

## SECTION 07160 - BITUMINOUS DAMPPROOFING

### PART 1 - GENERAL

#### RELATED DOCUMENTS:

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### DESCRIPTION OF WORK:

Extent of each type of dampproofing work is indicated on drawings.

Following types and applications of work are specified in this section:

Cold-applied asphalt emulsion dampproofing.

#### QUALITY ASSURANCE:

General: For each type of work, obtain primary materials from single manufacturer, to greatest extent possible. Provide secondary materials only as recommended by manufacturer of primary materials.

#### SUBMITTALS:

Product Data: Submit manufacturer's technical product data, installation instructions, and general recommendations for each dampproofing material required. Include data substantiating that materials comply with specified requirements.

#### JOB CONDITIONS:

Substrate: Proceed with dampproofing work only after substrate construction and penetrating work have been completed.

Weather: Proceed with dampproofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations.

### PART 2 - PRODUCTS

#### BITUMINOUS DAMPPROOFING MATERIALS:

General: Provide bituminous dampproofing materials which comply with the following requirements, or provide other similar products which are certified in writing by manufacturer of primary dampproofing materials to be superior in performance for application indicated.

#### Cold-Applied Asphalt Emulsion Dampproofing:

Asphalt Emulsion: Manufacturer's standard asphalt and water emulsion coating, recommended for below-grade and for above-grade applications to either damp (green) or dry substrates, compounded to penetrate substrate and build to moisture-resistant coating.

Provide non-fibrated type liquid asbestos-free emulsion; ASTM D 1227, Type III.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering asphalt emulsion products which may be incorporated in the work include, but are not limited to, the following:

Celotex Corporation.  
Koppers Company, Inc.

Manville Building Products Corp.  
Sonneborne Bldg. Products/Rexnord Chemical Products Inc.  
Tamko Asphalt Products, Inc.  
Tremco Company.

### PART 3 - EXECUTION

#### PREPARATION OF SUBSTRATE:

Clean substrate of projections and substances detrimental to work; comply with recommendations of prime materials manufacturer.

Prime substrate as recommended by prime materials manufacturer.

Protection of Other Work: Do not allow liquid and mastic compounds to enter and clog drains and conductors. Prevent spillage and migration onto other surfaces of work, by masking or otherwise protecting adjoining work.

#### INSTALLATION:

General: Comply with manufacturer's instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of work.

#### Asphalt Emulsion on Exterior and Interior Surfaces:

Apply coat of liquid asphalt emulsion dampproofing material by brushing or spraying at rate of 1.5 to 2.5 gal. per 100 sq. ft., depending upon substrate texture, as required to produce uniform dry film thickness of not less than 15 mils. Apply in 2 coats if necessary to obtain required thickness, allowing time for complete drying between coats.

End of SECTION 07160

## SECTION 07180 - WATER REPELLENTS

### PART 1 - GENERAL

#### RELATED DOCUMENTS

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### SUMMARY

This Section includes surface preparation and application of clear water repellent coating to the following vertical and nontraffic horizontal exposed surfaces:

Exterior Brick Masonry

Related Sections: The following sections contain requirements that relate to this Section:

Division 3 Sections for concrete work including floor sealers and curing agents, precast concrete, and concrete restoration and cleaning.

Division 7 Section "Joint Sealants" for joint fillers and sealants.

Division 7 Sections for fluid-applied waterproofing and dampproofing.

Division 9 Section "Painting" for paints and coatings.

#### SUBMITTALS

General: Submit the following according to the Conditions of Contract and Division 1 Specification Sections.

Product data including manufacturer's specifications, surface preparation and application instructions, recommendations for water repellents for each surface specified, and protection and cleaning instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.

Samples: Submit 16-inch-square samples of each substrate indicated to receive water repellent with the specified repellent treatment applied to half of each sample.

Certification by water repellent manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC).

#### QUALITY ASSURANCE

Installer Qualifications: Engage an experienced Installer who employs only persons trained and approved by water repellent manufacturer for installation of manufacturer's products.

Manufacturer Qualifications: Firm experienced in manufacturing products similar to those indicated for this Project and that has a record of successful in-service performance.

Regulatory Requirements: Comply with applicable rules of the pollution-control regulatory agency having jurisdiction in the Project locale regarding volatile organic compounds (VOC) and use of hydrocarbon solvents.

Project Mockup: Apply water repellent to mockup, either partial or full coverage as directed, before proceeding with installation. Comply with installation requirements of this Section.

Performance Requirements: Indicate test results for water repellents on substrate simulating Project conditions, as close as possible. Use same materials and methods of application to be used on the Project.

Absorption Tests: Comparison of treated and untreated specimens:

Brick: ASTM C 67.

Water Vapor Transmission: ASTM E 96. Comparison of treated and untreated specimens:

Water Penetration and Leakage Through Masonry: ASTM E 514.

## PROJECT CONDITIONS

Weather and Substrate Conditions: Do not proceed with application of water repellent (except with written recommendation of manufacturer) under any of the following conditions:

- Ambient temperature is less than 40 deg F (4 deg C).
- Substrate surfaces have cured for less than one month.
- Rain or temperatures below 40 deg F (4 deg C) are predicted for a period of 24 hours.
- Earlier than 24 hours after surfaces became wet.
- Substrate is frozen or surface temperature is less than 40 deg F (4 deg C).
- Windy condition such that repellent may be blown to vegetation or substrates not intended.

## WARRANTY

Warranty: Submit a written warranty, executed by the Applicator and water repellent manufacturer covering materials and labor, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have against the contractor under the contract documents.

