

SECTION 07 60 00
FLASHING, GUTTERS, DOWNSPOUTS, AND OTHER ACCESSORIES

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work in this section.
- B. Wood Curbs and Nailers - Section 06 10 00
- C. Modified Bitumen Membrane Roofing, - Section 07 52 00
- D. Joint Sealants - Section 07 92 00

1.2 SECTIONS INCLUDE

- A. Shop or field-formed sheet metal work for moisture protection
- B. Miscellaneous sheet metal accessories

1.3 QUALITY ASSURANCE

- A. All welding personnel affiliated with the site construction shall be approved certified welders and shall supply certified welding certificates to the School Board Project Facility Manager prior to commencing work.
- B. Applicator/Installer shall be a company specializing in sheet metal flashing work with minimum 5 years of experience.
- C. Job supervisor shall have minimum 5-years of documented trade experience in supervision of projects of this size and type.
- D. Manufacturer Qualifications: A qualified manufacturer offering products meeting the requirements that are ANSI/SPRI FM 4435 ES-1 tested.
- E. Products shall be manufactured in specified manufacturer's facilities. Products fabricated by installer or other fabricator will not be acceptable unless fabricator can demonstrate to Architect's satisfaction that products have been tested and passed SPRI RE-1, RE-2, and RE-3 Wind Design Standard, and meet specified pressures for perimeter and corner zones.

1.4 REFERENCES

- A. ASTM A167 – Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- C. ASTM B32 – Standard Specification for Solder Metal
- D. ASTM B101 - Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction
- E. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- F. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction
- G. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
- H. ASTM D226/D226M – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- I. ASTM D4586/D4586M – Standard Specification for Asphalt Roof Cement, Asbestos-Free
- J. FED A-A-51145 - Flux, Soldering, Non-Electronic Paste and Liquid
- K. NRCA (National Roofing Contractors Association) - Roofing Manual
- L. SMACNA - Architectural Sheet Metal Manual
- M. FBC - Florida Building Code

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- N. Factory Mutual (FM Global): FM Property Loss Prevention Data Sheet 1-49
- O. ANSI/SPRI/FM 4435 ES-1 – Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems (RE-1, RE-2, and RE-3 Testing).
- P. 2018 International Building Code Chapter 15, Section 1504.5 Edge Securement for Low-Slope Roofs.
- Q. American Society of Civil Engineers (ASCE-7) Minimum Design Loads for Buildings and Other Structures, Chapter 26, Wind Loads: General Requirements and Chapter 30, Wind Loads: Components and Cladding.
- R. State Product Approval Documentation (current), ie. Miami-Dade County NOA, FL Issue, 3rd Party Evaluation Firm.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, and general recommendations for each specified sheet material and fabricated product.
- B. Samples: Submit 8" square samples of specified sheet materials exposed as finished surfaces.
 - 1. Submit 12" long, completely finished units of specified factory-fabricated products.
 - 2. Submit samples of splash pads.
- C. Provide FBC product approval if system is not covered in the product approval for roof covering.

PART 2 PRODUCTS

2.1 FLASHING, FASCIA, COPINGS, GUTTERS, DOWNSPOUTS, and OTHER ACCESSORIES

- A. Sheet Metal Flashing/Trim:
 - 1. Copper: ASTM B370, cold rolled 20-oz/sq ft; lacquered finish
 - 2. Stainless Steel: ASTM A167, Type 304, soft temper; smooth patterned finish
 - 3. Aluminum: ASTM B-209, .040 gauge (minimum). Not allowable within 1600' of coastal areas.
- 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 extruded cleat to engage cover and secure membrane, Provide matching corner units.
 - 1. Roof edge fascia, including components, shall be manufactured by same manufacturer at manufacturer's facility
 - 2. All fasteners shall be supplied by specified manufacturer and installed per manufacturer's written instructions.
 - 3. Tested per ANSI/SPRI/ FM 4435 ES-1 RE-1 and RE-2. Designed and installed to meet specified wind loads referenced on drawings for Zone 2 (Perimeter) and Zone 3 (Corner).
 - 4. Prefabricated Aluminum Sheet Fascia Cover- consisting of aluminum sheet of following thickness as determined by fascia face height indicated on drawings: up to 8 1/2", .040 gauge, 8 1/2" - 10", .050 gauge, 10" - 13", .063 gauge; when greater than 13", refer to manufacturer.
 - 5. Prefabricated Stainless Steel Sheet Fascia Cover- consisting of aluminum sheet of following thickness as determined by fascia face height indicated on drawings: up to 8 1/2", 24 gauge, 8 1/2" - 10", 22 gauge, 10" to 13", 20 gauge, when greater than 13", refer to manufacturer.
- C. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet, concealed anchorage with corner units, end caps, and concealed splice plates. Finish to match coping metal.

