

**SECTION 07 71 00
ROOF SPECIALTIES**

SPEC WRITER NOTES:

1. Delete between // // if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
2. Include standard manufactured components installed on and in roofing other than mechanical, electrical, and structural items.

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies copings, gravel stops, fascias, and expansion joints.

1.2 RELATED WORK:

- //A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS.//
- B. Color and Texture of Finish: Section 09 06 00, SCHEDULE FOR FINISHES
- C. Sealant Material and Installation: Section 07 92 00, JOINT SEALANTS.
- D. General Insulation: Section 07 21 13, THERMAL INSULATION
- E. Rigid Insulations for Roofing: Section 07 22 00, ROOF AND DECK INSULATION

1.3 QUALITY CONTROL:

- A. Provide roof accessories that products of manufacturers regularly engaged in producing the kinds of products specified.
- B. For each accessory type provide products made by the same manufacturer.
- C. Assemble each accessory to the greatest extent possible before delivery to the site.
- D. Provide each accessory with FM approval listing for class specified.

1.4 PERFORMANCE REQUIREMENTS:

- A. Provide roof accessories that withstand exposure to weather and resist thermal movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, or installation.
- B. Provide roof accessories listed in FM Approvals "RoofNav" and approved for windstorm classification Class // //. Identify materials with FM Approval markings.

- C. Manufacture and install roof accessories to allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
 - 1. Provide clips that resist rotation and avoid shear stress as a result of thermal movements.
 - 2. For design purposes, base provisions for thermal movement on assumed ambient temperature (range) from minus 18 degrees C (0 degrees F), ambient to 82 degrees C (180 degrees F).

1.5 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- //B. Sustainable Design Submittals, as described below:
 - //1. Postconsumer and preconsumer recycled content as specified in PART 2 - PRODUCTS.// //
- C. Samples: Representative sample panel of color-anodized aluminum not less than 101 x 101 mm (4 x 4 inches), except extrusions are to be of a width not less than section to be used. Submit sample that shows coating with integral color and texture. Include manufacturer's identifying label.
- D. Shop Drawings: Each item specified showing design, details of construction, installation and fastenings.
- E. Manufacturer's Literature and Data: Each item specified.
- F. Certificates: Stating that aluminum has been given specified thickness of anodizing.

1.6 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. ASTM International (ASTM):
 - A240/A240M-14.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - A653/A653M-13.....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process

- A666-10.....Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
- B209-14.....Aluminum and Aluminum Alloy-Sheet and Plate
- B209M-14.....Aluminum and Aluminum Alloy-Sheet and Plate (Metric)
- B221-14.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- B221M-13.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
- B32-08(R2014).....Solder Metal
- B370-12.....Copper Sheet and Strip for Building Construction
- B882-10.....Pre-Patinated Copper for Architectural Applications
- C612-14.....Mineral Fiber Block and Board Thermal Insulation
- D1187/D1187M-97 (R2011)..Asphalt-Base Emulsions for Use as Protective Coatings for Metal
- D1970/D1970M-14.....Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- D226/D226M-09.....Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- D4869/D4969M-05(R2011)..Asphalt-Saturated Organic Felt Underlayment Used In Steep Slope Roofing
- C. National Association of Architectural Metal Manufacturers (NAAMM):
- AMP 500-06.....Metal Finishes Manual
- D. American Architectural Manufacturers Association (AAMA):
- 2605-11.....High Performance Organic Coatings on Architectural Extrusions and Panels.
- 611-14.....Anodized Architectural Aluminum
- E. FM Global (FM):
- RoofNav.....Approved Roofing Assemblies and Products

PART 2 - PRODUCTS

SPEC WRITER NOTE: Update materials requirements to agree with applicable requirements (types, grades, classes) specified in the referenced Applicable Publications.

