

SECTION 077100 – ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copings.
2. Roof-edge specialties.
3. Roof-edge drainage systems.
4. Reglets and counterflashings.

B. Related Sections:

1. Section 042000 – Unit Masonry
2. Section 075216 – SBS Modified Bituminous Membrane Roofing
3. Section 076200 – Sheet Metal Flashing and Trim
4. Section 079200 – Joint Sealants

C. Reference and Industry Standards

1. The following reference standards shall be applicable to this Section:
 - a. 2020 Enterprise Green Communities (EGC) Criteria, 15th Anniversary edition and the 2020 New York City Overlay dated April 6, 2020.
 - b. New York City Building Code, **current** edition, as amended, inclusive of:
 - Chapter 15 Roof Assemblies and Rooftop Structures
 - Chapter 16 Structural Design
2. Industry Standards
 - ASTM (American Society for Testing and Materials)
 - SMACNA (Sheet Metal & Air Conditioning Contractors National Association)

D. The NYC Overlay of the 2020 Enterprise Green Communities Criteria

1. Mandatory Requirements: See the NYC overlay of the 2020 EGC reference standards for full specifications.
 - a. All projects must achieve compliance with the mandatory criteria measures that are applicable:
 - Criterion 6.9: Managing Moisture: Roofing and Wall Systems
 - Criterion 6.10: Construction Waste Management

2. Additionally, rehab projects are required to achieve **55** optional points. Criteria with optional points related to this Specification Section include, but may not be limited to:

- Criterion 6.2: Recycled Content and Ingredient Transparency
- Criterion 6.7: Regional Materials
- Criterion 6.10: Construction Waste Management

1.2 PREINSTALLATION MEETINGS: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- C. Shop Drawings: For roof specialties.

1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.

- C. Samples: For each type of roof specialty and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For tests performed by a qualified testing agency.

- B. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.6 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:

- a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
- b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
- c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: 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. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. 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.

2.2 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet, concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.

1. Formed Aluminum Sheet Coping Caps: Aluminum sheet, 0.040 inch thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Two-coat fluoropolymer <Insert finish>.
 - c. Color: [**Light bronze**] [**Medium bronze**] [**Dark bronze**] [**Black**] [**As selected by Design-Professional-of-Record from manufacturer's full range**] [**As selected by Owner from manufacturer's full range**].
2. Corners: Factory mitered and [**soldered**] [**continuously welded**] [**mechanically clinched and sealed watertight**].
3. Coping-Cap Attachment Method: [**Snap-on**] [**or**] [**face leg hooked to continuous cleat with back leg fastener exposed**], fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches wide, with integral cleats.
 - b. Face-Leg Cleats: Concealed, continuous galvanized-steel sheet.

2.3 ROOF-EDGE SPECIALTIES

- A. Canted Roof-Edge [**Fascia**] [**and**] [**Gravel Stop**]: Manufactured, two-piece, roof-edge fascia consisting of [**snap-on**] [**compression-clamped**] metal fascia cover in section lengths not exceeding 12 feet and a continuous formed galvanized-steel sheet cant, 0.028 inch thick, minimum, with extended vertical leg terminating in a drip-edge cleat. Provide matching corner units.

1. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, 0.040 inch thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Two-coat fluoropolymer <Insert finish>.

