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SECTION 07620 – FLASHING AND SHEET METAL

**PART 1        GENERAL**

1.01        SUMMARY

A.        Section includes flashing and sheet metal including necessary accessories indicated on Drawings, specified in this Section, and not specified in Section 07527.

B. Related Sections:

1.        04000 – Unit Masonry
2.        06100 – Rough Carpentry
3.        07463 – Aluminum Siding
4.        07533 – Single-Ply Roofing Membrane
5.        07920 - Sealants and Caulking
6.        09210 – Lathing, Plaster and Stucco

1.02        SUBMITTALS

A.        Product data and descriptive literature on manufactured items.

B.        Shop drawings on flashing and sheet metal work. Submit as part of or together with shop drawings required in Section 07527. Coordinate work of both sections.

1.03        COORDINATION

A.        Coordinate application of flashings with application of roofing, protruding material and roof accessories in such a manner that complete installation is weather-tight and in accordance with the specified warranty requirements.

1.04        WARRANTY

A.        Furnish Owner a five-year warranty covering materials and workmanship for all flashings in conjunction with warranty of roofing systems specified in Section 07527.

1.        Warranty shall cover watertight integrity of flashings for a period of five years, including repair or replacement of components or systems deemed faulty or in disrepair by Owner during warranty period, at no cost to the Owner.

B.        Definition of faulty components or systems in disrepair includes but is not limited to:

1.        Defects in manufacture and installations.
2.        Defects in materials.
3.        Leaks of any kind.

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**PART 2 PRODUCTS**

2.01 SHEET METAL

- A. Stainless Steel: Type 302 or 304, fully annealed, complying with the requirements of ASTM A167-88, 26 gage for general flashing, counter-flashing and pitch pans, 20 gage for parapet cap flashing, emergency scuppers, leader heads and downspouts, mill finish (2B or 2D).

2.02 ACCESSORIES

- A. Solder: ASTM B-32, 60 percent tin and 40 percent lead.
- B. Fastening Devices:
1. For Attaching Sheet Metal to Wood with Concealed Fastenings: Hot dip galvanized ring shank roofing nails not less than one inch long, conforming to Fed. Spec. FF-N-105B (3) Int. Amd.4, Type II, Style 20.
  2. For Attaching Sheet Metal to Wood with Exposed Fastenings: No. 10 x 1-1/4 inch pan head stainless steel sheet metal screws. Provide neoprene sealant washers and stainless steel washers under screw heads.
  3. For Attaching Sheet Metal to Metal Decking: No. 10 x 1/2 inch pan head stainless steel sheet metal screws. Provide neoprene sealant washers and stainless steel washers under screw heads.
  4. For Attaching Sheet Metal to Masonry and/or Concrete: No. 10 x one inch pan head stainless steel sheet metal screws in lead shields or No. 10 x one inch pan head Tap-Con zinc plated concrete tapping screws. Provide neoprene sealant washers and stainless steel washers under screw heads.
- C. Roofing Cement: Plastic roofing cement complying with the requirements of Fed. Spec. SS-C-153C, Type I, asphalt base, or Type II tar base as appropriate and as recommended by roofing manufacturer.
- D. Lead Flashings for Vent Stacks: Four pound sheet lead conforming to ASTM B29-79 (1984).
- E. Flashing Reglets: Surface mounted, .020 thick Type 304 stainless steel, factory formed, equal to Fry Reglet Springlock Type SM.
- F. Neoprene expansion joint covers: Pre-formed EPDM sponge bellows 4 inches wide, .015 in. stainless steel or 26 gage galvanized steel flanges, equal to Manville Expand-O-Flash, Style EJ.

2.03 FABRICATION

- A. Workmanship:
1. Fabricate flashing and sheet metal work in accord with accepted shop drawings
  2. Select methods of fabrication, assembly and installation. Fabricate with joints and corners accurately machined, filed and fitted, and rigidly framed together and connected.