Warranty Period: 5 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### MANUFACTURERS

Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

Products: Subject to compliance with requirements, provide one of the following:

- Siloxane: (Water Based) (Exterior)
  - Euco Weather-Guard, The Euclid Chemical Company.
  - Dynatrete, Huls America, Inc.
  - Weather Seal Siloxane WB, ProSoCo, Inc.

- VOC Complying Water Repellents (Type): (Exterior)
  - Hydrozo Enviroseal 20, Hydrozo Inc. (water-based silane, 20 percent solids with water).

### WATER REPELLENTS AND GRAFETTI GUARDS

Siloxanes: Penetrating water repellent. Alkylalkoxysiloxanes that are , water, or other proprietary solvent carrier.

VOC-Complying Water Repellents: Products certified by the manufacturer that they comply with local regulations controlling use of volatile organic compounds.

## PART 3 - EXECUTION

### PREPARATION

Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to repellent manufacturer's instructions to ensure that surface is sufficiently dry.

Test for pH level, according to repellent manufacturer's instructions to ensure chemical bond to silicates minerals.

Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass where there is the possibility of the water repellent being deposited on surfaces. Cover live plants and grass. Immediately clean water repellent from adjoining surfaces, complying with manufacturer's cleaning recommendations.

Coordination with Sealants: Do not apply water repellent until the sealants for joints adjacent to surfaces receiving water repellent treatment have been installed and cured.

INSTALLATION

Apply a heavy-saturation spray coating of water repellent on surfaces indicated for treatment using low-pressure spray equipment. Comply with manufacturer's instructions and recommendations using airless spraying procedure unless otherwise indicated.

Provide protective coverings for floors, adjacent walls, ceilings, etc.

Remove protective coverings from adjacent surfaces at completion.

End of SECTION 07180

## SECTION 07200 - INSULATION

### PART 1 - GENERAL

#### RELATED DOCUMENTS:

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### DESCRIPTION OF WORK:

Extent of insulation work is shown on drawings and indicated by provisions of this section.

Applications of insulation specified in this section include the following:

Insulation under slabs-on-grade.

Foam Board Insulation Sheathing— masonry veneer/metal stud wall.

Sill Seal - foam gasket under exterior wall metal stud sill plate.

Blanket/Batt-type building insulation.

Wall assembly thermal insulation.

Attic assembly thermal insulation.

Sound insulation in wall and above ceiling - See drawings for locations.

General usage throughout perimeter wall / roof intersection gap filler.

#### QUALITY ASSURANCE:

Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by r-values they represent the rate of heat flow through a homogenous material exactly 1" thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

Surface Burning Characteristics: ASTM E 84.

Fire Resistance Ratings: ASTM E 119.

Combustion Characteristics: ASTM E 136.

#### SUBMITTALS:

Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation and vapor retarder material required.

#### DELIVERY, STORAGE, AND HANDLING:

General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

Do not expose to sunlight, except to extent necessary for period of installation and concealment.

Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time.

Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

## PART 2 - PRODUCTS

### ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

#### Manufacturers of Extruded Polystyrene Board Insulation:

Amoco Foam Products Co.  
Dow Chemical U.S.A.  
Minnesota Diversified Products, Inc.  
UC Industries.

#### Manufacturers of Glass Fiber Insulation:

CertainTeed Corp.  
Johns Manville  
Knauf Fiber Glass GbmH.  
McCormick Corp.  
Owens-Corning Fiberglas Corp.

### INSULATING MATERIALS:

General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.

Preformed Units: Sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths and lengths.

EXTRUDED POLYSTYRENE BOARD INSULATION: Rigid, cellular thermal insulation with closed-cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type indicated; with 5-year aged r-values of 5.4 and 5 at 40 and 75 deg. F (4.4 and 23.9 deg.C), respectively; and as follows:

Type IV, 1.6 lb./cu. ft. min. density, unless otherwise indicated.

Surface Burning Characteristics: Maximum flame spread and smoke developed values of 5 and 165, respectively.

Use: Rigid board perimeter insulation.

Size: 2'-0" widths (4 '-0" total width of horizontal and vertical widths if installation requires both direction placement. See details.) x **3" thickness** x continuous placement around building perimeters at slab-on-grades. Horizontal length may be shortened if distance from bottom of slab to top of footing is less than 2'-0".

RIGID INSULATION FOR TYPICAL EXTERIOR CONTINUOUS FOAM BOARD INSULATING SHEATHING: Glass-Fiber-Reinforced Polyisocyanurate Foam Core Insulating Sheathing Board with aluminum facers.

Application: [Typical exterior sheathing over metal stud framing.](#)

Thickness: **2.0" typical** for masonry/stud walls - unless noted otherwise on drawings.

Joints: Seal all exterior joints (bottom, top, sides, and corners) with aluminum foil tape along all edges.

Code requirements for Foam Plastic Insulation (2012 NC Building Code, Section 2603):

Surface Burning: ASTM E 84 or UL 723

Fire-Resistance-rated walls: ASTM E 119 or UL 263

Thermal Barrier: FM 4880, UL 1040, NFPA 286 or UL 1715.

Potential Heat: NFPA 259

Wall Assembly - Test Standard and Labeling Standard: NFPA 285

Exterior Wall Ignition: NFPA 268

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

"Thermax Sheathing" - by Dow Chemical USA  
"Hunter Panels Xci Class A" - by Hunter Panels  
-Or equal - by Owens Corning or DiversiFoam Products.

SILL SEAL: Flexible polyethylene foam gasketing strip used to reduce air infiltration between concrete foundation and sill plate.

Basis of Design: Styrofoam Brand Sill Seal Foam Gasket by DOW Chemical Company

FACED and UNFACED MINERAL FIBER BLANKET/BATT INSULATION: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type II, Class C, Category 1 and ASTM E 84 or UL 723 for Surface Burning Characteristics and as follows:

Mineral Fiber Type: Fibers manufactured from glass.