- c. Color: **[Light bronze] [Medium bronze] [Dark bronze] [Black] [As selected by Design-Professional-of-Record from manufacturer's full range] [As selected by Owner from manufacturer's full range]**.
 - 2. Corners: Factory metered and **[soldered] [continuously welded] [mechanically clinched and sealed watertight]**.
 - 3. Splice Plates: **[Concealed] [Exposed]**, of same material, finish, and shape as fascia cover.
 - 4. Fascia Accessories: **[Fascia extenders with continuous hold-down cleats] [Wall cap] [Soffit trim] [Overflow scuppers] [Overflow scuppers with perforated screens] [Spillout scuppers] [Downspout scuppers with integral conductor head and downspout adapters] [Downspout scuppers with integral conductor head and downspout adapters and perforated screens] <Insert description>**.
- B. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet and a continuous metal receiver with integral drip-edge cleat to engage fascia cover **[and secure single-ply roof membrane]**. Provide matching corner units.
- 1. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, 0.040 inch thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Two-coat fluoropolymer **<Insert finish>**.
 - a. Color: **[Light bronze] [Medium bronze] [Dark bronze] [Black] [As selected by Design-Professional-of-Record from manufacturer's full range] [As selected by Owner from manufacturer's full range]**.
 - 2. Splice Plates: **[Concealed] [Exposed]**, of same material, finish, and shape as fascia cover.
 - 3. Receiver: Aluminum sheet, 0.050 inch thick.
 - 4. Fascia Accessories: **[Fascia extenders with continuous hold-down cleats] [Wall cap] [Soffit trim] [Overflow scuppers] [Overflow scuppers with perforated screens] [Spillout scuppers] [Downspout scuppers with integral conductor head and downspout adapters] [Downspout scuppers with integral conductor head and downspout adapters and perforated screens] <Insert description>**.
- C. One-Piece Gravel Stops: Manufactured, one-piece, metal gravel stop in section lengths not exceeding 12 feet, with a horizontal flange and vertical leg **[, drain-through] fascia [terminating in a drip edge]**, and concealed splice plates of same material, finish, and shape as gravel stop. Provide matching corner units.
- 1. Formed Aluminum Sheet Gravel Stops: Aluminum sheet, 0.040 inch thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Two-coat fluoropolymer **<Insert finish>**.
 - c. Color: **[Light bronze] [Medium bronze] [Dark bronze] [Black] [As selected by Design-Professional-of-Record from manufacturer's full range] [As selected by Owner from manufacturer's full range]**.
 - 2. Corners: Factory mitered and **[soldered] [continuously welded] [mechanically clinched and sealed watertight]**.

3. Accessories: **[Fascia extenders with continuous hold-down cleats] [Wall cap] [Soffit trim] <Insert description>**.

2.4 ROOF-EDGE DRAINAGE SYSTEMS

- A. Gutters: Manufactured in uniform section lengths not exceeding 12 feet, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.
 1. Aluminum Sheet: 0.032 inch [thick].
 2. Gutter Profile: **[Style A] [Style B] [Style F] [Style G] [Style H] [Style I] [Style K] [Style K highback] [Half-round single bead] [Half-round highback] [Quarter round] [Ogee] [As indicated]** according to SMACNA's Architectural Sheet Metal Manual.
 3. Corners: Factory mitered and **[soldered] [continuously welded] [mechanically clinched and sealed watertight]**.
 4. Gutter Supports: **[Gutter brackets] [Straps] [Spikes and ferrules] [Manufacturer's standard supports as selected by Design-Professional-of-Record] <Insert description>** with finish matching the gutters.
 5. Gutter Accessories: **[Continuous screened leaf guard with sheet metal frame] [Continuous hinged leaf guard of solid metal designed to shed leaves] [Continuous snap-in plastic leaf guard] [Bronze wire ball downspout strainer] [Wire ball downspout strainer] [Flat ends] [Bullnose ends for half-round gutter] <Insert description>**.
- B. Downspouts: **[Plain round] [Corrugated round] [Plain rectangular] [Corrugated rectangular] [Open-face rectangular] <Insert shape>** complete with **[machine-crimped] [mitered] [smooth-curve]** elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
 1. Formed Aluminum: 0.032 inch thick.
- C. Parapet Scuppers: Manufactured with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. **[Fasten gravel guard angles to base of scuppers.]**
 1. Formed Aluminum: 0.032 inch thick.
- D. Conductor Heads: Manufactured conductor heads, each with flanged back and stiffened top edge, and of dimensions and shape indicated, complete with outlet tube that nests into upper end of downspout **[, exterior flange trim,] [and] [built-in overflow]**.
 1. Formed Aluminum: 0.032 inch thick.
- E. Aluminum Finish: Two-coat fluoropolymer **<Insert finish>**.

1. Color: **[Light bronze] [Medium bronze] [Dark bronze] [Black] [As selected by Design-Professional-of-Record from manufacturer's full range] As selected by Owner from manufacturer's full range]**.