2.1 MATERIALS:

- A. Aluminum, Extruded: ASTM B221M (B221).
- B. Aluminum Sheet: ASTM B209M (B209).
- C. Galvanized Sheet Steel: ASTM A653/A653M; G-90 coating.
- D. Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
- E. Copper Sheet: ASTM B370, cold-rolled copper sheet, H00 or H01 temper.
- //F. Recycled Content of Metal Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than // 30 //
// // percent.//
- G. Insulation: ASTM C612, Class 1 or 2.
- H. Asphalt Coating: ASTM D1187, Type I, quick setting.

2.2 UNDERLAYMENT:

- A. Self-Adhering Modified Bitumen Underlayment:
 1. Provide self-adhering modified bitumen membrane underlayment material in compliance with ASTM D1970/D1970M, suitable for use as underlayment for metal copings and fascias.
 2. Provide membrane resistant to cyclical elevated temperatures for extended period of time in high heat service conditions (stable after testing at 116 degrees C (240 degrees F)).
 3. Provide membrane with integral non-tacking top surface of polyethylene film or other surface material to serve as separator between bituminous material and metal products to be applied above.
 4. Provide primer.
- B. Felt Underlayment: Provide No. 30 asphalt saturated organic, non-perforated felt underlayment in compliance with ASTM D226/D226M, Type II, or ASTM D4869/D4869M.
- C. Slip Sheet: Provide 0.24 kg per square meter (5 pounds per 100 sf) rosin sized unsaturated building paper for slip sheet.

2.3 SOLDER:

- A. Copper Solder conforming to ASTM B32, //lead-free solder//
//Grade Sn50, 50 percent tin and 50 percent lead//.

SPEC WRITER NOTE:

1. Detail coping system; select thickness of metal for wall thickness span.
Select anchoring system to conform to details.

2.4 COPINGS:

- A. Fabricate of aluminum sheet not less than // 1.6 // // 2 //
// 3.2 //-mm (// 0.063 // // 0.08 // // 0.125 // inch) thick; 16 oz.
copper // 0.5 mm (0.018 inch) thick; stainless steel//
- B. Turn outer edges down each face of wall as shown on construction documents.
- C. Maximum lengths of 3.05 M (10 feet).
- D. Shop fabricate external and internal corners as one-piece assemblies with not less than 305 mm (12 inch) leg lengths.
- E. Provide 101 mm (4 inch) wide 0.81 mm (0.032 inch) thick watertight joint covers.
- F. Provide anchor gutter bar of 0.81 mm (0.032 inch) thick with anchor holes formed for underside of joint.
- G. Provide concealed guttered splice plate of 0.81 mm (0.032 inch) thick with butyl or other resilient seal strips anchored to splice plate for underside of joint. Use galvanized steel anchor plate providing compression spring anchoring of coping cover.
- H. Finish: // Two-coat fluoropolymer // // Three-coat fluoropolymer //
// Two-coat mica fluoropolymer // // Three-coat metallic
fluoropolymer // // Clear anodic // // Color anodic // Color // // as specified.

SPEC WRITER NOTE: Detail gravel stop and fascias. If roof is ballasted extend vertical curb to be above paver/gravel surface. Where protective membrane insulation or 1-90 design occurs use system that clamps insulation or pavers down. Provide scuppers at water line for overflow protection when stop exceeds 25 mm (1 inch) in height above roof line.

2.5 EXTRUDED ALUMINUM GRAVEL STOPS AND FASCIAS:

- A. Fabricate of aluminum not less than 2 mm (0.078 inch) thick.
- B. Turn fascia down face of wall and up above roof as shown in construction documents.
- C. Maximum lengths of 3.05 M (10-feet).
- D. Shop fabricate external and internal corners as one (1)-piece assemblies with not less than 305 mm (12 inch) leg lengths.
- E. Provide 101 mm (4 inch) wide 2 mm (0.078 inch) thick watertight joint covers with 152 mm (6 inch) wide 0.8 mm (0.030 inch) thick underside joint flashing.