Thickness: Fiber blanket/batt insulation shall completely fill framing space of wall receiving insulation.

Use: **Exterior stud walls: R-19 (unfaced)**

**\*Attic Insulation: R-38 with foil/scrim facing.**

Note: Attic Insulation is suspended along bottom chord of Wood Trusses with wire or poly netting. Insulation shall be laid parallel and between wood trusses – See Wall Sections. End roll joints shall be overlapped and taped. Insulation side flaps shall be used to overlap bottom chord of wood truss and secure building envelope. Building edges or perimeter shall be stapled with vapor barrier and taped.

(SEE NOTE REGARDING INSTALLATION AND ARCHITECT'S INSPECTION)

Combustion Characteristics: Unfaced blanket/batt passes ASTM E 136 test.

Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50, respectively.

\*Attic Floor: Exposed insulation materials installed on attic floors shall have a critical radiant flux of not less than 0.12 watt per square centimeter when tested in accordance with ASTM E 970.

UNFACED MINERAL FIBER BLANKET/BATT INSULATION: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665, Type I and ASTM E 84 Surface Burning Characteristics (with flame spread of 25 or less) and as follows:

Sound Insulation: Above ceilings - R=11 batt insulation. If any, Where noted on drawings.  
Within interior walls - R=11 batt insulation. Typical, all interior walls.

#### AUXILIARY INSULATING MATERIALS:

Adhesive for Bonding Insulation: Type recommended by insulation manufacturer, and complying with requirements for fire performance characteristics.

Mechanical Anchors: Type and size indicated or, if not indicated, as recommended by insulation manufacturer for type of application and condition of substrate.

Mastic Sealer: Type recommended by insulation manufacturer for bonding edge joints between units and filling voids in work.



Polypropelene Netting: Type recommended by insulation manufacturer for suspending insulation between structural members.

Vinyl Tape: Type recommended by insulation manufacturer for sealing plastic vapor barrier seams.

### PART 3 - EXECUTION

#### INSPECTION AND PREPARATION:

Require Installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain Installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.

#### INSTALLATION, GENERAL:

Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

**NOTE: FIBERGLASS BATT INSULATION WITH VAPOR BARRIER BACKING MUST BE INSTALLED BY EXTENDING THE EDGES OF THE BACKING NEATLY OVER THE FACE OF THE STUD OR JOIST OR TRUSSES FORMING THE SPACE BEING INSULATED. THESE EDGES SHALL BE NEATLY STRETCHED AND FASTENED TO ALLOW THE INTERIOR FINISH MATERIAL TO "LAY FLAT" OVER THE STUDS AND INSULATION - to be inspected by Architect prior to finishing/covering area.**

#### INSTALLATION OF GENERAL BUILDING INSULATION:

Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

Set vapor retarder faced units with vapor retarder to warm side of construction, except as otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.

Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure air-tight installation.

Stuff loose glass fiber insulation into miscellaneous voids and cavity spaces around building's exterior walls systems. Compact 40% above normal maximum volume (to a density of approximately 2.5 lbs. per cu. ft.)

#### PROTECTION:

General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by nondelayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

End of SECTION 07200

## SECTION 07270 - FIRESTOPPING

### PART 1 - GENERAL

#### RELATED DOCUMENTS:

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### DESCRIPTION OF WORK:

This Section includes firestopping for the following:

Penetrations through fire-resistance-rated floor and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.

Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.

Sealant joints in fire-resistance-rated construction.

Related Sections: The following Sections contain requirements that relate to this Section:

Division 3 Section "Cast-In-Place Concrete" for construction of openings in concrete slabs.

Division 4 Section "Unit Masonry" for joint fillers for non-fire-resistive-rated masonry construction.

Division 7 Section "Joint Sealants" for non-fire-resistive-rated joint sealants.

#### SYSTEM PERFORMANCES:

General: Provide firestopping systems that are produced and installed to reduce the spread of fire, according to the requirements indicated, and the passage of smoke and other gases.

F-Rated Through Penetration-Firestop systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.

Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

#### QUALITY ASSURANCE:

Provide firestopping products containing no asbestos as determined by the method specified in 40 cfr Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

Firestopping for penetrations shall be the provided by the contractor responsible for the penetration.

#### SUBMITTALS:

General: Submit the following according to Conditions of Contract and Division 1 Specification Sections:

Product Data: for each type of product specified.

Product certificates signed by manufacturers of firestopping products by certifying that their products comply with specified requirements.

#### DELIVERY, STORAGE, AND HANDLING:

Deliver firestopping products to project site in original unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture; lot number; shelf

life, if applicable; qualified testing and inspecting agency's classification marking applicable to project; curing time and mixing instructions for multi-component materials.

Store and handle materials to prevent their deterioration or damage due to moisture, temperature change, contaminants, or other causes.

#### PROJECT CONDITIONS:

Environmental Conditions: Do not install firestopping:

When ambient and substrate temperature conditions are outside the limits permitted by firestopping manufacturer or below 40 degrees F.

When joint substrates are wet due to rain, frost, condensation or other causes.

#### PART 2 - PRODUCTS

##### FIRESTOPPING, GENERAL:

Compatibility: Provide firestopping composed of components that are compatible with each another, the substrates forming openings, and the items, if any, penetrating the firestopping under condition of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

Accessories: Provide components for each firestopping system that are needed to install fill materials. Use only components specified by the firestopping manufacturer for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

Permanent forming/damming/backing materials including the following:

Semi-refractory fiber (mineral wool) insulation.

Sealants used in combination with other forming/damming materials to prevent leakage of fill material in liquid state.

Fire-rated foamboard.

