SECTION 076207

Sheet metal for PVC roofing

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***NOTE TO SPECIFIER***

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

**Use this Section in conjunction with Section 075419 - Polyvinyl-Chloride Membrane Roofing.**

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# PART 1 - GENERAL

# 1.1 SUMMARY

## A. This Section includes requirements related to sheet metal fabrication and installation related to Polyvinyl Chloride (PVC) roofing.

# 1.2 RELATED SECTIONS

## A. Section 013300 – Submittal Procedures.

## B. Section 016000 – Product Requirements.

## C. Section 075419 - Polyvinyl-Chloride Membrane Roofing.

D. Section 079200 – Joint Sealants.

## E. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

# 1.3 REFERENCES

## A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:

### 1. American Society for Testing and Materials (ASTM)

#### a. ASTM A 653/653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

2. American National Standard Institute (ANSI)

### 3. Factory Mutual Global (FM)

### 4. National Roofing Contractors Association (NRCA)

5. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

 a. SMACNA Architectural Sheet Metal Manual, 6th Edition

6. Single Ply Roofing Industry (SPRI)

#### a. ANSI/SPRI/FM 4435/ES-1 – Wind Design for Edge Systems Used with Low Slope Roofing Systems

# 1.4 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:

1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

# 1.5 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer’s product and that is eligible to receive a manufacturer’s warranty. Company shall have a minimum of 5 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state, or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the Owner immediately for resolution.

1.6 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage, and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Cover insulation, roofing materials, and other moisture-sensitive products with a canvas tarp.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

# 1.7 ENVIRONMENTAL REQUIREMENTS

## A. Do not perform work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

## B. Cold weather precautions:

### 1. NOTE: Do not install sealants, adhesives, primers, and pressure-sensitive flashings associated with sheet metal flashing at temperatures below 40°F (5°C).

### 2. When the outside temperature is forecast to fall below 40°F (5°C), store unused materials in a heated location. Remove these materials only when ready for installation. Sealants, adhesives, primers, and pressure-sensitive flashings should be maintained at a temperature of 40°F (5°C), minimum, at all times. Do not use sealants, adhesives or primers that develop a gelled or lumpy texture to them. Return these materials to a heated location.

### 3. Be aware of potential condensation formation on the PVC roof surface during application/flash-off of adhesives and primer. Remove condensation using a heat gun prior to adhesion to the insulation or cover board substrate. Do not use an open flame to remove condensation from the roof membrane or flashing materials.

### 4. Refer to the PVC roofing manufacturer and NRCA requirements and recommendations for additional cold weather application recommendations and restrictions.

## C. Material Safety Data Sheets (MSDS) of all specified products shall remain on site for the duration of this project.

# PART 2 – PRODUCTS

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**NOTE TO SPECIFIER**

Article 2.1 may be edited to reflect sheet metal flashing requirements for a specific project. EDIT Article 2.1 as necessary. Re-letter/number paragraphs and sub-paragraphs after editing.

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# 2.1 SHEET METAL ACCESSORIES

A. Perimeter edge metal flashing system: Perimeter edge sheet metal flashing system consisting of a continuous inner clip and outer fascia piece, designed in accordance with the requirements of ANSI/SPRI/FM 4435/ES-1.

1. Inner clip/retention system and continuous cleats associated with perimeter edge metal flashing systems: Galvanized steel, minimum 22-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.

2. Fascia piece/gravel stop associated with perimeter edge metal flashing systems: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating; maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

B. Perimeter parapet cap metal flashing system: Parapet cap sheet metal flashing system consisting of a continuous inner clip and outer fascia piece, designed in accordance with the requirements of ANSI/SPRI/FM 4435/ES-1.

1. Inner clip/retention system and continuous cleats associated with perimeter edge metal flashing systems: Galvanized steel, minimum 22-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.

2. Parapet cap associated with perimeter parapet cap metal flashing systems: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating; maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

C. Interior parapet caps, area divider caps, expansion joint covers, and fascia extensions: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

1. Continuous cleats and expansion joint backer pieces associated with prefinished galvanized steel caps and fascia extension installation: Galvanized steel, minimum 22-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.

D. Curb caps: Galvanized steel, 18-gauge, ASTM A 653/653M; G-90. Fabricate to match dimensions of curbed cap, and as indicated on the drawings. Fabricate top with a cross-break, providing four-way slope to the outer edges of the cap adequate to remove the potential for standing water at the top of cap.

E. Reglet-mounted, surface-mounted and slip counterflashings: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

F. Gutters: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating. Fabricate gutters to match dimensions indicated on the drawings; fabricate in 10-foot sections, with a 4-inch flange with a 1/2-inch hug at the inner edge of the gutter flange.

1. Gutter spacers: Painted galvanized steel, 1-inch wide by 1/8-inch thick; seal and secure to gutter as shown on drawings. Paint color to match gutter.

