SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

A. Drawings and general provisions of the Contract, including the Division 1 Specifications Sections, apply to this Section.

B. Refer to other Divisions of these specifications to determine the type and extent of work therein affecting the work of this trade, whether or not such work is specifically mentioned in this Section

C. Anticipate some variations between conditions expressed in the above-referenced documents and actual field conditions. No adjustment to the Contract Sum shall be made due to minor discrepancies between existing conditions and the Drawings.

1.02 SUMMARY

A. Reference Drawings: The Work of this Section is shown on the Contract Drawings titled “Physical Education Building Exterior Renovations, Montgomery College, Germantown Campus. Germantown, MD”.

B. The work contemplated by the Contract Documents includes the work of all trades required and all labor, equipment, and materials and supervision necessary and incidental to the work indicated. The following description of the work represents a summary and should be considered in conjunction with the Drawings and all other Specifications.

C. The scope of work specified herein includes, but is not limited to, the following:

1. Provide stainless steel through-wall flashing in brick masonry and EIFS cladding and all related accessories required for proper installation, as shown on the Drawings.

2. Provide stainless steel flashing, jamb closures, and all related accessories required for proper installation at fenestration rough openings, as shown on the Drawings.

3. Provide sheet metal trim where exposed at curtain wall perimeters as shown on the drawings.

4. Provide sheet metal coping flashing and roof edge flashing as shown on the drawings.

5. Provide stainless steel gutter liner as shown on the drawings.

D. All work is to be done in accordance with applicable codes and regulations.

1.04 RELATED SECTIONS

A. Coordinate the work of this Section with the work of other trades under this Contract, including, but not limited to, the following:

1. Section 02 41 19 – Selective Demolition

2. Section 04 20 00 – Unit Masonry

3. Section 07 13 26 – Self-Adhered Sheet Waterproofing

4. Section 07 24 19 – Water-Drainage Exterior Insulation Finish System (EIFS)

5. Section 07 27 00 – Air and Water Barrier

6. Section 07 52 16 – Modified-Bitumen Roofing

7. Section 07 92 00 – Joint Sealants

8. Section 08 42 13 – Aluminum Framed Entrances and Storefronts

9. Section 08 44 13 – Glazed Aluminum Curtain Walls

10. 22 05 00 – Common Work Results for Plumbing

1.05 REFERENCE STANDARDS

A. The following Standards are incorporated into these Specifications.

1. Revere's "Copper and Common Sense" Standards for Details.

2. Architectural Zinc Material Standards: ASTM B69-11 – Types 1 and 2 – Standard Specification for Architectural Rolled Zinc sheet & coil; DIN EN 988.

3. Stainless Steel Alloy Material Standards: ASTM A167-99 & A240. Type 304.

4. Architectural Zinc Design Guidelines (handling, fabrication, & installation issues specific to zinc): RHEINZINK Div. 7 Binder; 3rd Edition & RHEINZINK “Applications in Architecture”; 2nd Updated Edition.

5. SMACNA – Architectural Sheet Metal Manual; 6th Edition; Chapter 6 as a minimum standard or these specification and details where they exceed SMACNA’s requirements.

6. NRCA’s “The NRCA Roofing Manual”.

7. ANSI-SPRI ES-1 – “Wind design standard for edge systems used with low-slope roofing systems”

1.06 PERFORMANCE REQUIREMENTS

A. Furnish and install sheet metal flashings, trim assemblies, and gutters following the guidelines included herein, to provide a complete flashing system capable of withstanding service loads (e.g., wind, snow, foot traffic, etc.) while maintaining the following long-term performance requirements:

1. Sufficiently watertight to prevent building leakage.

2. Secure attachment to the structure, without noticeable deformation.

3. Free of corrosion, either from atmospheric conditions, galvanic action, or reaction with surrounding materials.

4. Free of excessive scratching, staining, or other aesthetic issues. “Oil-canning” of sheet metal surfaces is not permitted.