F. Finish: // Two-coat fluoropolymer // // Three-coat fluoropolymer //
 // Two-coat mica fluoropolymer // // Three-coat metallic
 fluoropolymer // // Clear anodic // // Color anodic // Color // //
 as specified.

SPEC WRITER NOTE: Use not less than
 101 mm (4 inch) high cant above roof.

2.6 EXTRUDED ALUMINUM FASCIA-CANT SYSTEM:

- A. The fascia-cant system consists of three (3) pieces, an extruded aluminum fascia, a galvanized steel cant, and an aluminum compression clamp.
- B. Furnish in stock lengths of not more than 3.05 M (10 feet) long.
- C. Form fascia from not less than 2 mm (0.070 inch) thick aluminum. Provide 101 mm (4 inch) wide 0.81 mm (0.032-inch) thick concealed sheet aluminum joint cover plates in back of fascia.
- D. Form cant strip from galvanized steel not less than 0.75 mm (0.0299 inch) thick, to profile shown and design to hold lower edge of the fascia.
- E. Form compression clamp of not less than 0.81 mm (0.032 inch) thick aluminum designed to hold the top edge of the fascia and the built-up flashing.
- F. Internal and external corners:
1. Factory fabricate and fully weld mitered joints.
 2. Furnish corner sections in // manufacturers standard sizes //
 // sizes shown // with not less than 305 mm (12 inch) leg lengths.

SPEC WRITER NOTE: Use sump assembly when
 downspouts are used to drain roof not
 having roof drains.

- G. Factory fabricated fascia sump assemblies.
1. Fabricate sump assemblies with stainless steel cores and extruded aluminum cover to match fascia-cant.
 2. Provide stainless steel outlet, tube sized to suit downspout and solder to core to make watertight.
 3. Furnish sump assembly in 508 mm (20 inch) minimum lengths.

SPEC WRITER NOTE: Use scuppers for
 overflow safety if only one roof drain
 occurs.

- H. Factory fabricated scupper assemblies:
1. Fabricate scupper assembly with extended plates to match fascia-cant in 508 mm (20 inch) minimum lengths.

2. Extend outlet opening not less than 50 mm (2 inches) with drip edge.
 3. Fabricate with stainless steel core or sleeve to drain water from toe of cant and flash in to built-up roofing with 101 mm (4 inch) wide flange.
- I. Finish on aluminum: // Two-coat fluoropolymer // // Three-coat fluoropolymer // // Two-coat mica fluoropolymer // // Three-coat metallic fluoropolymer // // Clear anodic // // Color anodic // Color // // as specified.

SPEC WRITER NOTE: Insure expansion joints are installed on curbs providing not less than 203 mm (8 inch) high base flashing. Detail and show system; allow option for use of both system.

2.7 EXTRUDED ALUMINUM ROOF EXPANSION JOINT COVERS:

- A. Fabricate in 3.0 M (10 foot) lengths with fastener openings slotting for expansion not over 610 mm (24 inch) centers.
- B. Provide four-way expansion, for joint widths shown on construction documents.
- C. Mill finish.
- D. Form waterstop or moisture seals of continuous sheets of neoprene, not less than 0.81 mm (0.032 inch) thick.
- E. Fabricate corners as one (1) piece assembly with mitered and welded joint and least dimension legs not less than 300 mm (12 inches) long.
- F. Factory fabricate end caps and transitions to insure waterproof assembly.
- G. Five (5) piece assembly:
 1. Roof expansion joint cover system consists of an extruded aluminum cover, extruded frame or curb vertical section, galvanized steel cant, and aluminum compression clamp counter flashing, complete with moisture seals. Form cover and vertical section from extruded aluminum, 2 mm (0.080 inch) minimum thickness with spring stainless steel tension or pivot bar.
 2. Form cant from galvanized steel not less than 0.8 mm (0.029 inch) thick formed to profile shown on construction documents.
 3. Form splice plates of not less than 0.81 mm (0.032 inch) thick aluminum sheet.
 4. Form counter flashing member of 1.3 mm (0.050 inch) thick sheet aluminum, secured with screws to the top edge of the vertical section and providing compression clamp over base flashing.

