DIVISION

7

THERMAL & MOISTURE PROTECTION

SECTION 07160

BITUMINOUS DAMPPROOFING

PART I - GENERAL

SCOPE:

Dampproofing is to be used at exterior face of CMU back-up walls, and on surfaces of structural members occurring in cavity, to maintain the integrity of dampproofing.

JOB CONDITIONS:

Proceed with the work only after substrate construction and penetrating work have been completed.

The Installer must examine the substrate and the conditions under which the work is to be performed, and notify Contractor in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Proceed with the work only when weather conditions comply with the Manufacturer's recommendations and will permit the materials to be applied in full accordance with said recommendations.

PART 2- PRODUCTS

COLD ASPHALT COMPOUND:

Asphalt blended with solvents recommended by the Manufacturer for exterior below-grade dampproofing. It shall be compounded to penetrate substrate and build a firm, elastic, moisture-resistant coating.

Provide semi-fibrated (semi-mastic) compound for heavy spray or brush coating.

Manufacturer: Manufacturers offering products to comply with the requirements include the following:

Celotex.
Flintkote Co.
W.R. Grace.
Sonneborn Contech.
Koppers.

Optional Materials: At Contractor's option, in lieu of asphalt dampproofing, "Thoroseal" by Standard Drywall Products or "Backelastic" by International Plastics, Inc. may be substituted.

PART 3 - EXECUTION

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 the work.

APPLICATION:

Apply cold bituminous compound to all CMU surfaces and structural members where indicated in drawings and behind metal in accordance with the Manufacturer's instructions.

Brush or spray semi-fibrated compound in a single uniform coating averaging 60 mils dry film thickness (20 sq. ft. per gal.).

Where cmu to be coated abuts structural members or other built-in obstructions, extend dampproofing over members to maintain integrity of waterproofing over entire surface.

If "Thoroseal" or "Backelastic" materials are substituted, provide two full coats over entire surface to be protected. Membrane waterproofing shall be used to cover all structural members and other obstructions occurring in wall. Seal against wall surface as required.

Upon completion, remove all trash and debris associated with work, and clean adjacent surfaces and site of dampproofing material.

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

SCOPE:

The scope of building insulation work shall be as indicated on drawings and as specified herein. Contractor shall provide all labor, materials, equipment, etc. as required for a complete and first class installation. Insulation types and locations are as follow:

Vinyl facing blanket insulation for installation:

On underside of metal roof as detailed and shown in drawings.

Thermal batt/ blanket insulation for installation:

In exterior stud walls and in stud walls between air conditioned and non-air conditioned spaces.

Between roof rafters in addition to vinyl faced insulation.

Elsewhere as shown in drawings.

Sound attenuation batt insulation for installation:

In interior partitions where shown in drawings.

QUALITY ASSURANCE:

Standards: Batt/ blanket insulation material shall be glass fiber or mineral wool insulation conforming to:

ASTM C 665-84, Type III, Class A and ASTM E 136 for foil reinforced kraft faced (low flame spread) insulation.

ASTM C 665-84, Type I for unfaced insulation.

ASTM E-84, "Certified R" for vinyl faced insulation blanket comply with ASTM C-665, Type I.

Acceptable Manufacturers:

Batt and Blanket Insulation: As manufactured by Owens/Corning Fiberglas, Celotex Corp., National Gypsum Co., U. S. Gypsum Co., Johns-Manville Co., or prior approved equal.

Submittals: Provide Manufacturer's technical literature for each product used showing compliance with requirements of this Section.

Product Usage and Installation: Comply with manufacturer's instructions for particular conditions of installation.

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.

PART 2 - PRODUCTS

VINYL FACED BLANKET INSULATION:

Provide and install vinyl faced insulation where indicated on the drawings.

Vinyl Faced Insulation Assembly under Roofing System (Section 7400): 3" thick building blanket with "R" Value of 10, consisting of Owens-Corning Fiberglas "Certified R" (or approved equal) insulation faced with Vytech "Atlas 36" (or approved equal) white vinyl.

Local Supplier: Taylor-Seidenbach, Inc., or approved equal.

Ratings: Flame Spread of 25 or less, Fuel Contributed of 50 or less, U.L. File No. R-7204. Surface characteristics of "Cerified R" are as tested in accordance with ASTM E-84.