B. Flashing installations shall not be reliant on sealants or gaskets for primary waterproofing performance. No exposed sealant products are permitted except where shown on the Drawings.

C. Install sheet metal flashings, trim assemblies, gutters and underlayment materials shingle fashion to avoid trapping of water. Flashing to divert all moisture infiltration to the building exterior.

D. Thermal Movement: Provide metal profiles and detail connections which allow for thermal movement of the metal resulting from ambient temperature range of 120°F.

E. Follow ANSI-SPRI ES-1 for typical attachment profiles and spacing requirements to meet the anticipated wind pressures determined by ASCE 7-10; refer to the Drawings.

1.07 SUBMITTALS

A. Refer to Section 01 33 00 – Submittals for provisions and procedures.

B. Provide the following submittals:

1. Product Data: For each item, submit information on the component materials and dimensions, information on the construction and application details, information on the manufacturer’s recommendations for application and use, test data substantiating that products comply with requirements, and material safety data sheets.

2. Shop Drawings: Provide complete drawings for each assembly and fabrication required for the project, showing exact profile, lengths, locations of joints,

terminations, and methods of attachment. Coordinate Shop Drawings with all relevant work of other trades specified in other Specification Sections.

3. Samples: Provide samples of the components listed in part two that will become part of the final assembly. Flashing samples shall be made to the exact profiles used for the project, 12 in. minimum length.

1.08 MOCKUPS

A. Working in conjunction with the related Sections, perform waterproofing and flashing work as specified herein as required to construct the following mockups at the following locations:

1. Typical Exterior Wall Flashings: Install in situ mockup of typical wall flashing assemblies to include sheet metal flashings to demonstrate aesthetic effects, quality of materials, sequencing, and execution. Mockups shall include all typical exterior wall components, including air/water barrier, insulation, and other wall components.

2. Window Sill Flashing: Install new metal sill flashing with an upturned back leg over the existing masonry. Provide an upturned back dam or profile as shown in the drawings, mill out projecting frame elements at the vertical mullion to allow the sill flashing to be continuous past the vertical mullion. Provide a minimum 6 in. overlap between metal flashing sections; bed overlapping flashing joints in three rows of butyl sealant. Cope drip edge to align flashing segments.

3. Roof edge flashing: Install in-situ mockup of typical roof coping flashing, in conjunction with all typical exterior wall components, including air/water barrier, EIFS, and roofing components.

4. Built-in Gutter Assembly: Install in situ mockup(s) of typical built-in gutter assembly. Mockup(s) must include the typical gutter profile, drain assembly, expansion joint, and gutter end. Integrate gutter mockups with typical steep-slope roofing, flashing, and gutter underlayment components.

5. Metal Panel Trim at Window Jambs: Install metal panel and attachment clips at a window jamb. Coordinate placement with air/water barrier, EIFS, and window flashing installation.

1.09 QUALITY ASSURANCE

A. Engage experienced waterproofing personnel to perform work of this Section. The Contractor shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance, for a period of at least 5 yrs. The contractor shall staff the work of this Section with only qualified personnel experienced in the application of this system.

B. The Contractor is responsible for a quality control program that includes but is not limited to the following:

1. Inspection of materials to assure conformity with contract requirements, and that the materials are new and undamaged.

2. Establishment of procedures for safely executing the work.

3. Inspecting surface preparation prior to material application.

4. Inspection of work in progress to ensure work is being done in accordance with established procedures, manufacturer's instructions, and specific Engineer instructions.

5. Inspection of work completed and prompt correction of defective work.

C. Obtain each type of material from a single manufacturer for the duration of the project.

D. Preconstruction Conference: Attend a preconstruction conference to be held with a representative of the Owner, Engineer, Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the Work.

E. Work in conjunction with the other trades employed on the project by promptly completing the work of this Section as required to meet the project schedule and so as not to impede other trades. Coordinate the work of this Section with other trades so the intent of the Drawings and Specifications is carried out. Coordinate with other trades to maximize efficient use of scaffolding, to minimize disruption to the building, and to avoid unnecessary traffic over areas of completed work or existing components to remain.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the site only in manufacturer's original containers, clearly marked with legible, intact labels with manufacturer's name and brand name and identifying contents of containers.