5. Provide compression gasket separating cover from curb bearing.

H. Two (2) piece assembly:

1. Roof expansion joint system consists of an extruded aluminum cover combination extruded aluminum frame or curb with integral adjustable counter flashing flange, and moisture seals.
2. Form cover from extruded aluminum 2 mm (0.078 inch) minimum thickness.
3. Form cover anchor system of stainless steel pivot bar.
4. Form frame assembly of not less than 2 mm (0.076 inch) aluminum except for flashing portion.
5. Provide compression gasket separating cover from curb at bearing.

SPEC WRITER NOTE: If more than one finish is used on project, proceed finish spec with "Finish for (list items);" Use mill finish for aluminum unless specified otherwise under item.

2.8 FINISH:

A. In accordance with NAAMM AMP 500-505.

//B. Aluminum, Mill Finish: AA-MIX, as fabricated. //

//C. Aluminum, Clear Anodic Finish AAMA 611: // AA-M12C22A41, Class I, 0.017 mm (0.7 mil) thick (min.). // // AA12C22A31 Class II, Architectural, 0.010 mm (0.4 mil) thick (min.). //

//D. Aluminum Color Anodic Finish AAMA 611: AA-C22A42 (anodized or AA0C22A44 (electrolytically deposited metallic compound), // Class 1, Architectural, 0.017 mm (0.7 mil) thick (min.) //. //Class II, Architectural, 0.010 mm (0.4 mil) thick (min.). // Dyes will not be accepted. //

//E. Copper Sheet Finishes: // Non-Patinated Finish: Mill finish // // Pre-Patinated Finish: Chemically treated according to ASTM B882 // .//

//F. Fluoropolymer Finishes: High performance organic coating. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

//1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.//

//2. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and top color coat.//

//3. Two-Coat Mica Fluoropolymer: AAMA 2605. Fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat.//

//4. Three-Coat Metallic Fluoropolymer: AAMA 2605. Fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.//

//5. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.013 mm (0.5 mil).// //

//G. Stainless-Steel Finish: // No. 2B (bright, cold rolled, unpolished //
// No. 3 (coarse, polished directional satin // // No. 4 (bright,
polished directional satin // . //

SPEC WRITER NOTE: Show anchorage location for items specified on drawings.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Examine substrates, areas, and conditions, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.

SPEC WRITER NOTE: Edit underlayment types required for project/details.

C. Underlayment Installation:

//1. Self-Adhering Sheet Underlayment:

- a. Apply primer as required by manufacturer.
- b. Comply with temperature restrictions of underlayment manufacturer for installation.
- c. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 152 mm (6 inches) staggered 610 mm (24 inches) between courses.
- d. Overlap side edges not less than 89 mm (3-1/2 inches). Roll laps with roller.
- e. Cover underlayment within 14 days.
- f. Apply continuously under copings and roof-edge fascias and gravel stops.

- g. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials. //
- //2. Felt Underlayment:
 - a. Install with adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties.
 - b. Apply in shingle fashion to shed water, with lapped joints of not less than 50 mm (2 inches). //
- 3. Slip Sheet:
 - a. Install with tape or adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties.
 - b. Apply in shingle fashion to shed water, with lapped joints of not less than 50 mm (2 inches).
- D. Install roof accessories where indicated in construction documents.
- E. Secure with fasteners in accordance with manufacture's printed installation instructions and approved shop drawings unless shown otherwise. Provide fasteners suitable for application, for metal types being secured and designed to meet performance requirements.
- F. Where soldered joints are required, clean surfaces to be soldered, removing oils and foreign matter.
 - 1. Pre-tin edges of sheets to be soldered to a width of 38 mm (1-1/2 inches).
 - 2. Reduce pre-tinning where pre-tinned surface would show in completed work.
 - 3. Tin edges of uncoated copper sheets using solder for copper.
 - 4. Do not use torches for soldering.
 - 5. Heat surfaces to receive solder and flow solder into joint.
 - 6. Fill joint completely.
 - 7. Completely remove flux and spatter from exposed surfaces.
- G. Coordinate to install insulation where shown; see Section 07 21 13, THERMAL INSULATION and Section 07 22 00, ROOF AND DECK INSULATION.
- H. Comply with section 07 92 00, JOINT SEALANTS to install sealants where required by manufactures installation instructions.
- I. Coordinate with roofing work for installation of items in sequence to prevent water infiltration.
- J. Gravel Stops and Fascias:
 - 1. Install gravel stops and fascia with butt joints with approximately 6 mm (1/4 inch) space for expansion.