Accessories: Provide vinyl tape, fasteners, and all other accessory items as recommended by the insulation manufacturer for a complete, vapor resistant installation of the insulation assembly.

BATT & BLANKET THERMAL INSULATION:

Provide and install the following insulation types as applicable to the project.

Between Roof Rafters: Between roof rafters, under vinyl faced insulation, unfaced insulation (batt or blanket form, as appropriate for best coverage). Provide 6-1/4" thick (R-19) insulation.

Owens Corning Thermal Batt Insulation, Unfaced, with a flame spread of 10 and a smoke developed of 10, or approved equal.

In Stud Wall Construction: In all exterior stud walls, and in stud walls separating air conditioned spaces from non-air conditioned spaces, foil reinforced kraft faced (low flame spread) batt insulation. Provide 3-1/2" thick (R-13) as indicated on drawings.

Owens Corning FRK Faced Flame Spread 25 Insulation, with a flame spread of 25 and a smoke developed of 50, or approved equal.

BATT SOUND INSULATION:

In Sound Insulated Interior Walls: In all interior partitions where indicated on drawings, provide full coverage unfaced insulation in batt form. Thickness shall be 3-1/2" for 3-5/8" metal stud walls, and 2 layer of 3-1/2" in 8" metal stud walls.

Owens Corning Sound Attenuation Batt Insulation, with a flame spread of 10 and a smoke developed of 10, or approved equal.

PART 3 - EXECUTION

GENERAL:

Protection from Deterioration: Do not allow insulation materials to become wet or soiled. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

Coverage: Extend insulation full thickness as shown over entire surface to be insulated.

Cut and fit tightly around obstructions, and fill voids with insulation and mastic.

Provide fasteners as recommended by Manufacturer specific to job conditions to hold insulation in place.

Vapor Barrier: For batt and blanket insulation, the vapor barrier on faced insulation should face toward the warm-in-winter side, unless recommended otherwise by product manufacturer for the specific conditions of this project. Verify prior to proceeding, and alert Architect in writing if manufacturer's recommendation is other than that as indicated in first sentence above.

VINYL FACED BLANKET INSULATION:

It is intended that the insulation be installed full coverage under metal roof panels where shown in drawings and detailed, with no breaks in the vinyl facing. Use fasteners as necessary to hold insulation in place. Tape all insulation joints, tears, etc. to form a complete, vapor resistant barrier. Install in a manner which allows conformance with the performance and guarantee standards outlined herein. Coordinate with installation of metal roofing system.

BATT/BLANKET INSULATION:

Stud Walls: Fully insulate stud walls full height (of studs).

Between Roof Rafters: Batt and/ or blanket insulation shall be placed below vinyl faced roof insulation (Section 07400) for full coverage of roof areas, tightly fitted at perimeters and to abutting construction.. Use insulation form (batt, blanket, etc.) most suitable for job specific type. Secure batt and/ or blanket insulation

with chicken wire secured to roof rafters or by manufacturer's recommended system for job specific installation.

END OF SECTION

SECTION 07260

UNDER-SLAB VAPOR BARRIER/ RETARDER

PART 1 – GENERAL

SUMMARY:

Products Supplied Under This Section:

Vapor Barrier, seam tape, mastic, pipe boots, and detail strip for installation under concrete slabs.

Related Sections:

Section 02200 Earthwork
Section 03300 Cast-In-Place Concrete

REFERENCES:

American Society for Testing and Materials (ASTM):

ASTM E 1745-97 – Standard specification for plastic water vapor retarders used in contact with soil or granular fill under concrete slabs.

ASTM E 154-88- Standard test methods for water vapor retarders used in contact with earth under concrete slabs.

ASTM E 96-95 - Standard test methods for water vapor transmission of materials.

ASTM E 1643-98 – Standard practice for installation of water vapor retarders used in contact with earth or granular fill under concrete slabs.

American Concrete Institute (ACI):

ACI 302.1R-96 – Vapor barrier component (plastic membrane).

SUBMITTALS:

Quality Control / Assurance:

Independent laboratory test results showing compliance with ASTM & ACI Standards.