B. All materials to be new. Handle all materials to prevent damage. Place materials on pallets. Use waterproof and fireproof canvas tarpaulins (not plastic) to cover all stored materials top to bottom.

C. Protect all materials in original, unopened, labeled containers and packaging and in compliance with manufacturer's directions. Comply with manufacturer's recommendations for minimum and maximum time and temperature limits for storage.

D. Promptly remove from the site all materials rejected by the Engineer or exposed to any moisture anywhere, at any time, during transportation, storage, handling, or installation.

E. Do not stockpile materials or equipment to overload any building or site component.

1.11 PROTECTION AND ACCESS

A. Protect the existing building and its contents, interior finishes, and all site work during all demolition, removal, and repair operations against all risks associated with this

work. Replace damaged components at no charge to the Owner and to the satisfaction of the Engineer using mechanics skilled in the appropriate trade including all site work. The premises shall be left in a neat, clean, and safe condition at the end of each day's work.

B. Schedule and execute work without exposing adjacent building areas to water, dust, and debris, or materials used by this Contractor. Protect adjacent areas from damage and stains with appropriate barriers and masking. Clean stains by approved means.

C. Do not damage existing materials scheduled to remain. Provide adequate protection of all mechanical equipment to prevent breakage, scratches, staining, and any other damage during work associated with this Section.

D. Where work is performed above or near roofing surfaces, clean the work areas free of all debris including fasteners, scrap metal, and metal shards, on a daily basis. Notify the Engineer immediately if any damage to the existing or new waterproofing and roofing system is observed, regardless of the source of the damage. Ensure that all adjacent roofing is covered with plywood protection board with taped joints prior to commencing work in the area.

E. Schedule and execute all work to avoid exposing the building and its contents to inclement weather. Keep water out of the building at all times

1.12 PROJECT CONDITIONS

A. Field Measurements: Verify all site conditions and dimensions by field measurements before material fabrication or delivery and indicate measurements on Shop Drawings. Notify the Engineer immediately of any inconsistency between the conditions found and those shown in the contract drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work. Consider the special conditions associated with repairs to existing construction when measuring for shop drawings.

B. Coordination requirements: Coordinate installation with other trades, to help ensure proper installation sequencing for assemblies.

1.13 WARRANTY

A. Applicator Warranty: Guarantee work under this section in a document stating that if, within 2 yrs after the Date of Substantial Completion of the Work, any of the work of this Section is found to be defective or not in accordance with the Contract Documents, the Applicator shall, at its sole cost and expense, correct it promptly after receipt of a written notice from the Owner to do so, unless the Owner has previously given the Applicator a written acceptance of such condition. Also, state that the Applicator shall bear costs incurred by the Owner, including reasonable attorney's fees, court costs, and expert witness and consultant fees, to enforce Applicator's compliance with the obligations of this Guarantee. The obligations of this Guarantee shall run directly to the Owner and its successors and assigns, and may be enforced by the Owner and its successors and assigns against the Applicator, shall survive the termination of the Contract, and shall not be limited by conditions other than this contract.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Manufacturer's products and specifications are generally referred to for identification; except as noted, products of other manufacturers meeting the requirements itemized below may be submitted for approval. Unless approved in writing by the Architect, obtain flashing materials from the same manufacturer whenever possible.

B. All materials are to be new. Handle, store, and install materials as recommended by the manufacturer. Materials shall be delivered to the job site in their original containers with the manufacturer's name, grade, number, and batch identification on the container or packaging. Do not use powder-actuated fasteners.