Joint fillers for joint sealants.

Collars.

Steel sleeves.

##### FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOP SYSTEMS

Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce paintable compound, passing ASTM E 136, with flame spread and smoke-developed ratings of zero per ASTM E 84.

Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a non-shrinking, homogeneous mortar.

Pillows/Bags: Re-usable, heat-expanding pillow/bags composed of glass-fiber cloth cases filled with a combination of mineral fiber, water-insoluble expansion agents and fire retardant additives.

Silicone Foam: Two component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, non-shrinking foam.

Silicone Sealant: Moisture curing, single component, silicone based, neutral-curing elastometric sealant of grade indicated below:

Grade for horizontal surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.

Grade for Vertical Surfaces: Nonsag grade for openings in vertical and other surfaces.

Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to the following:

Job-mixed Vinyl Compound:

USG Firecode Compound, United States Gypsum Company

Mortar:

K-2 Firestop Mortar, Bio Fireshield, Inc.

Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.

KBS-Mortar Seal, International Protective Coatings Corp.

Pillows/Bags:

Firestop Pillows, Bio Fireshield Inc.

KBS Sealbags, International Protective Coatings Corp.

Silicone Sealants:

Dow Corning Firestop Sealant 2000, Dow Corning Corp.

Dow Corning Firestop Sealant SL 2003, Dow Corning Corp.

Pensil 100 Firestop Sealant, General Electric Co.

CS240 Firestop Sealant, Hilti Construction Chemicals, Inc.

FIRE-RESISTANT ELASTOMERIC JOINT SEALANTS:

Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated which complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class and Uses, and requirements specified in this section applicable to fire-resistive joint sealants.

Sealant colors: Provide color of exposed joint sealants to comply with the following:

Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

Single Component, Neutral-Curing Silicone Sealant: Type S, Grade NS, Class 25, exposure related Use NT, and joint substrate related uses M, G, A and (as applicable to joint substrates indicated) O.

Single Component, Nonsag, Urethane Sealant: Type S, Grade NS, Class 25, and uses NT, M, A, and (as applicable to joint substrates indicated) O.

Single Component, Neutral-Curing, Silicone Sealant:

Dow Corning 790, Dow Corning Corp.

Dow Corning 795, Dow Corning Corp.

864, Pecora Corp.

Single Component, Nonsag, Urethane Sealant:

Isoflex 880 GB, Harry S. Peterson Co., Inc.

Isoflex 881, Harry S. Peterson Co., Inc.

Vulkem 921, Mameco International Inc.

Sikaflex - 15LM, Sika Corp.

MIXING

For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportional materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

### PART 3 - EXECUTION

#### INSPECTION:

Require installer to inspect penetrations indicated to receive firestopping for compliance with requirements, installation tolerances and other conditions affecting firestopping performance. Obtain Installer's written report listing any conditions detrimental to performance of firestopping work. Do not allow firestopper to proceed until unsatisfactory conditions have been corrected.

#### PREPARATION:

Surface Cleaning: Clean out openings and joints immediately before installing firestopping to comply with recommendations of firestopping manufacturers and the following requirements:

Remove all foreign material from all openings and joint substrates which could interfere with adhesion of firestopping, including dust; paints, except for permanent, protective coatings tested and approved for firestopping adhesion and compatibility by firestopping manufacturer; oil; grease; waterproofing; water repellents; water; surface dirt and frost.

Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.

Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous opening and joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, acid washing or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with firestopping. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

Remove laitance and form release agents from concrete.

Joint Priming: Prime opening and joint substrates where recommended by firestopping manufacturer based on prior experience. Apply primer to comply with firestopping manufacturer's recommendations. Confine primers to areas of firestopping bond, do not allow spillage or migration onto adjoining surfaces.

Masking Tape: Use masking tape where required to prevent contact of firestopping with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove firestopping smears. Remove tape immediately after tooling without disturbing firestopping seal.

#### INSTALLING THROUGH-PENETRATION FIRESTOPS

General: comply with the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.

Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:

Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.

Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

For fill materials that will remain exposed after completing work, finish to produce smooth, uniform surfaces that are flush with adjoining fixtures.

### INSTALLATION OF FIRE RESISTIVE JOINT SEALANTS:

General: Comply with ASTM C 1993 and with firestopping manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

Install Joint-fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability and develop fire-resistant rating required.

Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability. Install sealants at the same time joint fillers are installed.

Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of concave configuration indicated or as required to produce fire-resistive ratings, as well as to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

### CLEANING

Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with special requirements.

End of SECTION 07270

## SECTION 07275 - WEATHER BARRIERS

### PART 1 - GENERAL

#### RELATED DOCUMENTS

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### SUMMARY

Section Includes:

Building wrap. "Air Infiltration Barrier" on Drawings.

Related Requirements:

See Section 07200 for insulation specifications.

See Section 07600 for flexible flashing and sheet metal.

#### ACTION SUBMITTALS

Product Data: For each type of product.

For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.

### PART 2 - PRODUCTS

#### WATER-RESISTIVE BARRIER

Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 10 and 10, respectively, when tested according to ASTM E 84 (Class A); ASTM D 1117 Tear resistance 10 lbs.; ASTM D 882 Tensile Strength 35 lbs./in.; UV stabilized; and acceptable to authorities having jurisdiction.

Products: Subject to compliance with requirements, **provide the following:**

DuPont - **Tyvek CommercialWrap**

Or approved equal by:

Dow Chemical Company

Ludlow Coated Products

Pactiv, Inc.

Reemay, Inc.

Water-Vapor Permeance: Not less than 28 perms per ASTM E 96/E 96M, Desiccant Method (Procedure B).

Air Permeance: Not more than 0.001 cfm/sq. ft. at 75 Pa when tested according to ASTM E 2178.