Manufacturer's samples, product literature

Manufacturer's installation instructions for placement, seaming and pipe boot installation

MANUFACTURERS:

Products as manufactured by one of the following:

Stego Industries
W.R. Meadows
Alumiseal
Prior approved equal

PART 2 – PRODUCTS

MATERIALS:

Vapor Barrier/ Retarder:

Vapor Barrier membrane must have the following properties:

Manufactured from prime virgin resins

Water Vapor Barrier:	ASTM E-1745	Meets or exceeds Class A
Water Vapor Transmission Rate:	ASTM E-96	0.006 gr./ft^2/hr. or lower
Permeance Rating:	ASTM E-96	0.01 perms or lower
Puncture Resistance:	ASTM E-1709	minimum 2200 grams
Tensile Strength:	ASTM D-882	minimum 50.0 lbf/in

Vapor Barrier Products:

Stego Wrap 15-mil Vapor Barrier by Stego Industries LLC
Premoulded Membrane with Plasmatic Core by W.R. Meadows
Zero-Perm by Alumiseal
Prior approved equal

ACCESSORIES:

Seam Tape:

Tape must have the following qualities:

Water Vapor Transmission Rate:	ASTM E 96	0.3 perms or lower

Seam Tape Products:

Stego Tape by STEGO INDUSTRIES LLC
Prior approved equal

Vapor Proofing Mastic:

Mastic must have the following qualities:

Water Vapor Transmission Rate: ASTM E 96 0.3 perms or lower

Vapor Proofing Mastic Products:

Stego Mastic by STEGO INDUSTRIES LLC
Prior approved equal

Pipe Boots:

Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

PART 3 – EXECUTION

PREPARATION:

Ensure that subsoil meets specification standards prior to proceeding.
Level and tamp or roll aggregate, sand or tamped earth base.

INSTALLATION:

Install Vapor Barrier/Retarder:

Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98.

Unroll Vapor Barrier/ Retarder with the longest dimension parallel with the direction of the pour.

Lap Vapor Barrier/ Retarder over footings and seal to foundation walls.

Overlap joints 6 inches and seal with manufacturer's tape.

Seal all penetrations (including pipes) per manufacturer's instructions.

No penetration of the Vapor Barrier/ Retarder is allowed except for reinforcing steel and permanent utilities.

Repair damaged areas by cutting patches of Vapor Barrier/Retarder, overlapping damaged area 6 inches and taping all four sides with tape.

END OF SECTION

SECTION 07272

FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR IMPERMEABLE

PART 1 — GENERAL

RELATED DOCUMENTS

All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

SUMMARY

The work of this section includes, but is not limited to, the following:

Materials and installation methods for fluid applied air and vapor barrier membrane system located in the non-accessible part of the wall.

Materials and installation methods to bridge and seal air leakage pathways in roof and foundation junctions, window and door openings, control and expansion joints, masonry ties, piping and other penetrations through the wall assembly.

Related Sections: Other specification sections that directly relate to the works of this section include, but are not limited to, the following:

Section 03300 – Cast-In-Place Concrete
Section 04200 – Unit Masonry
Section 06160 – Exterior Sheathing
Section 07600 – Flashing and Sheet Metal
Section 07900 – Joint Sealers

PERFORMANCE REQUIREMENTS

Provide an air and vapor barrier system to perform as a continuous barrier to air infiltration/ exfiltration and water vapor transmission and to act as a liquid water drainage plane flashed to discharge any incidental condensation or water penetration.

Air Barriers:

The building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of the conditioned space. An air barrier shall also be provided for interior partitions between conditioned space and space designed to maintain temperature or humidity levels which differ from those in the conditioned space by more than 50% of the difference between the conditioned space and design ambient conditions. The air barrier shall have the following characteristics:

It must be continuous, with all joints made airtight.

It shall have an air permeability not to exceed 0.004 cfm/ft2 under a pressure differential of 0.3 in. water. (1.57 psf.) (equal to 0.02L/s/m2 @ 75 Pa.).

It shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure. It shall not displace adjacent materials under full load.

It shall be durable or maintainable.

The air barrier shall be joined in an airtight and flexible manner to the air barrier material of adjacent systems, allowing for the relative movement of systems due to thermal and moisture variations and creep. Connection shall be made between:

Foundation and walls.
Walls and windows or doors.
Different wall systems.
Wall and roof.
Wall and roof over unconditioned space.
Walls, floor and roof across construction, control and expansion joints.
Walls, floors and roof to utility, pipe and duct penetrations.

