framing and glass, which will conceal the flashing repairs from view). Contractor is to notify Architect a minimum of 3 days in advance to schedule site visit.

1.8 WARRANTY

A. Contractor's warranty:
   1. By the sheet metal contractor
   2. Time Period: Two years after the date of completion and acceptance by the Owner
   3. Terms: All materials, labor, tools and equipment necessary for repair, restoration, or replacement of all new work damaged as a result of:
      a. Defects, imperfections, or faults in:
         1) Materials
         2) Workmanship
      b. Contractors correcting defects, imperfections, or faults in materials and/or workmanship.
   4. Corrections of defects, imperfections, and faults shall not relieve the Contractor from his responsibility for additional corrective work during the remaining time period.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sheet Metal Stock:
   1. Stainless steel for through-wall flashings: 28 gage stainless steel made from Type 304 stainless. Conform to ASTM A167. Finish is to be Mill Rolled No. 2D.

B. Solder: ASTM B32, Alloy composition as required for metals to be soldered (copper, bronze, and stainless steel).

C. Flux: Type as required for use with metals to be soldered. Neutralize flux after soldering.

D. Membrane Flashing: 60 mil uncured neoprene or EPDM as supplied by waterproofing membrane manufacturer. Use adhesives, primers, mastics, and lap sealant as required by manufacturer.

E. Liquid Flashing: Soprema ALSAN RS PMMA liquid resin flashing or approved equal.

F. Sealant
   1. Exposed Metal Flashing Laps/Joints: one part silicone sealant, Refer to Section 07 95 10 Sealants.
   2. Concealed Metal to Metal Laps: Non-skinning butyl sealant Refer to Section 07 95 10 Joint Sealants

G. Provide other materials not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

H. Miscellaneous Materials

1. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items required for installation.
2. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads. Size fasteners to provide penetration into substrate of at least 1 1/4 inches for nails and 3/4 inches for wood screws.
    a. Use stainless-steel fasteners, except that aluminum fasteners may be used with aluminum sheet metal, and copper or hardware bronze fasteners may be used with copper sheet metal.
    b. Exposed Fasteners: Heads shall match color of sheet metal by means of plastic caps or factory-applied coating.
    c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
        1) Blind Fasteners: High-strength aluminum or stainless-steel rivets.
3. Sealing Tape: Pressure-sensitive, 100-percent solids, polyisobutylene-compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, non-staining tape.

2.2 FABRICATION

A. Form and fabricate the sheet metal in the shop into the shapes and sizes as shown on the Drawings or following mock-up approval. Clean surfaces after fabrication to remove contaminants that could lead to surface corrosion or poor bond of membrane flashing or solder.

B. Fabricate items with the minimum number of joints, using concealed fasteners wherever possible. Lap or lock joints but do not rivet or otherwise restrict relative movement of sections unless shown on Drawings.

C. All corners are to be fully soldered to form a single watertight section. Roughen edges of metal with emery cloth prior to soldering. Perform soldering by thoroughly heating the seam and sweating the solder through the full width of the joint. Test each fabricated collar after fabrication to verify water tightness. Neutralize and clean soldered connection after soldering.

D. Field document the required configuration and measurements of all new flashings prior to fabrication.

E. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

F. Expansion Provisions: Use lapped or bayonet-type expansion provisions where possible; otherwise, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.

G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, non-corrosive metal, and in thickness not less than that of metal being secured.

2.3 FASTENERS

A. Non-corrosive metal, compatible with material being fastened or anchored.

B. Metal to Concrete and Masonry:
    1. Screw fasteners 1/4 inch by 1-3/4 inches long with neoprene head washers for predrilled holes, as manufactured by ITW Buildex, Itasca, IL.

2. All fasteners to have a 1 inch minimum embedment in the concrete substrate and 1-1/4 inch minimum embedment into masonry substrate.

C. Metal to Wood (Blocking): No 8, stainless steel screws with neoprene washers. Lengths for minimum 1 3/4-inch embedment in wood substrate.

D. Metal (concealed) to Wood: No. 8 stainless steel screws with lengths that provide a minimum embedment of 1 3/4- inch.

E. Metal to Metal fasteners, No. 3 point, 10 – 16 x 3/4 inches (minimum length) having a corrosion resistant coating and with an neoprene or EPDM sealing washer. Similar to "Teks" HWH Teks/1 with an EPDM washer.

PART 3 EXECUTION

3.1 PREPARATION OF SUBSTRATE

A. Examine the surface condition of the substrate under which sheet metal is to be installed. Report to the Architect/Engineer and Owner's Representative in writing all conditions that would adversely affect installation of the work. Do not proceed with the new installation until unsatisfactory conditions have been corrected in a manner approved by the Architect/Engineer and Owner's Representative.

B. Clean the substrate of obstructions and substances detrimental to the work.

C. Proceeding with the work shall signify the Contractor's acceptance of the substrate being covered by the new sheet metal installation.

3.2 COORDINATION

A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
   1. With other trades to avoid or minimize work on, or in immediate vicinity of, installation in progress.
   2. With interfacing and adjoining construction to provide leak-proof, secure, and non-corrosive installation.
      a. Coordinate counterflashing installation with base flashing installation.
      b. Coordinate installation of flashing with installation of waterproofing and concrete wearing slab.

3.3 INSTALLATION OF SHEET METAL

A. General:
   1. Install members and components in strict accordance with arrangements shown on the Drawings.
   2. Erect all members plumb, level and in line securely anchored and properly related to other parts of the Work.
   3. Dissimilar Metals: Separate dissimilar metals by bonding membrane to the matching surfaces.
   4. Metal Protection: Separate bronze, steel, and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" paragraph in Appendix B in AAMA/NWWDA 101/I.S.2.

5. Install sealant cover over all exposed fasteners.
6. Install fully soldered collars to be water tight.

B. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to width of 1 1/2 inches except where pre-tinned surface would show in finished Work.

C. Flashing:
1. Provide movement joints in flashing no farther than 10 ft. on center.
2. Metal flashing sections are to be installed with a ¼ in. gap covered by a self-adhering flashing. Clean substrate where membrane is to be bonded, with membrane manufacturer's recommended cleaner and primer if necessary. Install membrane flashing with 3 in. minimum laps. Membrane is to be a single piece extending from top edge to bottom of receiver as shown in the Drawings. Install membrane with manufacturer's recommended primer and seal edge with mastic recommended by manufacturer. Membrane is be fully adhered free of "fishmouths" and air bubbles.
3. Install stainless steel splice cover extending 6 in. minimum beyond flashing membrane and sealed with 5 transverse rows of butyl sealant between splice cover and underlying stainless steel flashing sections.
4. Install metal counterflashing in reglet with silicone sealant over top portion.
5. Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

3.4 ADJUST/CLEAN

A. Upon completion, carefully examine all flashing and trim work. Remove all damaged and defective work and replace with new materials.

B. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

C. Remove trash, debris, and equipment from the job site.

D. Repair damage and remove stains caused by the work.

3.5 PROTECTION

A. Protect installed work during remainder of construction period. Ensure that it will be without damage or deterioration (other than normal weathering) at substantial completion.

END OF SECTION