- a. Match components to produce perfect continuity of line and design.
  - b. Except as otherwise specified or indicated, comply with SMACNA Manual.
3. Make joints and connections in exterior face metal watertight.
  4. Make hairline joints in face of metal in contact except where indicated or required for expansion.
  5. Conceal fastenings except as otherwise indicated.
  6. Conceal reinforcement within the finished assembly.
  7. Seal reglets with removable filler to prevent intrusion of foreign substances.
  8. Hem all exposed edges.
  9. Angle bottom edges of exposed vertical surfaces to form drips.
- B. Bitumen Dams: Fabricate tubular sleeve dams using 26 gage stainless steel of proper diameter for close fit over sanitary vents and other roof penetrations with dam height of not less than 1-1/2 inches and 4 inch flanges, soldered bitumen tight to dam sleeve.
- C. Sanitary Vent Stack Flashings: Fabricate using 4 lb. sheet lead in accord with SMACNA Plate 59, Figure B, size and height to fit vent stacks, 4 inch minimum integral roof flanges.
- D. Stucco/Wall Shoulder Counter-flashings: Fabricate using sheet stainless steel to detail indicated, in 10-foot sections.
1. Form 4 inch high counter-flashing with 3/4-inch inward kink towards wall, and 1 3/4 inch top wall flange.
  2. Shop punch wall flange at 12 inches o.c. for fastenings.
  3. Provide shop fabricated corner splices extending four inches each way.
  4. Bend 1/4 inch of top flange 1/8 inch towards wall.
  5. end bottom 3/8 inch of bottom flange 1/4 inch away from wall and hem.
- E. Pitch Pans: Stainless sheet steel, not less than 3 inches high, minimum 2 inch clearance from item surrounded, with 4 inch wide roof flanges with closed corners soldered in. Solder vertical corner joints and hem top edges down 1/4 inch inside.
1. Coordinate pan sizes with other trades before fabrication.
- F. Fabrication of flashings for Pipes, Conduits and Round Equipment Supports Penetrating Roofing or Resting on Roofing:
1. Form tubular stainless steel base flashing sleeves not less than 8 inches high to fit pipe, conduit and round equipment support and with 4-inch wide roof flanges soldered watertight.
  2. Form split tubular stainless steel counter-flashing to provide slip fit over base flashing, with 2-inch minimum loose edge lap, of 5-1/2 inch minimum height and with 4-inch lap over base flashings. Secure with stainless steel hose clamps.
- G. Expansion and contraction:
1. Provide for thermal expansion and contraction and building movement in completed work, without over-stressing the material, breaking connections or producing wrinkles and distortion in finished surfaces. Make water and weather-tight throughout.
  2. Where subject to thermal expansion and contraction, attach members with clips to permit

- movement without damage or provide slotted or oversize holes with washers only, as approved by Owner.
3. Make lock seam work flat and true to line and sweat full of solder except where installed to permit expansion and contraction.
    - a. Lap flat lock seams, and lap seams where soldered, according to pitch but in no case less than 3 inch. Make seams in direction of flow.

**PART 3 EXECUTION**

3.01 INSPECTION

- A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.
- B. Before installing sheet metal, verify shapes and dimension of surfaces to be covered.
- C. Verify that substrates are smooth and clean to extent needed for sheet metal work.
- D. Verify that reglets, nails, cants, and blocking, to receive sheet metal are installed and free of concrete and soil.
- E. Correct unsatisfactory conditions before proceeding with this work.
- F. Verify that surfaces, which are inaccessible after fabrication or installation, are shop prime coated.

3.02 INSTALLATION

- A. Lap, rivet, lock or seal joints, as field conditions require. Provide necessary reinforcement, miscellaneous fittings and accessories.
- B. Apply flashing and sheet metal work including miscellaneous fittings and accessories to even, smooth, sound, thoroughly clean and dry surfaces free of defects that might affect application.
- C. Perform soldering work slowly, with properly heated coppers to thoroughly heat seam material and sweat solder through full width of seam showing not less than 1 inch of evenly flowed solder.
  1. Commence soldering immediately after application of flux.
  2. Solder flat locked seam.
- D. Isolate dissimilar metals with accepted isolation paint or other accepted materials.
  1. Do not place in contact with or in positions where drainage across such paint or other materials will occur.
- E. Make flashing and sheet metal work water and weather-tight, with lines, arises and angles sharp and true and plane surfaces without waves or buckles.