2.02 METAL COPING AND GRAVEL STOPS

A. Manufactured metal coping system with caps in lengths not exceeding 12 ft, concealed anchorage, with pre-manufactured corner pieces, end caps, and concealed splice plates. All fasteners shall penetrate the vertical face of the parapet substrate. Provide 0.050 in. thick aluminum coping panels, with a two-coat fluoropolymer finish, color to match existing metal copings or as selected by the Owner. Coordinate coping size with cladding assembly, as shown in the Drawings.

1. Basis of Design: Una-Clad by Firestone

2. Alternate: Petersen Aluminum Corporation
   Hickman Company, W.P.

2.03 METAL PANEL TRIM

A. Painted aluminum, minimum 0.050 in. thick, with fluropan high performance Kynar 500 finish, color to match adjacent curtain wall framing. Provide concealed attachment clips secured to the backup wall framing.

2.04 METAL THROUGH WALL FLASHING

A. Metal flashings at window sills, jambs, and head, and other miscellaneous wall flashings: 18-8 stainless steel AISI Type 304, 2D finish, 24 ga with hemmed edge; use in conjunction with self-adhered membrane flashing accessory of selected air/water barrier product. Metal flashing shall be fastened to the backup wall, include a sloped horizontal surface, and shall daylight through the cladding.

2.05 METAL GUTTER LINER

A. Metal Gutter Liner: Minimum 22 ga stainless steel with fully soldered seams and corners. Provide gutter with dimensions shown on the Drawings, including 1/8 in. per ft min. cross slope.

B. Expansion Joints: Form elevated sheet metal expansion joints constructed integral with the metal gutter liner as shown in the Drawings. Expansion joints shall be spaced and designed to accommodate thermal movements as recommended by SMACNA.

Fully solder all sheet metal joints not designed to accommodate movement. The top edge of the expansion joint shall extend continuously from the outermost edge of the metal fascia to the sloped roof edge, as shown in the Drawings.

C. End dams: Form sheet metal end dams constructed integral with the metal gutter liner as shown in the Drawings. Fully solder all sheet metal joints not designed to accommodate movement. Coordinate end dam dimensions, flashing, and installation sequence with the membrane underlayment, roofing system, and cladding assembly.

D. Drainage and Downleaders: Refer to Section 22 05 00 – Common Work Results for Plumbing.

E. Underlayment: Refer to Section 07 31 26 – Slate Shingles.

2.06 LOW-SLOPE SHEET METAL FABRICATIONS

A. Base Flashing: Aluminum, 0.040 in. thick min.

B. Counterflashing: Aluminum, 0.040 in. thick min. Shop fabricate interior and exterior corners.

C. Flashing Receivers: Aluminum, 0.040 in. thick min. Shop fabricate interior and exterior corners.

D. Roof Penetration Flashing: Stainless Steel, 20 ga min. Field-measure all penetration sizes and shop fabricate flashing system. Provide a 6 in. min. wide flange to integrate with the modified-bitumen roofing assembly. Field solder all seams or metal laps, and provide a band clamp and sealant around the flashing top edge.

2.07 FENESTRATION PERIMETER FLASHING

A. Sheet Flashing: Minimum 26 ga stainless steel, unless specified otherwise in the Drawings. Provide continuous sheet metal flashing around all fenestration systems to separate the primary seal from the air/water barrier membrane and facilitate future sealant replacement.

B. Provide sheet metal shapes as shown in the Drawings to accommodate rough opening geometry and cladding systems. All sheet flashing shall be placed flush against the backup wall substrate; adjust fastening methods and/or metal thickness as necessary, pending Engineer’s approval.

2.08 MISCELLANEOUS ACCESSORIES

1. Mastic: Rubberized asphalt caulking and sealing compound; HE925-BES by Henry Company.

2. Slip Sheet: Rosin-sized Kraft paper, weighing approximately 3 lbs/100 sq ft.

3. Strip Flashing for Expansion Joints: Use preformed butyl glazing tape 1/8 in. thick by 1/2 in. wide conforming to AAMA 806.1.Membrane Strip Flashing, for use at expansion joints; 0.060 in. thick uncured EPDM, “Form Flash” by

Firestone; use manufacturer's recommended primers, adhesives, sealants, and solvent cleaners.