Allowable UV Exposure Time: Not less than three months.

### MISCELLANEOUS MATERIALS

Flashing system (other than that covered under Section 07600), seam tape, fasteners, sealants, adhesives, and primers shall be provided by the selected structural insulating sheathing manufacturer to be installed as a single source system.

### PART 3 - EXECUTION

#### WATER-RESISTIVE BARRIER INSTALLATION

Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.

Cover sheathing with water-resistive barrier as follows:

Cut back barrier 1/2 inch (13 mm) on each side of the break in supporting members at expansion-or control-joint locations.

Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap unless otherwise indicated.

Building Wrap: Comply with manufacturer's written instructions.

Seal seams, edges, fasteners, and penetrations with tape.

Extend into jambs of openings and seal corners with tape.

END OF SECTION 07275



## SECTION 07411 – PREFORMED METAL ROOF PANEL SYSTEMS

### PART 1 – GENERAL

#### RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

Note: Base Bid work includes PAINTING of existing Roof System – See 09911 Exterior Painting.

Reference ALTERNATE #2 – Demo and Replacement of existing Roof System. Existing Roof, Fascia, & Wall Panels shall be replaced with the systems as described in this specification section. Eliminate need for Transition Flashing materials.

#### SUMMARY

Extent of preformed metal roofing and wall panel systems - Furnish and install all metal roof and wall panels and associated accessories to form a weathertight exterior enclosed structure, as indicated on drawings. Preformed roofing is hereby defined to include formed metal panels, seam caps, ridge caps, eave trim, rake trim, flashing (@ valleys, hips, walls) and counter flashing trim, sealants, etc. which are part of manufacturer's total metal roofing system.

Types of panels required include the following:

Formed sheet roof panels - Standing Seam Metal Roof.

Factory fabricated of one piece of aluminum with integral battens – Fascia Panel – Match Existing.

Factory fabricated aluminum wall panels – Flush Wall Panels – Match Existing.

**Including coordination & provision of any and all metal curbs, crickets, etc. as required for any equipment that penetrates the preformed metal roof system.**

All roof and panel accessories must be supplied by panel manufacturer. Independent or outside source of supply is not acceptable.

Guttering & Downspouts: Is specified in another Division 7 section “Flashing and Sheet Metal”.

Aluminum Trim and Cladding: Is specified in another Division 7 section “Flashing and Sheet Metal”.

Aluminum Soffit Panel: Is specified in another Division 7 section “Flashing and Sheet Metal”.

#### QUALITY ASSURANCE

##### Codes and Standards:

ASIC code of standard practice.

ASTM E 283-73 Air Infiltration, E 331-70 Water Penetration, E84-70 Flame Spread Rating. Sheet Metal and Air Conditioning Contractor's Association's “Architectural Sheet Metal Manual” specifications.

Manufacturer Qualifications: Minimum 8 years experience in manufacturing of architectural metal roofing and panel systems.

Installer Qualifications: Authorized by manufacturer/licensee of roofing system and have a minimum of 3 years experience in installation of roofing and sealant systems.

Field Measurements: Where possible, prior to fabrication of prefabricated panels, take field measurements of structure or substrates to receive panel system. Allow for trimming panel units where final dimensions cannot be established prior to fabrication.

## SUBMITTALS

Product Data Submit manufacturer's product specifications, standard details, certified product test results, installation instructions and general recommendations, as applicable to materials and finishes for each component and for total system of preformed panels including sealants.

Samples: Submit 2 samples 12" square, of each exposed finish material.

Shop Drawings: Submit drawings, including elevations and sections of each condition, showing complete installation methods and procedures. Drawings shall indicate material types, metal thicknesses, finish, methods of anchoring and thermal movement accommodations. Distinguish between factory and field assembly work.

## DELIVERY, STORAGE, AND HANDLING

Deliver pans and battens, or coil material properly packaged and adequately protected from damage during shipment.

Protect products from extremes in weather conditions prior to installation and against damage from other trades after installation.

## WARRANTY

In addition to Warranty required by General and Supplementary Conditions and/or Division 1, include a twenty year, non-prorated extended warranty covering finish performance. Warranty includes labor and material through twentieth year.

Contractor shall provide both a 20 Year Weather Tightness Warranty and 20 Year Finish Warranty. The warranties shall not be supplied or held by *suppliers* to the Roof/Wall panel Manufacturer. The Finish Warranty shall not be supplied or held by the *coil coating manufacturer or supplier*. Warranties from separate manufacturers will not be permitted.

All warranties shall be provided by the Roof/Wall Panel Manufacturer, on their letterhead and authorized by corporate official signature(s).

## PART 2 - PRODUCTS

### MATERIALS:

#### ROOFING –

Pans, seam covers and flashing metal: **22 gauge**, aluminum-zinc alloy coated carbon steel (*Galvalume*) meeting ASTM A 792. The manufacturer will provide roofing panels that are factory rolled by an 18 station fixed based process. No field rolled panels or spliced panels will be accepted.

Panel Design:        2" Leg Height  
                                 16" Panel Width, Smooth Finish

Subject to compliance with requirements, provide one of the following:

Span-Lock (SL20) Panel System , Standing Seam Roof System by DMI  
Tite-Loc Panel System, Standing Seam Roof System by PAC-CLAD  
S-2500 Mechanically Seamed Panels by Construction Metal Products.  
BattenLok , Standing Seam Roof System by MBCI.

#### WALL PANEL –

Panels shall be factory fabricated of one piece of .040 aluminum, flush panel, integral interlocking system.