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- F. Provide sufficient fasteners and related hardware to insure a complete and weather-tight system.
- G. Bitumen Dams: Place over roof penetrations before roofing installation. Set flanges on roof deck in roofing cement and fasten in place with appropriate fasteners.
- H. Vent Stacks: Provide sheet lead flashings for sanitary vent stacks, of proper size to fit stacks, with roof flange set in roofing cement and secure to wood roof deck and cover with two ply roofing felts stripping in accordance with accepted shop drawings.
1. Extend lead flashings up to top of vent stack and turn top edge down into vent stacks.
  2. Install vandal proof vent stack caps.
- I. Eave Drip Strips: Set roof flange in full bed of roofing cement over completed roofing.
1. Lap splices 4 inches minimum and seal watertight.
  2. Stagger nail flange to roof deck at 3 inches o.c.
  3. Cover roof flanges with 2 ply felt stripping set in full bed of roofing cement.
- J. Gutters, Downspouts, and Scuppers:
1. Install scuppers in full bed of roofing cement over completed base flashing and roofing. Form sump fully 1/2" below adjoining roof surfaces.
  2. Install gutters dead level or sloping slightly toward downspouts, with sufficient brackets to support them when full of water.
    - a. Sweat solder joints and rivet with minimum 3 rivets per joints.
    - b. Provide expansion joints at high point of mid-span in runs greater than 50 ft.
  3. Secure downspouts with galvanized steel straps at top and bottom, allow for thermal movement.
  4. Install continuous gutter guards on gutters. Install strainer guards at conductor heads, removable for cleaning downspouts.
- K. Provide pitch pans for conduits, metal equipment supports and pipes penetrating roofs that are not subject to vertical movement, heat or vibration, and for other items projecting from or resting on roofs, as indicated on drawings and as specified in this section.
1. Set pitch pan roof flange in a full bed of plastic roofing cement.
  2. Cover pan flanges with two layers of roofing felt stripping set in solid coats of hot pitch or roofing cement.
  3. Fill pitch pan 1 inch deep with mixture of plastic roofing cement and portland cement and top out with hot coal tar bitumen or roofing cement.
    - a. Allow hot coal tar pitch or roofing cement to fill to top edge of hem.
    - b. Do not nip top edge of hem to allow for drainage of water.
- L. Provide sheet metal base and counter-flashing at pipes, conduits and round equipment supports.
1. Set flashing roof flanges in full bed of roofing cement.
  2. Cover flashing flanges with two layers of roofing felt stripping set in solid coats of hot pitch or roofing cement.

3. Wrap pipe, conduit and round equipment support with one or more layers of 3/8 inch by 1-inch wide neoprene foam tape, with tight fitting butt joints.
4. Install counter-flashing over base flashing and seal watertight at top edge with elastomeric sealant.
5. Seal counter-flashing lap with elastomeric sealant.
6. Secure counter-flashings with stainless steel hose clamps.

M. Installation of Stucco Shoulder Counter-flashings:

1. Set top flange in full bed of roofing cement and secure to wall with masonry nails 12 inches o.c.
2. Lap splices 4 inches, including, corners, and seal inside laps with roofing cement.
3. Seal nail heads and top edge of flashing with roofing cement.
4. Coordinate installation of galvanized hardware cloth strip over wall flange with Section 09210.

N. Downspouts:

1. Install over gutter sleeve to within 1/2 in. of gutter bottom.
2. Secure to wall or post with anchor straps at top and bottom.
  - a. Provide intermediate straps for downspout lengths exceeding 10 ft. – 0 in.
  - b. On larger lengths, space intermediate straps at 6 ft. – 0 in. maximum.
  - c. Secure downspouts to straps with No. 6 pan head sheet metal screws.
3. Secure straps to wall or posts with No. 8 full threaded screws.

\*\*\*END OF SECTION\*\*\*