

SECTION 07 62 00 – 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes furnishing and installing:
 - 1. Flashings and counter flashings with continuous cleats
 - 2. Roof penetration flashings
 - 3. Roof structural penetration flashings
 - 4. Parapet copings

1.3 RELATED WORK

- A. Related Work of Other Sections:
 - 1. Section 04 20 00 – Unit Masonry.
 - 2. Section 06 10 53 – Miscellaneous Rough Carpentry; Treated wood curbs and nailers.
 - 3. Section 07 52 16 – Styrene-Butadiene-Styrene (SBS) Modified Membrane Roofing.
 - 4. Section 07 70 00 – Roof Specialties: Roof access hatch, equipment curbs and supports.
 - 5. Section 07 92 00 – Joint Sealants.
 - 6. Division 21, 22, 23 Sections: Mechanical and plumbing systems and equipment.
 - 7. Division 26 Sections: Electrical Work.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Flashing Design Wind Loads: Provide flashing systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.
 - 1. Basic Wind Speed (V3s): 110 mph (49-meters per second).
 - 2. Importance Factor: 1.00
 - 3. Exposure Category: B.
- C. Thermal Movements: Provide sheet metal work that allows for thermal movements from ambient and surface temperature changes. Base calculations 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.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:
 - 1. Identification of 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 joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
 - 4. Details of termination points and assemblies, including fixed points.
 - 5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
 - 6. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counter flashings as applicable.
 - 7. Details of special conditions.
 - 8. Details of connections to adjoining work.
 - 9. Detail formed flashing and trim at a scale of not less than 3 inches per 12 inches.
- C. Samples for Initial Selection: For each type of sheet metal flashing, trim, and accessory indicated with factory-applied color finishes involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 - 2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.
 - 3. Accessories and Miscellaneous Materials: Full-size Sample.
- E. Qualification Data: For qualified fabricator.

1.6 QUALITY ASSURANCE

- A. Qualifications: Arrange for flashing work to be fabricated and installed by a firm with a minimum of 3 years successful experience in the fabrication and installation of flashing work similar in type and scope to project requirements.
- B. Quality Assurance: Conform to profiles and sizes shown, roofing manufacturer's printed instructions and comply with the following portions of the "Architectural Sheet Metal Manual," 5th Edition, 1993, by SMACNA, for each general category of work required, including recommended gages for conditions other than roofing pan units.
 - 1. Formed Gravel Stop-Fascia: Chapter 2, Figures 2-1B, including Continuous Cleat Detail 1, Basic Flange Nailing Pattern, and 2-5A joint cover.

2. Counterflashings: Chapter 4; Figure 4-3A.
 3. Roof Penetration Flashings: Chapter 4; Figure 4-13A with fastened and sealed upturned splice as detailed.
 4. Roof Vent or Pipe Penetrations: Chapter 4; Figure 4-14C.
- C. Pre-Installation Conference: Before installing flashing, roofing system and roof deck insulation, conduct a conference at the Project Site. This conference may be combined with the pre-roof conference. Notify participants at least 5 working days prior to meeting.
1. Meet with Owner, Architect, Construction manager, Owner's insurer, if applicable; roof inspection representative, if applicable; roof Installer ("Roofer"); roofing system product representative; installers of other work adjoining flashing work including penetrating work and roof-top units.
 2. Review methods and procedures related to flashing installation, including manufacturer's written instructions. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing and flashing installation and performance. Review submittals, status of coordinating work, availability of materials and installation facilities, proposed installation schedule, requirements for inspections and testing or certifications, forecasted weather conditions. Review governing regulations, insurance requirements, if applicable, and proposed installation procedures.
 3. Examine areas of roof substrates and discuss substrate condition, including flatness and attachment to structural members. Examine special flashing conditions and coordinate with requirements of Contract Documents.
 4. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant. If meeting ends with substantial disagreements, determine how disagreements will be resolved and set date for reconvened meeting.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.8 WARRANTY

- A. Furnish a 2-year special project warranty for flashing and sheet metal work. Warranty shall cover metal flashings and counter flashings, roof penetration flashings, parapet, coping and associated work, and agree to repair and replace work that fails in attachment to substrate, leaks water, deteriorates excessively, and otherwise fails to perform as protective flashing. Warranty shall be signed and countersigned by the installer and Contractor. Provide 20-year coil coating warranty.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality. Color to match Sheet metal roofing finish as approved by Architect. Approved manufacturers as follows:

1. Architectural Building Components
 2. Berridge Manufacturing Company
 3. Carlisle Engineered Metals
 4. Centria
 5. Molenco
 6. Inryco
- B. Exposed Finish - High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

2.2 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 and recommended by manufacturer of primary sheet metal unless otherwise indicated
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.
 3. Fasteners for Zinc Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: See Section 07 92 00 – Joint Sealants for requirements.
- E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION

- A. Conform to profiles, patterns, arrangements and sizes shown, and comply with referenced standards applicable to each general category of work required.
- B. Shop-fabricate work to the greatest extent possible.

