SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

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2. Materials and Resources - Building Life-cycle Impact Reduction. For each product submit the following:---in9(T)--yp6.1(l)31(pe 4(pac)-I(or)-6I(or)-6.E)-9T7-P-8.6(D(t)-9 .) (-)Tj 11.771 9.6020.002 T

2) Health Product Declaration.
3) Cradle to Cradle v3 Bronze level certification documentation.

8. Materials and Resources - Product Disclosure and Optimization - Material Ingredients. Option 2 Material Ingredients Optimization. If available, for each product submit the following:

a. GreenScreen v1.2 Benchmark with chemical inventory of chemical ingredients to 100 ppm.
b. For products meeting the above criteria, submit a letter stating the dollar value of all products that are extracted, manufactured, and purchased (including distribution) within a 100 mile radius of the project site.

9. Materials and Resources - Product Disclosure and Optimization - Material Ingredients. Option 3 Product Manufacture Supply Chain Optimization.

a. If available, for each product submit the following:

1) An inventory by weight of each constituent material of the product and a letter from each supplier.

b. For products meeting the above criteria, submit a letter stating the dollar value of all products that are extracted, manufactured, and purchased (including distribution) within a 100 mile radius of the project site.

10. Construction and Demolition Waste Management. For all products submit:

a. A letter stating the total weight and value of waste diverted form landfills. Provide details of how the waste was recovered, reused or recycled.

C. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
10. Include details of typical and non-typical conditions and special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 3 inches per 12 inches (1:5).

D. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

E. Samples for Verification: For each type of exposed finish.

D. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof [**edge**] [**eave**], including [**built-in gutter**] [**fascia**] [**fascia trim**] [**apron flashing**], approximately <**Insert dimension**> long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract be0 Tw 01(s)-87o4 p.1(i)3.4

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. FM Approvals Listing: Manufacture and install [**copings**] [**roof edge flashings**] that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with name of fabricator and design approved by FM Approvals.

E. SPRI Wind Design Standard: Manufacture and install [**copings**] [**roof edge flashings**] tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: <**Insert design pressure**>.

F. Recycled Content of Copper-Sheet Flashing and Trim: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 40 percent.

G. Recycled Content of Steel-Sheet Flashing and Trim: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

H. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.

1. Nonpatinated Exposed Finish: Mill.

2. Nonpatinated, Exposed, Lacquered Finish: Finish designations for copper alloys comply with system defined in NAAMM's "Metal Finishes Manual for Architectural and Metal Products."

a. Brushed Satin (Lacquered): M32-06x (Mechanical Finish: directionally textured, medium satin; with clear organic coating); coating of "Incralac," waterborne, methyl methacrylate copolymer lacquer with UV inhibitor, applied by air spray in two coats per manufacturer's written instructions to total thickness of 1 mil (0.025 mm).
b. Mirror Polished (Lacquered): M22-06x (Mechanical Finish: buffed, specular; with clear organic coating); coating of "Incralac," waterborne, air-drying, methyl methacrylate copolymer lacquer with UV inhibitor, applied by air spray in two coats per manufacturer's written instructions to total thickness of 1 mil (0.025 mm).

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B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.7 ROOF-DRAINAGE SHEET METAL FABRICATIONSH.

6. Gutters with Girth 21 to 25 Inches (530 to 640 mm)

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1. Copper: 16 oz./sq. ft. (0.55 mm thick).
2. Aluminum: 0.050 inch (1.27 mm) thick.
3. Stainless Steel: 0.025 inch (0.64 mm) thick.

D. Base Flashing:

D. Eave, Rake, Ridge, and Hip Flashing: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft. (0.55 mm thick).
2. Aluminum: 0.032 inch (0.81 mm) thick.
3. Stainless Steel: 0.016 inch (0.40 mm) thick.

E. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Copper: 16 oz./sq. ft. (0.55 mm thick).
2. Aluminum: 0.032 inch (0.81 mm) thick.
3. Stainless Steel: 0.019 inch (0.48 mm) thick.

F. Flashing Receivers: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft. (0.55 mm thick277 0 Td [(0.)-1.1(03)-12.3(2 i)-8.9(nc)-8.1(h)]TJ 0 Tc 0 Tw ( )Tj 0.

1. Copper: 16 oz./sq. ft. (0.55 mm thick).
2. Stainless Steel: 0.019 inch (0.48 mm) thick.

B. Overhead-Piping Safety Pans: Fabricate from the following materials:

1. Copper: 24 oz./sq. ft. (0.82 mm thick).
2. Stainless Steel: 0.025 inch (0.64 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners[**, solder**], protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.
6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recom3.1(n)-1(i)2.1(dBotb4(anent1( )-11.epar)hee3(3.1(n1(s)-8(.4(et)-1.1(al)3.1(Tc 0 Tw 17.272 0
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3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.

1. Fasten gutter spacers to front and back of gutter.
2. Anchor and loosely lock back edge of gutter to continuous [**cleat**] [**eave or apron flashing**].
3. Anchor gutter with [**brackets**] [**spikes and ferrules**] spaced as recommended by manufacturer but not more than [**36 inches (914 mm)**] [**48 inches (1219 mm)**] [**60 inches (1524 mm)**] [**72 inches (1829 mm)**] [**96 inches (2438 mm)**] [**120 inches (3048 mm)**] [**144 inches (3658 mm)**] [**192 inches (4877 mm)**] [**240 inches (6096 mm)**] [**288 inches (7315 mm)**] [**336 inches (8534 mm)**] [**384 inches (9754 mm)**] [**432 inches (10 973 mm)**] [**480 inches (12 192 mm)**] [**528 inches (13 411 mm)**] [**576 inches (14 630 mm)**] [**624 inches (15 850 mm)**] [**672 inches (17 069 mm)**] [**720 inches (18 288 mm)**] apart.

H. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches (100 mm) in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet

3.7 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

B. Overhead-Piping Safety Pans: Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise indicated on Drawings. Pipe and install drain line to plumbing waste or drainage system.

3.8 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.9 CLEANING AND PROTECTION

A. Remove all scrapes and dirt immediately upon completion of work.

B. Clean all fabrications of surface dirt, oils, grease, weld or solder residue and other surface contaminates that would effect eh application of finish primers and paints.

C. After installation cover and protect exposed portions of the fabrications from damage.