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1. All components of coping caps, corners and system shall be manufactured by the same manufacturer.
 2. All fasteners shall be concealed, supplied by specified manufacturer, and installed per manufacturer's written instructions.
 3. Tested: ANSI/SPRI FM 4435 ES-1 RE-2 and RE-3. Designed and installed to meet wind loads specified on drawings for Zone 2 (Perimeter) and Zone 3 (Corner).
 4. Prefabricated Aluminum Sheet Coping Cap Cover: Aluminum sheet of following thickness as determined by width of covered wall indicated on drawings: up to 12", 040 gauge, 12" - 16", .050 gauge, greater than 16" - 24", .063 gauge, when greater than 24", refer to manufacturer.
 5. Prefabricated Stainless Sheet Coping Cap Cover: Stainless Steel sheet of following thickness as determined by width of covered wall indicated on drawings: up to 12", 24 gauge, greater than 24", 22 gauge, greater than 24", refer to manufacturer.
 6. Coping cap attachment method: Snap-on
 - a. Snap-on coping anchor plates: Concealed, galvanized sheet-metal, 12 inches wide with integral cleats.
- D. Sheet Metal Gutters:
1. Form gutters in sections not to exceed 12' lengths (and not less than 8' lengths) complete with end pieces, outlet tubes, and special pieces as necessary.
 2. Keep joints to minimum, but any joint that is required, rivet, and seal.
 3. Unless otherwise indicated, provide expansion joint with cover plate where indicated but no more than 50' between expansion joints.
 4. Furnish gutter supports constructed of same metal as gutters, spaced at 3'-0" o. c. per SMACNA plate 13, Chart 9.
 - a. Provide standard aluminum-wire ball strainers at each outlet.
 5. Gutters shall be aluminum or stainless steel.
 6. The Architect based the gutter size upon a minimum rainfall rate of 8" per hour over five-minute duration.
 7. Form gutters in as long as possible sections, but not less than 8' in length (complete with end pieces, outlet tubes, and special pieces as required).
 8. Keep joints to a minimum, but any joint that is required, shall be riveted, and sealed.
 9. Unless otherwise indicated, provide expansion joint with cover plate where indicated but no more than 50' between expansion joints.
 10. Furnish gutter supports constructed of same metal as gutters, spaced at 3'-0" o.c. per SMACNA plate 13, Chart 9.
 - a. Provide standard aluminum-wire ball strainers at each outlet.
 11. Gutters shall be aluminum or stainless steel.
 12. The Architect based the gutter size upon a minimum rainfall rate of 8" per hour over five-minute duration.
- E. PVC Downspouts:
1. All downspouts shall be PVC Schedule 40, painted.
 2. Space 8-gauge aluminum downspout straps at a maximum of 4' o.c.
 3. All strap edges shall be rolled or smooth.
 4. Downspout size and configuration shall be at a minimum the sizes and locations shown on the drawings.
 5. The Architect based the gutter size upon a minimum rainfall rate of 8" per hour for five-

minute duration.

6. Configure supports to avoid forming ladders for students to use as a means to climb to the roof while maintaining proper support of the downspout to prevent separation of the downspout at all connections joints.

F. Vent Stack Flashing:

1. Provide and install stainless steel vent extensions with a stainless steel vandal resistant cap.
2. Field verify the flashing height prior to ordering/installation to comply with the plans.

G. Finish: All flashing, trim, gutters, and downspout guards shall be mill finish.

H. Reglets and Counter-flashings: Shall be prefabricated, 24-gauge stainless steel with factory mitered corners.

1. Provide continuous foam backer rod and elastomeric sealant where shown.

I. Miscellaneous Materials and Accessories:

1. Solder: Provide approved sheet metal compatible lead free solder with resin flux.
2. Fasteners: Provide and install Stainless Steel or other non-corrosive metal as recommended by manufacturer.
 - a. Match finish of exposed heads with material it is fastening.
3. Bituminous Coating: FS TT-C-494 or SSPC-Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
4. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material it is fastening, non-corrosive, size, and gauge required for performance.
5. Roofing Cement: Provide product meeting ASTM D4586 with no asbestos.
6. Master Sealant: For slipping joints in flashings shall be polyisobutylene and be non-hardening, non-migrating, non-skinning, and non-drying.
7. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15-mil.

2.2 FABRICATED UNITS

- A. Shop-fabricate work to greatest extent possible.
- B. Comply with details shown and with applicable requirements of SMACNA Architectural Sheet Metal Manual.
- C. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels as indicated with exposed edges folded back to form hems.
- D. Fabricate non-moving seams in sheet metal with flat-lock seams.
- E. When movable expansion type joints indicated on plans or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

2.3 ACCESSORIES

- A. Splash Pads: Provide and install precast concrete type.

PART 3 EXECUTION

3.1 INSTALLATION REQUIREMENTS

- A. Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA Architectural Sheet Metal Manual.
- B. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners and set units true to line and level as indicated.

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- C. Provide drip edge flashing with concealed splice plates for joints 10' o. c.
 - D. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproofing performance.
 - E. Install counter-flashing in reglets by snap-in seal arrangement.
- 3.2 CLEANING AND PROTECTION
- A. Clean all exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
 - B. Provide for surveillance and protection of flashings and sheet metal work during construction, to ensure the work will be without damage or deterioration, other than natural weathering at time of substantial completion.

END OF SECTION