- C. Comply with details shown and the publications referenced in the Design/Performance paragraph of this Section.
- D. Fabricate work to provide weatherproof and weather resistant performance with provisions for thermal expansion in running work to prevent leakage, damage, and deterioration of the work.
 - 1. Form work to fit substrate.
 - 2. Form exposed flashing work without excessive oil canning, buckling, and tool marks, true to lines and levels indicated, with exposed edges folded back to form hems.
 - 3. Fabricate non-moving seams with flat locked seams. Hem edge to be seamed and rivet joints for additional strength at locations of high stress due to thermal expansion.
 - 4. Where lapped or bayonet-type expansion provisions in the Work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant tape.
 - 5. Fabricate flashings for embedment in other construction or nailing to substrates with 4-inch minimum flange width, unless greater width is indicated.
 - 6. Fabricate seams at joints between units to provide at least 4-inch overlap, to form a continuous waterproof system.
 - 7. Non-Moving Seams: For non-moving seams provide riveted flat-lock seams, except as otherwise indicated.
 - 8. Provisions for Thermal Expansion: Provide for thermal expansion of all exposed sheet metal work exceeding 10'-0" in running length.
- E. Accessories: Provide cleats, clips, anchors, flashings, and appurtenances required for a complete installation.
- F. Reglets: Units of type, material matching flashing, and of profile as indicated, formed to provide secure interlocking of separate reglet and counter flashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions with interlocking counter flashing on exterior face, of same metal as reglet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cheney Flashing Company.
 - b. Fry Reglet Corporation.
 - c. Heckmann Building Products Inc.
 - d. Hickman, W. P. Company.
 - e. Hohmann & Barnard, Inc.; STF Sawtooth Flashing.
 - f. Keystone Flashing Company, Inc.
 - g. National Sheet Metal Systems, Inc.
 - h. Sandell Manufacturing Company, Inc.

2.4 FABRICATION, 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, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
 - 1. 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.

2. Obtain field measurements for accurate fit before shop fabrication.
 3. Form 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.
 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.
- D. Expansion Provisions: Where lapped expansion provisions 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.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Seams: For painted or coated metal, 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
 2. Sweep surfaces clean of all debris, dirt and dust. Surfaces must be clean and dry.
 3. Confirm that curbs for penetrations are in place, inspected and approved prior to start of flashing and sheet metal work.
 4. Confirm that adequate nailers and blocking are in place, inspected and approved prior to start of flashing and sheet metal work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Separate flashing and sheet metal roofing components from incompatible metal and corrosive substrates with bituminous coating or other permanent separation such as rubberized asphalt underlayment.

3.3 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing 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. Install sheet metal flashing and trim true to line and levels indicated. 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. Provide continuous cleats secured to nailers and blocking with fasteners spaced not more than 12-inches (300-mm) apart.
 4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
 5. Install sealant tape where indicated.
 6. Torch cutting of sheet metal flashing and trim is not permitted.
 7. Fabricate work to the extent not performed in the shop. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks considering temper and reflectivity of metal to the extent not fabricated in the shop.
 8. Conceal fasteners and expansion provisions wherever possible. Fold back edges on concealed side of exposed edges, to form a hem.
- B. 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 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.
- C. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws metal decking not less than three full fastener threads unless increased penetrations is recommended by fastener manufacturer to achieve maximum pull-out resistance.
- D. Seal joints as shown and 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 each 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 07 Section "Joint Sealants."
- E. Reglets and Flashing Receivers: Install counterflashings in reglets by snap-in hooked arrangement in flashing and reglet edges and secure bottom edge of flashings with a continuous cleat secured to substrate at maximum 12-inches (300-mm) on center. Fill reglet with Type "A" sealant as specified in Division 07 Section – Joint Sealants.

3.4 CLEANING

- A. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

END OF SECTION 07 62 00