

SECTION 07720  
ROOF ACCESSORIES AND SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary Conditions and Division 1 - General Requirements, apply to work specified in this Section.

1.02 SUMMARY

- A. This Section includes the following sheet metal flashing and trim:
  - 1. Parapet coping.
  - 2. Roof edge flashing and fascia.
  - 3. Metal counterflashing at roofing terminations.
- B. Related Work Specified in Other Sections:
  - 1. Masonry through-wall flashing: Section 04810.
  - 2. Wood blocking for securement of sheet metal fabrications: Section 06100.
  - 3. Cap flashing and counter flashing furnished with mechanical equipment curbs: Division 15 Sections.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Fabricate parapet copings capable of resisting the following forces according to recommendations in FMG Loss Prevention Data Sheet 1-49:
  - 1. Wind Zone 1: For velocity pressures of 21 to 30 lbf/sq. ft.: 60-lbf/sq. ft. perimeter uplift force, 90-lbf/sq. ft. corner uplift force, and 30-lbf/sq. ft. outward force.
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

#### 1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:
  - 1. Identify material, thickness, weight, and finish for each item and location in Project.
  - 2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
  - 3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.

#### 1.05 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standards:
  - 1. Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
  - 2. Copper Standard: Additionally, for copper and lead-coated copper fabrications, comply with CDA's "Copper in Architecture Handbook."
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
  - 1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, and roof-mounted equipment.
  - 2. Review methods and procedures related to sheet metal flashing and trim.
  - 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
  - 4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

## 1.07 COORDINATION

- A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

## 1.08 WARRANTY

- A. For manufactured roof accessories, furnish manufacturer's warranty agreeing to replace roof edge coping and fascias that fail within the warranty period. Failures shall include blow-off under wind design conditions and water infiltration.
  - 1. Period of Warranty: 15 years.
- B. The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

## PART 2 - PRODUCTS

### 2.01 SHEET METALS

- A. Aluminum Extrusions: **ASTM B 221 (ASTM B 221M)**, alloy and temper recommended by manufacturer for type of use and finish indicated.
  - 1. Metal Finish: Class I, Clear Anodic Finish, conforming to AA-M12C22A41 with Architectural Class I, clear coating 0.018 mm or thicker, and complying with AAMA 611.
- B. Aluminum Sheet: ASTM B 209, alloy 3003, temper H14, 0.032-inch thick except as otherwise indicated.
  - 1. Metal Finish: Class I, Clear Anodic Finish, conforming to AA-M12C22A41 with Architectural Class I, clear coating 0.018 mm or thicker, and complying with AAMA 611.
- C. Lead-Coated Copper Sheet: ASTM B 101, Temper H00 and H01, cold-rolled copper sheet, of weight (thickness) indicated below, coated both sides with lead weighing not less than 12 lb/100 sq. ft. (0.59 kg/sq. m) nor more than 15 lb/100 sq. ft. (0.73 kg/sq. m) of copper sheet (total weight of lead applied equally to both sides).
- D. Copper Sheet: ASTM B 370, Temper H00 or H01, cold-rolled copper sheet.
- E. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.

### 2.02 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
  - 1. For anchoring coping anchor plate to wood blocking, furnish threaded fasteners.
  - 2. For anchoring galvanized steel cant dam to wood blocking, furnish galvanized roofing nails or threaded fasteners.
  - 3. For securing copper sheet, furnish copper or stainless steel fasteners of sizes that will penetrate substrate not less than **1-1/4 inches (32 mm)** for nails and not less than **3/4 inch (19 mm)** for wood screws.
    - a. Nails for Copper Sheet: Copper or hardware bronze, 0.109 inch minimum and not less than 7/8 inch long, barbed with large head.
- C. Solder for Lead-Coated Copper: ASTM B 32, Grade Sn60, 60 percent tin and 40 percent lead.
- D. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
- G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- I. Splash block: Precast concrete.

#### 2.03 SHEET METAL FABRICATIONS, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.
- B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
- C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
- D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

- E. Fabricate roofing accessories and sheet metal fabrications with provisions for expansion.
- F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.
- G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
  - 1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" and FMG Loss Prevention Data Sheet 1-49 for application but not less than thickness of metal being secured.