Panel Design:        12" seam on center  
                                 1" deep, Smooth Finish

Subject to compliance with requirements, provide one of the following:

FP10 Panel System , Standing Seam Roof System by DMI  
Flush Series Panels by Construction Metal Products.  
Or Matching system by - by Pac-Clad or MBCI.

**FASCIA PANEL-**

Panels shall be factory fabricated of one piece of .040 aluminum with integral battens, concealed fastening with water dams, and automatic expansion joints.

Match Existing  
Panel Design:

Net width 33", 1¼" depth, 5 ¾" wide battens @ 6 ¾" o.c.

Subject to compliance with requirements, provide one of the following:

Cheney Fascia Panel System – No. 500 www.cheneyflashing.com  
Or matching panel factory fabricated by DMI, Pac-Clad, CMP or MBCI.

**NOTES:** NO METAL PANEL SYSTEM SUBSTITUTIONS WILL BE ACCEPTED AFTER BIDS ARE RECEIVED. PANEL SYSTEMS SUBSTITUTIONS MUST BE REQUESTED EARLY ENOUGH TO BE INCLUDED IN ADDENDAS TO BIDDERS.

**Roof Underlayment Materials:**

Self-Adhering, High-Temperature Sheet: 40 mils thick minimum, 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.

Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.

Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

Products: Subject to compliance with requirements,

Carlisle Coatings & Waterproofing Inc., Div. of Carlisle Companies Inc.;  
Metal-Fab Manufacturing, LLC; MetShield.  
Owens Corning; WeatherLock Metal High Temperature Underlayment.

Felts: ASTM D 226, **Type II (No. 30)** asphalt-saturated organic felts.

Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

Accessories: Except as indicated as work of another specification section, provide components required for a complete roofing/siding system, including trim, copings, fascias, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips and similar items. Match materials/finishes of preformed panels.

Wall Panel Flashings shall be shop-fabricated from material that is the same thickness and finish as the panels to which they are attached. Where practical, flashings shall be furnished in maximum 10' lengths. Exposed flashings shall be lapped 6".

Closures shall be pre-molded polyethylene to match the profile of the panel and shall be in lengths as supplied by the panel manufacturer.

**Transition Flashing:** coordinate with manufacturer to provide and install necessary "transition flashing" between the **Existing Metal Roof and the New Metal Roof** – these two panels will have different seam panels.

## METAL FINISHES

General: Apply coatings either before or after forming and fabricating panels, as required by coating process and as required for maximum coating performance capability. Protect coating promptly after application and cure, by application of strippable film or removable adhesive over, and retain until installation has been completed. Provide colors or color matches as indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

Fluoropolymer Coating: Full-strength 70% "Kynar 500" coating baked-on for 15 minutes at 450 degrees F (250 degrees C), in a dry film thickness of 1.0 mils, 30% reflective gloss (ASTM D 523), over 0.3 mil baked-on epoxy primer.

Durability: Provide coating which has been field tested under normal range of weathering conditions for minimum of 20 years without significant peel, blister, flake, chip, crack or check in finish, and without chalking in excess of 8 (ASTM D 659), and without fading in excess of 5 NBS units.

**NOTE: Assume CUSTOM COLOR required for all metal roof and wall and fascia panels in order to match existing BLUE COLOR.**

## PANEL FABRICATION; PERFORMANCE:

General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, and as required to fulfill indicated performance requirements which have been demonstrated by factory testing.

Underwriter's Laboratories, Inc. (UL) Wind Uplift Resistance Classification for Roof Assembly shall be Class 90, as installed, and defined by UL 580. Certified statements from manufacturer without proper UL classification will not be acceptable. The roof shall be designed to meet NC Building code basic wind speed of 90 MPH, 3 second wind gust and 90 MPH maximum sustained wind speed as indicated for Rowan County, N.C.

Provide factory formed, pre-finished, concealed fastener panels that are capable of withstanding the applicable wind loads for the fastener spacing using.

Structural Requirements: Engineer Panels for structural properties in accordance with latest edition of American Iron and Steel Institutes *Cold Formed Steel Design Manual* using "effective width" concept and Aluminum Association's *Aluminum Design Manual*.

Water Penetration: No significant, uncontrolled leakage at 4 lbs. Per sq. ft. pressure with spray test.

Air Infiltration: 0.02 cfm per sq. ft. for gross roof/wall area, with 4 lbs. per sq. ft. differential pressure.

Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with substrate materials which are noncompatible or could result in corrosion or deterioration of either material or finishes.

Condensation: Fabricate panels for control of condensation, including proper inclusion of seals and provisions for breathing, venting, weeping and draining.

## PART 3 - EXECUTION

### INSTALLATION

General: Comply with panel fabricator's and material manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal/structural movement..

Install panels with concealed fasteners.

Installation Tolerances: Shim and align panel units within installed tolerance of 1/4" in 20'-0" on level/plumb/slope and location/line as indicated, and within 1/8" offset of adjoining faces and of alignment of matching profiles.

Joint Sealers: Install gaskets, joint fillers, and sealants and where required for weatherproof performance of panel systems. Provide types of gaskets, sealants/fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.

#### CLEANING AND PROTECTION

Damaged Units: Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures.

Cleaning: Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

END OF SECTION 07411

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

Section 07411 Preformed Metal Roofing Systems.

SUMMARY

This Section includes the following:

Metal counter flashing and base flashing (prefinished color to be selected by architect).  
Miscellaneous sheet metal accessories.( prefinished color to be selected by architect)  
Note: Roof Flashings, Trim and Cladding must match Roof Systems – Assume Custom Color.  
Miscellaneous sheet metal assessories.  
Metal wall flashings  
Elastic flashing.  
Gutters.  
Downspouts.  
Soffit Panels.

NOTE: ITEMS TO BE COORDINATED WITH METAL ROOF SUPPLIER.