G. Through-fascia, through-wall, and overflow scuppers:

1. Scupper liners: Stainless steel, 22-gauge. Fabricate scupper flashings in accordance with the “SMACNA Architectural Sheet Metal Manual, 7th Edition”, Figures 1-26, 1-28, 1-29 and 1-30. Provide a 4-inch flange with a 1/2-inch hug at the inner edge of the scupper

flange. Solder all seams watertight.

2. Conductor boxes and scupper closure plates: Stainless steel, 22-gauge. Solder all seams watertight. Fabricate these components in accordance with the drawings, and the requirements outlined in the “SMACNA Architectural Sheet Metal Manual, 7thEdition”.

H. Conductor box fascia covers: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating; standard prefinished color as selected by the Owner.

I. Downspouts, associated with gutters and scuppers: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating; standard prefinished color as selected by Owner. Fabricate downspouts with a “Pittsburgh Lock” seam, and in accordance with the drawings and “SMACNA Architectural Sheet Metal Manual, 7th Edition”, Figures 1-32B and 1-32F; size the hangers to match downspouts.

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J. High-temperature tubular penetrations:

1. High-temperature tubular penetration flashing, and insulation stops: Stainless steel, 24-gauge. Fabricate a one-piece flanged sleeve with a flange extending 6-inches minimum out from the sleeve onto the roof surface.

K. Pitch pans, tubular penetration hoods, and pitch pan covers:

1. Pitch pans: PVC-coated sheet metal, 24-gauge, minimum. Fabricate to dimensions shown on drawings, with a minimum 4-inch depth, and flange extending 6-inches minimum out from the pitch pan, and other dimensions to be kept to the minimum size necessary to provide a 2-inch clearance all sides from the penetration.

2. Tubular penetration hoods and pitch pan covers: Stainless steel, 24-gauge. Fabricate to dimensions shown on drawings.

L. Miscellaneous sheet metal accessories:

1. For terminating flashing: Anchor bar: 1-inch x 1/8-inch extruded aluminum with slotted holes spaced 6 inches on center

2. For securement of tubular penetration flashings and sheet metal hoods at tubular penetrations: Stainless steel adjustable clamp.

3. For use behind counterflashing flanges where indicated on the drawings: Butyl tape, width, and thickness as necessary to create a seal between the existing substrate and secured counterflashing.

# 2.2 FASTENERS

A. For securing sheet metal flashings: Fasteners indicated on the drawings, or appropriate and approved by the Owner for the substrate encountered, and compatible with the sheet metal type to be secured. Where fastener heads are exposed, provide neoprene gaskets/washers.

B. For copper: Copper or bronze fasteners.

C. For stainless steel: Stainless steel fasteners.

D. For securing aluminum anchor bar: Fasteners appropriate for and approved by the Owner and roofing manufacturer for the substrate encountered.

# 2.3 SEALANT

## A. Refer to Section 079200.

# PART 3 - EXECUTION

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**NOTE TO SPECIFIER**

Article 3.1 may be edited to reflect sheet metal flashing requirements for a specific project. EDIT Article 3.1 as necessary. Re-letter/number paragraphs and sub-paragraphs after editing.

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# 3.1 SHEET METAL INSTALLATION

A. Perimeter edge metal flashing system:

1. Install perimeter edge metal in a manner that meets the requirements of ANSI/SPRI/FM 4435/ES-1. Provide a system matching the configurations and dimensions indicated on the drawings.

2. For pre-fabricated parapet cap metal systems: Install in accordance with the metal system manufacturer.

3. For shop-fabricated perimeter edge metal systems:

a. Secure the horizontal flange and vertical face of the inner clip/continuous cleat with ring shank coated nails 12-inches on center, max. Decrease fastener spacing to 6-inches on center, max. within 10-feet of a building corner.

b. Place the outer fascia/gravel stop piece. Hook the fascia to the underlying continuous cleat. Secure the flange with nails 3-inches on center in two staggered rows as indicated on the drawings.

B. Parapet edge cap metal flashing system:

1. For pre-fabricated parapet cap metal systems: Install in accordance with the metal system manufacturer to meet the requirements of ANSI/SPRI/FM 4435/ES-1. Provide a system matching the dimensions indicated on the drawings.

2. For shop-fabricated parapet cap metal systems:

a. Fabricate inner clips/continuous cleats with a kick-up, creating a minimum 1/2-inch per foot slope toward the roof.

b. Secure the horizontal flange and vertical face of the inner clip/continuous cleat with ring shank coated nails 12-inches on center, max. Decrease fastener spacing to 6-inches on center, max. within 10-feet of a building corner.

c. Place the cap sections. At the outer face, hook the fascia to the underlying continuous cleat. At the inner face, secure the flange with #12 fasteners, fitted with neoprene gaskets/washers 18-inches on center, max., and within 2-inches of each end.

d. Join adjacent parapet cap sections using a standing seam, with a one inch height. Where upturned standing seam ends meet, apply continuous sealant to the joint. Cut outer edges of upturned seams at a 45-degree angle. Fold ear over end, and crimp in place.

e. Where parapet caps terminate at walls, turn self-adhering membrane 1-inch, minimum, up wall. Turn coping cap piece 2-inches, minimum, up wall. Seal and secure as indicated on the drawings. Install regleted counterflashing over exposed end piece.