4. Release Tape: 0.006 in. thick polyethylene, adhesive-backed on one side, width as required.

5. Sloped Shims: Tapered, hard plastic shims, EZ-Shim by EZ-Shim Inc., Santa Barbara, California.

6. Rivets (for stainless steel): solid stainless steel rivers by Jay-Cee Sales and Rivet Inc. or similar.

7. Solder: ASTM B32, Class 50A or 50B, Bar Form, 50% block tin and 50% pig lead, with an approved brand of soldering flux.

8. Fasteners for attaching metal flashing to wood: Use stainless steel screws, bolts, washers, and nails as required. Nails to be 12 ga with minimum 1/4 in. dia. flat head, annular threaded, with needlepoint, and of sufficient length to obtain 1-1/4 in. embedment into blocking, and for full depth into plywood.

9. Fasteners for attaching metal flashing to concrete, CMU, or masonry: 1/4 in. dia. Nylon-Nailin with stainless steel nail and mushroom head by Rawl Powers Inc. Provide lengths to obtain 1-1/4 in. embedment. Unless otherwise shown on the drawings, install with 3 in. minimum edge distance in masonry and concrete.

10. Fasteners for attaching metal to metal: #12 HWH SDS/2 Flo-Seal hex head fastener with Stalgard coating and integral sealing washers by Textron Inc., Provide length as required to obtain 1-1/4 in. embedment.

PART 3 – EXECUTION

3.01 PREPARATION

A. Examine all surfaces to receive self-adhered membrane underlayment and flashing for roughness, contaminants, unsound structural substrates, or other conditions that may impair the membrane or metal application. Notify the Engineer in writing of any discrepancies between the drawings and field conditions. Do not start work until all discrepancies have been resolved.

3.02 SUBSTRATE PREPARATION

A. Membrane Underlayment

1. Do not leave the completed underlayment and waterproofing systems exposed to the elements. Remove and replace deteriorated or damaged underlayments and waterproofing as directed by the Engineer.

2. Install membrane underlayment in accordance with the manufacturer's published installation instructions and guidelines and as further defined in other

Divisions of these specifications. Prime all substrates scheduled to receive membrane underlayment.

B. Separator Sheet

1. Install rosin-sized Kraft paper immediately before installation of sheet metal flashing, copings and cladding; replace any separator sheet material that comes in contact with moisture at any time.

2. Lay out rosin paper without fastening through underlayment. Lap sides 2-1/2 in. minimum and ends 6 in. minimum in a shingled fashion.

3.03 SHEET METAL FABRICATION

A. Shop-fabricate work to the greatest extent possible. Form sheet metal on a bending brake. Perform shaping, trimming, and hand seaming in the shop as far as practical, with the proper sheet-metal working tools. Make the angle of the bends and the folds for interlocking the metal with full regard for expansion and contraction, to avoid buckling or other deformation in service. All lines shall be straight and crisp allowing for thickness of metal dictating minimum radius bend. Hem all exposed edges 1/2 in. minimum except where explicitly shown as shorter on the Drawings.

3.04 SEAMS

A. Immediately prior to soldering, mechanically clean all metal to be soldered with steel wool or by other acceptable means, apply flux, and pre-tin. Clean metal again if it is not soldered on the same work day. Perform all soldering slowly with well heated heavy (10 lbs/pair) irons with properly tinned clean blunt tips. Do not use torches. Apply enough heat to sweat the solder completely through the full width of the seam. Close clinch lock seams gently with a block of wood and mallet, then flux and show at least one full inch of continuous and evenly flowed solder. Whenever possible, do all soldering in flat position. All sloped and vertical seams shall be laced and soldered a second time. Wipe and wash clean soldered joints to remove all traces of acid from the flux immediately after the joints are made.