Integral masonry flashings are specified as masonry work in sections of Division 4.

**All roof and rain drainage work shall be assigned to the same roofing contractor for single point of responsibility.**

**Note: All sheet metal flashings, copings shall be designed and installed to meet minimum UL I -90 wind certification.**

SUBMITTALS

General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

Product data, Flashing, Sheet Metal, and Accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

Samples of the following flashing, sheet metal, and accessory items:

8-inch-square color samples of specified sheet materials to be exposed as finished surfaces.

12-inch-long samples of factory/shop -fabricated products exposed as finished work. Provide complete with specified factory finish, including gutters, down spouts, straps, flashings, and gravel stops.

**Shop Drawings - Flashing, Sheet Metal, Accessories:** Submit shop drawings showing layout, joining, profiles, and anchorage of fabricated work, including major counter flashings, trim/fascia units, gutters, down spouts and expansion joint systems; layouts at 1/4" scale, details at 3" scale.

## PROJECT CONDITIONS

Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

Assign Roofing Installer portions of this section required to provide necessary interface with roofing material to single source responsibility in case of roof leaks for the extent of the roofing warranty.

## PART 2 - PRODUCTS

### SHEET METAL FLASHING AND TRIM MATERIALS

Aluminum: ASTM B 446, alloy 3003, temper H14, 70% Kynar 500 finish; 0.032" & 0.040" thick (20 & 18 gage) minimum except as otherwise indicated. Treat with asphaltic compound as required against dissimilar materials.

Metal trim/fascia units, counter flashing:	thickness .040" UNO
Gutters: (match existing profile)	thickness .032", with <u>1" wide supports</u> at 30" o.c.
Downspouts: (match existing shape)	thickness .032"

Reminder: Assume **CUSTOM COLOR** / Kynar Finish on these items – to match existing.

Prefinished Perforated Aluminum Soffits: Aluminum soffits complying with AAMA 1402, fabricated from aluminum sheet metal alloy recommended by manufacturer as follows:

<u>Pattern:</u>	12 inch o.c. seams Ribs to run from perpendicular to the eave line.
<u>Ventilation:</u>	Provide perforated soffit. (7.5% free air permeation)
<u>Thickness:</u>	.032 inch
<u>Finish:</u>	"White"

Basis of Design: Match Existing Soffit  
Similar to: V-Groove Soffit VS-05 by DMI

Materials used near or in contact with Metal Roof: As directed by Metal Roof supplier

Extruded Aluminum (reglets): Manufacturer's standard extrusions of sizes and profiles indicated, 6063-T52, mill finish; 0.08" minimum thickness for primary legs of extrusions.

### FLEXIBLE SHEET MEMBRANE FLASHING

Elastic Sheet Flashing/Membrane: Nonreinforced flexible, black elastic sheet flashing of 50 to 65 mils' thickness and complying with the following:

Shore A Hardness (ASTM D 2240): 50 to 70.  
Tensile Strength (ASTM D 412): 1200 psi.

Tear Resistance (ASTM D 624, Die C): 20 lbs. per linear inch.  
Ultimate elongation (ASTM D 412): 250 percent.  
Low temperature brittleness (ASTM D 746): minus 30 deg F (minus 35 deg C).  
Resistance to ozone aging (ASTM D 1149): no cracks for 10 percent elongated sample for 100 hours in 50 pphm (50.5 mPa) ozone at 104 deg F (70 deg C).  
Resistance to Heat Aging (ASTM D 573): maximum hardness increase of 15 points, elongation reduction of 40 percent, and tensile strength reduction of 30 percent, for 70 hours at 212 deg F (100 deg C).

Acceptable Products:

Neoprene synthetic rubber sheet.  
Butyl synthetic rubber sheet.  
EPDM synthetic rubber sheet.

MISCELLANEOUS MATERIALS AND ACCESSORIES:

Solder: For use with steel or copper, provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.

Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant or, if in contact with roof membrane, as recommended by single-ply roof membrane manufacturer for its intended use.

Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealers."

Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.

Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

Paper Slip Sheet: 5-lb. rosin-sized building paper.

Reglets: Metal units of type and profile indicated, compatible with flashing indicated, noncorrosive.

Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.

Roofing Cement: ASTM D 2822, asphaltic or, if in contact with roof membrane, as recommended by single-ply manufacturer for intended use. (NOT ALLOWED IN CONTACT with PVC ROOFING MEMBRANE)

FABRICATED UNITS

General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized



industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

Gutter Expansion Joints: Expansion joints shall be "butt-type" expansion joints per SMACNA Architectural Sheet Metal Manual, Figure 1-7. Gutter Joints shall be **spaced equally** at a maximum of 30 foot intervals. (Note that gutter submittals -shop drawings- should indicate these joint locations.)

Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

Aluminum Extrusion Units: Fabricate extruded aluminum running units with formed or extruded aluminum joint covers for installation behind main members where possible. Fabricate mitered and welded corner units.

## PART 3 - EXECUTION

### INSTALLATION REQUIREMENTS

General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation as recommended by aluminum producer

Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

Install reglets to receive counterflashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.

Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

Base and Counter Flashing Systems installation methods for flashing the junction of a sloping roof and a masonry wall shall be per SMACNA, Figure 4-8. Two-piece counter flashing installation methods shall be per SMACNA, Figure 4-4C and D.

Install elastic flashing in accordance with manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.

Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches o.c. Fabricate seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof system.

#### CLEANING AND PROTECTION

Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION 07600

## SECTION 07900 - JOINT SEALERS

### PART 1 - GENERAL

#### RELATED DOCUMENTS:

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

#### DESCRIPTION OF WORK:

Extent of each form and type of joint sealer is indicated on drawings and described in this section.