Air barrier penetrations:

All penetrations of the air barrier and paths of air infiltration/ exfiltration shall be made airtight.

REFERENCES

The following standards and publications are applicable to the extent referenced in the text. The most recent version of these standards is implied unless otherwise stated.

American Society for Testing and Materials (ASTM)

C 836 Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
C 920 Specifications for Elastomeric Joint Sealants
C 1193 Guide for Use of Joint Sealants
D 412 Standard Test Methods for Rubber Properties in Tension
D 570 test Method for Initial tear Resistance of Plastic Film and Sheathing
D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
D 1644 Test Methods for Non-volatile Content of Varnishes
D 1876 Test Method for Peel Resistance of Adhesives
D 1938 Test Method for Tear Propagation Resistance of Plastic Film and Sheeting
D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

D 4258 Practice for Surface Cleaning Concrete for Coating
D 4263 Test Method for Indicating Moisture in Concrete by Plastic Sheet Method
D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
D 3767 Standard Practice for Rubber - Measurements of Dimensions
E 96 Test Methods for Water Vapor Transmission of Materials
E 154 Test Methods for Water Vapor Retarders Used in Contract with Earth Under Concrete Slabs, on Walls, or as Ground Cover
E 162 Test Method for Surface Flammability of materials Using a Radiant Heat Source
E 283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E 1186 Practice for Air Leakage Site Detection in Building Envelopes and Air Retarder Systems
E 2178 Standard Test Method for Air Permeance of Building Materials
E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

SUBMITTALS

Product Data: Submit manufacturer's product data, installation instructions, use limitations and substrate preparation recommendations.

Shop drawings showing locations and extent of air and vapor barrier system including details for terminations flashings, penetrations, window and door openings and treatment of substrate joints and cracks.

Written documentation demonstrating installers qualifications under the "Quality Assurance" article including reference projects of a similar scope.

Samples: Submit representative samples of the following for approval:

Fluid applied air barrier membrane
Transition Membrane
Through Wall Flashing

Warranty: Submit a sample warranty identifying the terms and conditions stated below.

QUALITY ASSURANCE

Manufacturer: Air and vapor barrier systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing and air barrier products. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.

Installer: The installer shall demonstrate qualifications to perform the work of this Section by submitting the following:

List of at least three (3) projects contracted within the past five (5) years of similar scope and complexity to this project carried out by the firm and site supervisor.

Installer must show evidence of adequate equipment and trained field personnel to successfully complete the project in a timely manner.

Materials: Fluid applied air and vapor barrier material shall be two part synthetic rubber based systems free of solvents, isocyanates and bitumen. For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.

Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include but not be limited to the following:

Review of submittals.
Review of surface preparation, minimum curing period and installation procedures.
Review of special details and flashings.
Sequence of construction, responsibilities and schedule for subsequent operations.
Review of mock-up requirements.
Review of inspection, testing, protection and repair procedures.

Mock-up:

Prior to installation of the air and vapor barrier system a field-constructed mock-up shall be provided under the provisions above to verify details and tie-ins and to demonstrate the required quality of materials and installation.
Construct a typical exterior wall section, 8 feet long and 8 feet wide, incorporating back-up wall, cladding, window and doorframe and sill, insulation, flashing and any other critical junction (roof, foundation, etc).

Allow 24 hours for inspection and testing of mock-up before proceeding with air and vapor barrier work.

Mock-up may remain as part of the work.

Inspection and Testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed air and vapor barrier membrane until it has been inspected, tested and approved.

DELIVERY, STORAGE AND HANDLING

Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.

Do not double-stack pallets of fluid applied membrane components on the job site. Provide cover on top and all sides, allowing for adequate ventilation.

Protect fluid-applied membrane components from freezing and extreme heat.

Sequence deliveries to avoid delays, but minimize on-site storage.

PROJECT CONDITIONS

Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive the air and vapor barrier membrane.

WARRANTY

Material Warranty: Manufacturer's standard form in which manufacturer agrees to replace fluid applied air barrier membrane materials, that fail within specified warranty period when installed and used in strict conformance with written manufacturer's instructions.