C. Curb caps, area divider and expansion joint covers:

1. Install caps, covers, and related continuous cleats and backer pieces, as detailed, at locations indicated on the drawings.

2. Fabricate with seam type indicated on drawings to dimensions indicated on drawings. Provide a 3/4-inch hemmed drip edge.

3. Fastening: Secure faces of curb caps, area divider covers, and expansion joint covers with specified fasteners appropriate for the substrate encountered, fitted with neoprene gaskets/washers, spaced 18-inches on center max., and within 2-inches of each end.

4. Join adjacent area divider and expansion joint cover sections using a standing seam, with a one inch height. Where upturned standing seam ends meet, apply continuous sealant to the joint. Cut outer edges of upturned seams at a 45-degree angle. Fold ear over end, and crimp in place.

5. Where area divider and expansion joint covers terminate at walls, turn self-adhering membrane 1-inch, minimum, up wall. Turn coping cap piece 2-inches, minimum, up wall. Seal and secure as indicated on the drawings. Install regleted counterflashing over exposed end piece.

D. Fascia extensions:

1. Secure fascia extensions with ring shank coated nails 12-inches on center, max., or fasteners appropriate for, and approved by the Owner for, the substrate condition encountered, 12-inches on center max.

E. Reglet-mounted and slip counterflashings: Provide counterflashings, as detailed, at locations indicated on the drawings:

1. At locations indicated on the drawings, install butyl tape to the backside of counterflashing flanges at the flange interface with the substrate.

2. Cut reglets into masonry walls to accommodate reglet-mounted counterflashing.

3. Fabricate counterflashing to dimensions indicated on drawings. Fabricate the counterflashing with a 3/4-inch hemmed drip edge, and on surface mounted counterflashing, a 1/2-inch 45-degree angle sealant slot. Fabricate slip counterflashings to dimensions necessary to accommodate existing conditions, and as shown on drawings. Provide a minimum 4-inch face if conditions allow.

4. Secure counterflashings with specified fasteners appropriate for substrate condition encountered, fitted with neoprene gaskets/washers. Space fasteners 12-inches on center max., and within 2-inches of each end.

F. Gutters and downspouts:

1. Install the specified gutter spacers 24-inches on center Seal and secure the spacers to the gutter assembly as indicated on the drawings.

2. Overlap individual gutter sections 1-1/2 inches. Seal overlap, and pop-rivet sections together with two rows of pop rivets. Space pop rivets 1/2-inch min., and 3/4-inch max. in each row. Completed gutter sections shall not exceed 50-feet in length.

3. Secure the flange with nails 3-inches on center in two staggered rows.

4. Gutter expansion joints: Provide gutter expansion joints at locations recommended by SMACNA; fabricated following the recommendations of SMACNA.

5. Downspouts: Install downspouts at locations indicated on drawings. Secure downspouts in accordance with the “SMACNA Architectural Sheet Metal Manual, 7th Edition”, Figure 1-35A, using fasteners appropriate for the substrate encountered.

a. Terminate the base of downspouts to match existing condition, unless indicated otherwise on the drawings.

G. Scupper liners, closure plates, conductor boxes and downspouts:

1. Scupper liners: Install scupper liners at through-fascia, through-wall, and overflow scupper locations indicated on the drawings. Install scupper liners following the requirements and recommendations of SMACNA.

2. Cover plates: At the exterior face of the scupper, install cover plates. Install scupper cover plates as indicated on the drawings and following the requirements and recommendations of SMACNA.

3. Conductor boxes: Where indicated on the drawings, install conductor boxes as indicated on the drawings, and following the requirements and recommendations of SMACNA.

4. Downspouts: Install downspouts at conductor boxes. Secure downspouts in accordance with the “SMACNA Architectural Sheet Metal Manual, 7th Edition”, Figure 1-35A, using fasteners appropriate for the substrate encountered.

a. Terminate the base of downspouts to match existing condition, unless indicated otherwise on the drawings.

5. Install conductor box fascia covers as indicated on the drawings. Fully clip fascia covers to stainless steel conductor boxes, or secure to substrate with fasteners appropriate for the substrate encountered.

H. Plumbing vents, tubular penetrations, and pitch pan flashings:

1. Flash tubular penetrations and pitch pans as indicated on drawings. Do not use pitch pans at tubular penetrations without the approval of the Owner.

2. Install tubular penetration hoods and pitch pan covers as indicated on the drawings.

3. Where soldering is required at stainless steel flanged sleeves, hoods, and pitch pans: Solder all seams and laps watertight. Prior to soldering of stainless steel, clean work area using solvents and wire brush; removing dirt, oil, grease, and other contaminants from the work area. Tin the work area by applying acid (flux). Perform soldering work. After completion of work, remove excess acid (flux) from the work area.

I. Anchor bar: Fasten the upper edges of PVC flashings with an anchor bar installed in accordance with the requirements of the roofing membrane manufacturer.

END OF SECTION

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