SECTION 07600
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 SUMMARY:
A. Section Includes:
   1. Copings.
   2. Flashings.
   3. Counterflashings.
   4. Downspouts.
   5. Gutters.
   6. Related clips, anchors, and fasteners.

B. Related Sections:
   1. Section 04200 - Unit Masonry.
   2. Section 04400 - Stone.
   3. Section 07320 - Roofing Tile.
   4. Section 07510 - Built-up Bituminous Roofing.
   5. Section 07530 - Single Ply Membrane Roofing.

1.2 SYSTEM DESCRIPTION:
A. Tile Roof Flashing:
   1. All flashings between tile roofs and vertical surfaces shall be 16 ounce cold rolled copper run not less than 2" higher than the tile and covering the first roll of tile.
   2. Flashings to be lapped 6" and to be secured with 4" wide floating 20 gage stainless steel cleats at 36" on center or continuous 20 gage stainless steel cleat.
   3. Box flashings to be used along rakes. All flashings to be counterflashed.
   4. Copper edge strip to be used along all exposed sheathing edges.
   5. All flashing and counter flashing associated with tile roof system shall be copper.

B. Gutters:
   1. 24-gage galvanized iron or copper (where appropriate), half round, 4" deep, 5" wide, both edges rolled over 5/8" copper coated steel rod and set at a pitch of 1/4" per 10' to drain.

ALL EXPOSED ITEMS ON MAIN CAMPUS ARE TO BE FABRICATED FROM COPPER EXCEPT ITEMS DIRECTLY RELATED TO PREFINISHED PANELS. ITEMS AT RESEARCH PARK AND EAST CAMPUS ARE AT DESIGNER'S DISCRETION SUBJECT TO APPROVAL BY CAMPUS ARCHITECT.
2. Hangers: Adjustable type, spaced at 24" o.c., Berger Brothers, shank type.

3. Gutters shall be used at draining edge of all tile roofs, unless specifically approved otherwise.

4. All joints shall be soldered.

C. Downspouts:

1. Galvanized steel or copper (where appropriate) threaded pipe built into the wall and turned out on top about 2 ft. below gutters and fitted with a drip flange.

2. Galvanized iron downspout shall run from gutter down and into the steel pipe, loose fit.

3. Steel pipe shall turn out at the bottom about one foot above grade and shall finish in a heavy fitting with drip lip.
   a. Provide precast concrete splash blocks (or C.I.P.) where downspouts discharge at grade. Direct all flow away from building.

4. No exposed downspouts shall be used except with express approval of Department of Facilities Management.

5. Use two 45 degree sections to transfer from gutter to downspout.

6. Provide snap-in cleanouts at each story of construction for multi-story work.

1.3 SUBMITTALS:

A. Submit full size samples in conformance with Section 01300 including:
   1. Flashing and counterflashing.
   2. Gutter section.
   3. Downspout section.
1.4 QUALITY ASSURANCE:

A. Except as otherwise indicated, conform to requirements and recommendations of SMACNA "Architectural Sheet Metal Manual", as applicable and including joints, seams, details and accommodation of thermal movement.

B. Sheet metal and flashing installations shall be designed to withstand 100 mph wind uplift.

C. Completed work must be free from water leakage under all weather conditions.

1.5 WARRANTY:

A. Sheet metal work shall be warranted for a period of 2 years from date of the Notice of Acceptance.

B. Warranty shall include replacement at Contractor's expense any defects which occur during the warranty period which, in the opinion of the Architect are due to defective materials, workmanship, or for failure to allow for expansion/contraction.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Zinc-Coated Steel Sheet: Commercial quality carbon steel sheets with minimum of 0.20% copper content complying with ASTM A526 or A527 for lock-forming; hot-dip galvanized to comply with ASTM A525, G90, mill phosphatized, 20 gage except as otherwise indicated.

B. Copper Sheet: Cold-rolled sheet copper (H00), complying with ASTM B370, except soft temper (060) where fully concealed and supported for proper performance, CDS 2B (bright) finish, 16 oz. per sq. ft. (0.0216" thick) except as otherwise indicated.

C. Stainless Steel Sheet: AISI Type 302/304 stainless steel sheet or strip complying with ASTM A167; soft; No. 2D annealed finish, 0.0250" thick (24 gage) except as otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Seams:

1. For non-moving seams provide soldered common-lock seams, except as otherwise indicated.

2. Comply with metal producer's recommendations for tinning, soldering and cleaning the joints.

3. Mastic sealed seams are not acceptable.
B. Expansion Provisions:

1. Provide for thermal expansion of all exposed sheet metal work exceeding 15'-0" running length, except as otherwise indicated.
   
a. Gutters: Locate where shown with 40'-0" maximum spacing, and located at high points in drainage wherever possible.
   
b. Flashing and Trim: 10'-0" maximum spacing, and located 2'-0" from corners and intersections.

2. Conceal fasteners and expansion provisions wherever possible. Fold back edges on concealed side of exposed edges, to form a hem.

C. Flashings:

1. Insert flashings into reglets. Anchor by mechanical means, including driven wedges of lead or other compatible metal, spaced 2'-0". Seal the joint with sealant.

2. Provide two piece flashing wherever possible.

3. Hem all exposed edges by fold-back on concealed side.

D. Copper:

1. Separate copper work from dissimilar metals by a 15-mil-dry-film thickness bituminous coating, or by a heavy tinning of solder at spot-contacts.

END OF SECTION 07600