B. Lay out metal flashing to minimize transverse joints. Detail transverse joints in all flashing pieces to provide a watertight connection, and allow for expansion/contraction of the metal as shown on the Drawings. Provide pre-fabricated corner pieces with joints locked, riveted, and soldered watertight. Space rivets at 1 in. o.c. in staggered pattern unless otherwise indicated. Unless shown otherwise on the Drawings, provide expansion joints at 20 ft o.c. maximum and at 2 ft away from all changes in flashing direction (each side) and from all terminations of flashing. Unless shown otherwise on drawings, provide expansion joints at 20 ft centers, and 2 ft from corners (each side) and from all terminations of flashing. Lap metal 4 in., apply release tape over edge of metal, and apply EPDM strip flashing and metal cover plate as shown on the drawings.

3.05 GENERAL SHEET METAL INSTALLATION

A. Except as called for in this section, comply with all recommendations of the 1982 edition of Revere's "Copper and Common Sense" Standards for Details. Completed metal shall be straight, flat, and without buckles, dents, scratches, or other blemishes.

B. Isolate all dissimilar metals with bond breaker tape.

C. Lap all materials at all joints 6 in. minimum unless noted otherwise.

D. Provide 1/8 in. / ft minimum slope on all horizontal surfaces to prevent ponding, unless otherwise indicated. Slope roof edge copings toward roof. Slope copings between two roofs toward upper roof to avoid runoff on face of wall below.

E. Provide continuous hook strips where indicated on the Drawings, nailed 6 in. o.c. into solid wood blocking, and 12 in. o.c. into stone or concrete. Crimp the formed hook of metal flashing onto the hook strip, forming a 3/4 in. loose lock, overlapping the hook strip at least 1/2 in.

F. Provide metal receiver strips (blind nailers) at vertical terminations and where shown. Provide a solid bed of sealant in joints, behind and within receiver metal.

G. Form cleats from 2 in. wide strips of metal of the same weight as the base metal, of sufficient length so that cleats can be fastened to the substrate and hooked to the locks of flashing pans, onto the hemmed edge of apron flashing, etc. Space cleats at 12 in. centers maximum. Fasten cleats to the substrate with two nails or one expansion anchor per cleat (as appropriate for substrate), staggered and folded over the fastener heads.

H. Reinforce all metal flashing corners; rivet and solder all flashing corners for permanent waterproof connections.

I. Exposed fasteners are prohibited.

J. Do not penetrate the horizontal portion of any flashing with fasteners.

3.06 COPING

A. Provide continuous metal coping, locked continuously onto hook strips on each side. For installation, leave interior lock slightly open to engage hook strip, and crimp interior lock closed after installation. Construct transverse joints as described above.

B. Where noted on the drawings, provide pre-fabricated thimbles formed from the same material as the flashing base metal, with fully soldered joints and seams to cover setting dowels. Solder thimbles continuously to coping. Provide at least 1/2 in. overlap at all metal joints in thimble, and at connection to coping flashing.

C. Terminate coping at intersecting (rising) walls with a bulkhead flange locked and soldered to the end of the coping. Secure the flange to the face of the intersecting wall; terminate the vertical edges in receivers on each side of the coping, and counterflash the up-turned leg.

3.07 METAL THROUGH-WALL FLASHING

A. Provide continuous through-wall flashing at all locations shown in the Drawings.

B. The through-wall flashing drip edge shall extend 1/4 in. min. beyond the exterior face of the cladding system with a hemmed edge.

C. Provide prefabricated inside and outside corners; do not overlap lengths of flashing at corners.

D. Provide expansion joints as indicated in the Drawings and described herein.

3.08 APRON COUNTERFLASHING (TWO-PIECE METAL FLASHING)

A. Provide metal apron counterflashing with 2 in. wide loose cleats at 12 in. o.c., to counterflash the top of the metal and membrane base flashing, and step flashing, as shown on the Drawings. Lock the transverse seams of adjacent apron flashing together using a 1/2 in. flat seam. Offset seams from adjacent flashing courses. Hem the bottom edge of the apron, and hook the top edge into the flashing receiver. Fold cleat tabs up to firmly secure the apron. Do not solder cleat to apron.