Refer to Division-8 Section "Tile" for joint sealers in tile work; not work of this section.

Refer to Division-8 sections for glazing requirements; not work of this section.

#### SYSTEM PERFORMANCES:

Provide joints sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

#### QUALITY ASSURANCE:

Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

#### SUBMITTALS:

Product Data: Submit manufacturer's technical data for each joint sealer product required, including instructions for joint preparation and joint sealer application and range of manufacturer's standard color selection.

#### DELIVERY, STORAGE, AND HANDLING:

Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.

Store and handle materials to prevent their deterioration or damage due to moisture, temperature change, contaminants, or other causes.

#### PROJECT CONDITIONS:

Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:

When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 degrees F (4.4 degrees C).

When joint substrates are wet due to rain, frost, condensation or other causes.

Joint Width Conditions: Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer for application indicated.

### PART 2 - PRODUCTS

#### MATERIALS, GENERAL:

Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

Colors: Provide color of exposed joint sealer indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

ELASTOMERIC JOINT SEALANTS:

Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

Multi-Part Nonsag Urethane Sealant: Type M, Grade NS, Class 25, and complying with the following requirements for uses:

Uses NT, M, G, A and, as applicable to joint substrates indicated, O.

Applications: Typical exterior building joints horizontal and vertical between similar and dissimilar materials closing all potential water, air and light leaks.

One-Part Pourable Urethane Sealant: Type S, Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.

Applications: Typical all exterior building joints over expansion joints in concrete walkways.

One-Part Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide for sealing interior joints with nonporous substrates around ceramic tile, showers, sinks and plumbing fixtures.

Applications: Typical all caulking in toilets, kitchens, shower rooms, labs and similar wet areas. Apply as required to seal all light and air leaks, between counter backsplashes and walls, around door frames, around perimeter of fixtures at walls, etc. whether or not specifically shown on drawings.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

Multi-Part Nonsag Urethane Sealant for Uses NT, M, G, A, and O:

"Chem-Calk 500"; Bostik Construction Products Div.

"Dynatrol II"; Pecora Corp.

"Sikaflex 2c NS"; Sika Corp.

"Sonolastic NP 2"; Sonneborn Building Products Div., Rexnord Chem. Prod. Inc.

One-Part, Pourable, Urethane Sealant:

"Vulkem 45"; Mameco International, Inc.

"NR-201 Urexpam"; Pecora Corp.

"Sonolastic SL-1"; Sonneborn B.P.Div., Rexnord Chem Prod. Inc.

One-Part Mildew-Resistant Silicone Sealant:

"Dow-Corning 786"; Dow Corning Corp.

"SCS 1702"; General Electric Co.

"863 #345 White"; Pecora Corp.

"Proglaze White"; Tremco Corp.

LATEX JOINT SEALANTS:

Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, acrylic, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be painted and recommended for exposed applications on interior and on protected exterior exposures involving joint movement of not more than  $\pm 7.5$  percent.

Applications: Typical interior building joints horizontal and vertical between similar and dissimilar materials closing all potential water, air and light leaks.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

"Chem-Calk 600"; Bostik Construction Products Div.

"AC-20"; Pecora Corp.

"Sonolac"; Sonneborne Building Products Div.; Rexnord Chem. Prod., Inc.

"Tremco Acrylic Latex Caulk"; Tremco Inc.

### JOINT FILLERS FOR CONCRETE PAVING:

General: Provide joint fillers of thickness and widths indicated or if not indicated 1/2" thick.

Bituminous Fiber Joint Filler: Preformed strips of composition below, complying with ASTM D 1751:  
Asphalt saturated fiberboard.

### JOINT SEALANT BACKING:

General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

Plastic Foam Joint Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

Elastomeric Tubing Joint-Fillers: Neoprene, butyl or EPDM tubing complying with ASTM D 1056, non absorbent to water and gas, capable of remaining resilient at temperatures down to -26 degrees F (-15 degrees C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

Expanding Foam Sealant Backing: (to provide secondary seal at exterior masonry joints) 100 percent acrylic, water-based impregnated expanding foam sealant. Material to be supplied in rolls, precompressed to less than joint size at mean temperature for installation, with pressure-sensitive mounting adhesive on one side of the material.

Product similar to: Backerseal by Emseal Corp. (or approved equal)

Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (3rd) surface of joint. Provide self-adhesive tape where applicable.

### MISCELLANEOUS MATERIALS:

Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer substrate and field tests.

Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials which are not harmful to substrates and adjacent nonporous materials.

## PART 3 - EXECUTION

### INSPECTION:

Require installer to inspect joints indicated to receive joint sealers for compliance with requirements for joint configurations, installation tolerances and other conditions affecting joint sealer performance. Obtain Installer's written report listing any conditions detrimental to performance of joint sealer work. Do not allow joint sealer to proceed until unsatisfactory conditions have been corrected.

### PREPARATION:

Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellants; water; surface dirt and frost.

Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, acid washing or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint

sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

Remove laitance and form release agents from concrete.

Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and other non-porous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

Joint Priming: Prime joint substrates where recommended by joint sealer manufacturer based on prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

#### INSTALLATION OF JOINT SEALERS:

General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications and conditions indicated.

Latex Sealant Installation Standard: Comply with requirements of ASTM C 790 for use of latex sealants.

Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

Install Joint-fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.

Do not leave gaps between ends of joint-fillers.

Do not stretch, twist, puncture or tear joint fillers.

Remove absorbent joint-fillers which have become wet prior to sealant application and replace with dry material.

Install bond breaker tape between sealants and joint-fillers, compression seals or back of joints where required to prevent third side adhesion of sealant to back of joint.

Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of concave configuration, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion.

Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

End of SECTION 07900