2.5 REGLETS AND COUNTERFLASHINGS

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
 1. Formed Aluminum: 0.024 inch thick.
 2. Corners: Factory mitered and **[soldered] [continuously welded] [mechanically clinched and sealed watertight]**.
 3. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 4. Stucco Type, Embedded: Provide reglets with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
 5. Concrete Type, Embedded: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 6. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
 7. Multiuse Type, Embedded: For multiuse embedment in **[cast-in-place concrete] [masonry mortar joints]**.
- B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in lengths not exceeding 12 feet designed to snap into **[reglets] [or] [through-wall-flashing receiver]** and compress against base flashings with joints lapped, from the following exposed metal:
 1. Formed Aluminum: 0.024 inch thick.
- C. Accessories:
 1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
 2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
 3. Color: **[As selected by Design-Professional-of-Record from manufacturer's full range] [As selected by Owner from manufacturer's full range]**.
- D. Aluminum Finish: Two-coat fluoropolymer **<Insert finish>**.

1. Color: [**Light bronze**] [**Medium bronze**] [**Dark bronze**] [**Black**] [**As selected by Design-Professional-of-Record from manufacturer's full range**] [**As selected by Owner from manufacturer's full range**]

2.6 MATERIALS

- A. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

2.7 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: ASTM D1970; stable after testing at 240 deg F.
 2. Low-Temperature Flexibility: ASTM D1970; passes after testing at minus 20 deg F.
- B. Felt: ASTM D226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
- C. Slip Sheet: Rosin-sized building paper, 3-lb/100 sq. ft. minimum.

2.8 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
 2. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
 3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153 or ASTM F2329.
- B. Elastomeric Sealant: ASTM C920, elastomeric [**polyurethane**] [**silicone**] polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- C. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.
- D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187.
- E. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.

2.9 FINISHES

- A. Coil-Coated Aluminum Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat.
 - b. **<Insert finish>.**

PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.
 1. Apply continuously under [copings] [roof-edge specialties] [and] [reglets and counterflashings].
 2. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials.
- B. Felt Underlayment: Install with adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- C. Slip Sheet: Install with tape or adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

3.2 INSTALLATION, GENERAL

- A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.

- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of uncoated aluminum roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
 - 1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise indicated **[on Drawings] [by Design-Professional-of-Record]**.
 - 2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that penetrate **[wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws] [substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance]**.
- E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.3 INSTALLATION OF COPING

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
 - 1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at **[30-inch centers] [40-inch centers] [manufacturer's required spacing that meets performance requirements]**.
 - 2. Interlock face-leg drip edge into continuous cleat anchored to substrate at **[24-inch centers] [16-inch centers] [manufacturer's required spacing that meets performance requirements]**.

3. Anchor back leg of coping with screw fasteners and elastomeric washers at **[24-inch centers]** **[16-inch centers]** **[manufacturer's required spacing that meets performance requirements]**.

3.4 INSTALLATION OF ROOF-EDGE SPECIALITIES

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.5 INSTALLATION OF ROOF-EDGE DRAINAGE-SYSTEM

- A. Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
- B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than **[12 inches]** **[24 inches]** **[30 inches]** apart. Attach ends with rivets and **[seal with sealant]** **[solder]** to make watertight. Slope to downspouts.
 1. Install gutter with expansion joints at locations indicated but not exceeding 10 feet apart. Install expansion-joint caps.
 2. Install continuous leaf guards on gutters with noncorrosive fasteners, **[removable]** **[hinged to swing open]** for cleaning gutters.
- C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.
 1. Provide elbows at base of downspouts at grade to direct water away from building.
 2. Connect downspouts to underground drainage system indicated.
- D. Parapet Scuppers: Install scuppers through parapet where indicated. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
- E. Conductor Heads: Anchor securely to wall with elevation of conductor top edge 1 inch below **[scupper]** **[gutter]** discharge.

3.6 INSTALLATION OF REGLETS AND COUNTERFLASHINGS

- A. Embedded Reglets: See *Section 042000 Unit Masonry* for installation of reglets.
- B. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches over top edge of base flashings.

- C. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.7 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 roof specialties are installed.

END OF SECTION 077100