3.09 GUTTER LINER

A. After removal of existing work as indicated, inspect substrate surfaces for unsatisfactory conditions and report such deficiencies to the Engineer. Do not proceed until corrective measures have been completed to provide satisfactory surface. Contractor shall inspect wood surfaces. Wood surface must be dry and smooth. Ensure that there are no projections to puncture underlayment, flashings, or gutter linings.

B. Box gutters: When areas of removed gutter lining will not be replaced in the same day, provide temporary covering to prevent penetration of water or moisture to interior. Any damage to interior finishes shall be repaired and refinished by the Contractor to the Engineer’s and Owner's satisfaction and at no cost to the Owner.

C. Prevent unnecessary walking on the installed gutter liners.

D. All joints to be soldered shall be prepared by cleaning to bright metal before joining. Cleaned area shall extend beyond actual joint dimension. Pre-tin joints before soldering where possible.

E. All joints to be soldered shall be soldered the same day as joint is formed to prevent intrusion of moisture and dirt into joint. If joint cannot be soldered on the same day it is formed in place, cover joint to prevent intrusion of dirt, water and moisture.

F. Coordinate gutter and flashing work with installation of roofing, replacement of deteriorated framing and decking work, as applicable. Install existing downspouts as soon as outlet tubes are completed.

G. Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal all fasteners, and set units true to line and levels as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

H. Rivets shall be installed from below whenever possible, such that popped end of rivet is exposed to view to help ensure that thermal movement can take place freely.

I. The exterior edge of the gutter liner shall be 1 in. below the roof-side of the liner to allow for overflow over the top of the cladding.

3.10 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 in. over base flashing. Install stainless-steel draw band and tighten.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 in. over base flashing. Lap counterflashing joints a minimum of 4 in. and bed with sealant.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.11 FENESTRATION PERIMETER FLASHING

A. Provide metal sheet flashing around the perimeter of all curtain wall and door rough openings where shown in the Drawings.

B. Bed all flashing in silicone sealant over the air/water barrier.

C. Shingle-lap all flashing pieces to prevent water traveling down the fenestration-side of the flashing from bucking along the flashing edge. Overlap all flashing 4 in. min., unless stated otherwise in the Drawings, and bed laps in silicone sealant and fasten together unless intended to accommodate movement. At all inside corners of the rough opening, extend flashing onto adjacent surface to create end dams.

D. At the clerestory head and sill, provide expansion joints at 20 ft. o.c. max.

3.12 METAL PANEL TRIM

A. General: Layout locations of clips, furrings, and supports for the metal panel trim pieces. Secure supports to the backup wall or adjacent construction as shown on the drawings.

B. Secure metal panel trim to supports in accordance with design requirements to meet the anticipated wind loads

C. Strip in metal furrings and supports with self-adhered membrane. Install sealant over exposed fastener heads securing the furrings.

D. Install sealant in the horizontal and vertical reveals around the metal panel trim. Weep the sealant joints at the bottom of the panels, above the cast stone.

3.13 CLEANING AND PROTECTION

A. Protect finished work from damage during subsequent work, such as impact, marring of the surface, and other damage. Replace or repair at no additional cost to the Owner all damaged work or materials.

B. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering and as recommended by panel manufacturer and maintain in a clean condition during construction. Use WD-40 applied to a clean cloth and apply light pressure to remove contamination from surface.

C. Keep roof areas clean of accumulating debris; police work areas on a daily basis.

D. Sweep areas around dumpsters daily. Setup, storage, and dumpster areas shall be clean, with materials neatly stacked.

PART 4 – ALLOWANCES

4.01 ALLOWANCE FOR LEAF GUARDS

A. Include on Bid Form an allowance for metal screen leaf guards over the built in metal gutters along the bottom of the steep-slope roofs. The leaf guard screens will require soldered clips at approximately 24 in. on center along the front and back of the gutter liner to retain the screens.

END OF SECTION