2. Over each joint provide cover plates of sheet aluminum, complete with concealed sheet aluminum flashing, centered under each joint.
3. Provide lap cover plates and concealed flashing over the gravel stop and fascia not less than 101 mm (4 inches).
4. Extend concealed flashing over built-up roofing, embed in roof cement and turn down over face of blocking at roof edge.

K. Aluminum Coping:

1. Install sections of coping with approximately 6 mm (1/4-inch) space between ends of sections.
2. Center joint gutter bar and covers at joints and lock in place.
3. When snap-on system is installed ensure front and back edges are locked in place.

L. Fascia-Cant System:

1. Install galvanized steel cant; coordinate with roofing work and after completion of roofing work install extruded aluminum fascia, concealed joint cover plate, and aluminum compression clamp, where shown in construction documents.
2. Install system to allow for expansion and contraction with 6 mm (1/4 inch) space between extruded aluminum members and galvanized steel cant as required by manufacturer of system.
3. Offset joints in extruded aluminum members from galvanized steel cant joints.

M. Expansion Joint Covers:

1. Install to terminate base flashing 203 mm (8 inches) above roof.
2. Install moisture seals to drain water to outlets that do not permit water to enter building.
3. Provide stainless steel screws when exposed.
4. Three piece assembly:
 - a. Install curb section with screws to wood blocking, allowing 6 mm (1/4 inch) at butt joints between sections with splice plate at joint.
 - b. Install cant to wood blocking by nailing along horizontal flange every 152 mm (6 inches), with galvanized roofing nails 25 mm (1 inch) long.
 - c. After completion of base flashing install cap flashing and compression clamp and fasten to the curb or metal cant with stainless steel self-tapping screws with neoprene washers under head spaced approximately 457 mm (18 inches) on center.

- d. Install expansion joint cover with a 6 mm (1/4 inch) wide end joints.
 - e. Install over end joint a cover plate complete with concealed aluminum flashing, centered under each joint. Fabricate flashing to lap cover not less than 101 mm (4 inches).
5. Two piece assembly:
- a. Install curb section with screws allowing 6 mm (1/4 inch) space at end joints with splice plate at joint.
 - b. After completion of base flashing bend down cap flashing flange and secure to blocking with screws.
 - c. Install expansion joint cover with 6 mm (1/4 inch) wide space at end joints and tension bars at 610 mm (24 inches) on center.
 - d. Install cover plates with formed aluminum flashing concealed and centered on joint. Flashing to lap cover not less than 101 mm (4 inches).

3.2 PROTECTION OF ALUMINUM:

- A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with two (2) coats of asphalt coating (complete coverage), or by separating the contact surfaces with a preformed neoprene tape having pressure sensitive adhesive coating on one (1) side.
- B. Paint aluminum in contact with wood, concrete and masonry, or other absorptive materials, that may become repeatedly wet, with two (2) coats of asphalt coating.

3.3 ADJUSTING:

- A. Adjust expansion joints to close tightly and be watertight; insuring maximum allowance for building movement.

3.4 PROTECTION:

- A. Protect roof accessories from damage during installation and after completion of the work from subsequent construction.

- - - E N D - - -