#### 2.04 FASCIA AND COPING SYSTEMS

- A. Canted Roof Edge Fascia: Manufactured, two-piece, roof edge fascia consisting of snap-on metal fascia cover and a continuous formed galvanized steel sheet cant dam, 0.028 inch thick, minimum, with integral drip edge cleat. Provide matching mitered and welded corner units.
  - 1. Basis-of-Design Product: MM Systems Corporation "F-Series Fascia System" or a comparable product by one of the following:
    - a. Hickman, W. P. Company.
    - b. Metal-Era, Inc.
    - c. Perimeter Systems, a division of Southern Aluminum Finishing Co.
    - d. Petersen Aluminum Corp.
  - 2. Fascia Cover: Extruded aluminum, 0.080 inch (2.0 mm) minimum thickness; thicker if recommended by manufacturer for shape and support conditions required.
  - 3. Special Fabrications: Radiussed sections.
  - 4. Expansion Provisions: Butt joints spaced 12'-0" maximum, with concealed splice plate of same material, finish, and shape as fascia cover.
- B. Copings: Manufactured coping system consisting of formed-metal coping cap, concealed anchorage, concealed splice plates with same finish as coping caps, mitered corner units, and end cap units.
  - 1. Basis-of-Design Product: MM Systems Corporation "Snap-Lok" coping system or a comparable product by one of the following:
    - a. Hickman, W. P. Company.
    - b. Metal-Era, Inc.
    - c. Perimeter Systems, a division of Southern Aluminum Finishing Co.
    - d. Petersen Aluminum Corp.
  - 2. Coping Caps: Snap-on, fabricated from aluminum; thickness of metal determined by the fabricator as required to resist wind uplift and not show "oilcanning" for coping of dimensions indicated; not less than 0.063 inch (1.6 mm) thick.
  - 3. Corners: Continuously welded.

4. Expansion Provisions: Butt joints spaced 12'-0" maximum, with concealed splice plate of same material, finish, and shape as fascia cover.
5. Anchor Plates: Concealed, galvanized steel sheet, 12 inches wide, 0.028 inch thick, with integral cleats.

## 2.05 COPPER FLASHING FABRICATIONS

- A. Counterflashing: Fabricate from lead-coated copper, 17.2 oz./sq. ft. (0.60 mm thick).
- B. Flashing Receivers: Fabricate from lead-coated copper, 17.2 oz./sq. ft. (0.60 mm thick).
- C. Seams: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- D. Expansion Provisions: Lapped joints filled with sealant; or where lapped joints cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
  1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION, GENERAL

- A. Metal Protection: 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.
  1. Coat side of lead sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
  3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.
- B. Install manufactured coping and fascia systems and sheet metal fabrications level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil-canning, buckling, or tool marks.

- C. Fasteners: Use fasteners of type and size recommended by manufacturer but of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

### 3.03 INSTALLATION OF MANUFACTURED COPINGS AND FASCIA SYSTEMS

- A. Install manufactured roof specialties according to manufacturer's written instructions. Anchor manufactured roof specialties securely in place and capable of resisting forces specified in performance requirements. Use fasteners, separators, sealants, and other miscellaneous items as required to complete manufactured roof specialty systems.
  - 1. Install manufactured roof specialties with provisions for thermal and structural movement.
  - 2. Torch cutting of manufactured roof specialties is not permitted.
- B. Install manufactured coping and fascia systems to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
- C. Expansion Provisions: Provide for thermal expansion of exposed manufactured roof specialties. Space movement joints at a maximum of 12 feet with no unplanned joints within 18 inches of corners or intersections.
- D. Seal joints with elastomeric or butyl sealant as required by manufacturer of roofing specialties.
- E. Expansion Provisions: Provide for thermal expansion of exposed manufactured roof specialties. Space movement joints at a maximum of 12 feet (3.6 m) with no unplanned joints within 18 inches (450 mm) of corners or intersections.
- F. Coping Systems: Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners. Anchor copings to resist uplift and outward forces according to performance requirements. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's recommended spacing.
- G. Roof Edge Flashing and Fascia: Install cleats, cant dams, and other anchoring and attachment accessories and devices with concealed fasteners. Anchor roof edgings to resist uplift and outward forces according to performance requirements.

### 3.04 INSTALLATION OF SHEET METAL FABRICATIONS (COUNTERFLASHING)

- A. Sheet Metal Flashing, 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, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Install exposed sheet metal flashing and trim without excessive oil caming, buckling, and tool marks. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

- C. 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.
  - 1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- D. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
- E. Fasteners: Use copper or stainless steel fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- F. Seal joints with butyl sealant as required for watertight construction.
  - 1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
  - 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. At edges of lead-coated copper, do not pretin, but wire brush before soldering.
  - 1. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

### 3.05 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07620