Failures include, but are not limited to, the following:

Failure to maintain air permeance rating not to exceed 0.02L/s/ sq. m. when tested per ASTM E 2178, within specified warranty period.

Failure to maintain a vapor permeance rating greater than 10 perms when tested in accordance with ASTM E 96, Method B.

Warranty Period: Five years from date of Substantial Completion.

Special Installer's Warranty: Written air barrier membrane Installer's warranty, signed by Installer, covering work of this Section, for warranty period of two years.

Deviations: In the event these Specifications or the Drawings deviate from the manufacturer's current specifications, these specifications prevail, except where they conflict with manufacturer's requirements for the specified warranty. In this case, the manufacturer's specifications prevail.

PART 2 PRODUCTS

GENERAL

For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.

FLUID APPLIED MEMBRANES

Description: a two part, self-curing, synthetic rubber based material free of solvents, isocyanates and bitumen

Performance Requirements:

Property	Test Method	Typical Value
Color		Green
Cured Film Thickness	ASTM D 3767 Method A	1.5 mm (0.060 in.) nominal
Solids Content	ASTM D 1644	100%
Air Permeance at 75Pa (0.3 in. water) Differential Pressure	ASTM E 2178	<0.001 L/(s.m^2) (<0.0002 cfm/ft^2)
Assembly Air Permeance at 75Pa (0.3 in. water) Differential Pressure	ASTM E 2357	<0.004 L/s*m^2 (<0.0008 cfm/ft^2)
Water Vapor Permeance	ASTM E 96, Method BW	Less than 4.6 ng/Pa.s.m^2 (0.08 Perms)
Pull Adhesion to Concrete Block (CMU)	ASTM D 4541-02	0.24 N/mm² (35 psi)
Pull Adhesion to Glass Faced Wall Board	ASTM D 4541-02	0.12 N/mm² (18 psi)
Peel Adhesion to Concrete	ASTM D 903 Modified[1]	880 N/m (5 lb./in.)
Elongation	ASTM D 412	500% minimum
Pliability, 180° Bend over 25 mm (1 in.) Mandrel at -30°C (-23°F)	ASTM D 1970	Unaffected
Low Temperature Flexibility and Crack Bridging 3.2mm (1/8in.) crack cycling at –26°C (-15°F)	ASTM C836	Pass
Extensibility over 6.4mm (1/4in.) crack after heat aging	ASTM C836	Pass

Footnote:

1. *The membrane is applied to concrete and allowed to cure. Peel adhesion of the membrane is measured at a rate of 50 mm (2 in.) per minute with a peel angle of 90° at room temperature.*

Acceptable Materials:

Perm-A-Barrier Liquid from Grace Construction Products, 62 Whittemore Avenue, Cambridge, MA or prior approved equal.

TRANSITION MEMBRANE

Description: 0.9 mm (36 mils) of self-adhesive rubberized asphalt integrally bonded to 0.1 mm (4 mil) of cross-laminated, high-density polyethylene film to provide a min. 0.1 mm (40 mil) thick

membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.

Performance Requirements:

Water Vapor Transmission: ASTM E 96, Method B: 2.9 ng/m2sPa (0.05 perms) max.
Air Permeance at 75Pa (0.3 in. water) pressure difference: 0.0006 L/(s.m^2) (0.00012 cfm/ft^2) max.
Puncture Resistance: ASTM E 154: 178 N (40 lbs.) min.
Lap Adhesion at –4°C (25°F), ASTM D 1876: 880 N/m (5.0 lbs./in.) of width min.
Low Temperature Flexibility, ASTM D 1970: Unaffected to –43°C (-45°F).
Tensile Strength, ASTM D 412, Die C Modified: min. 2.7 MPa (400 psi)
Elongation, Ultimate Failure of Rubberized Asphalt, ASTM D 412 Die C: min. 200%

Acceptable Materials:

Perm-A-Barrier Detail Membrane manufactured by Grace Construction Products or prior approved equal.

FLEXIBLE MEMBRANE WALL FLASHING

Description: 0.8 mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to 0.2 mm (8 mil) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.

Performance Requirements:

Water Vapor Transmission, ASTM E 96, Method B: 2.9 ng/m2sPa (0.05 perms) max.
Water Absorption, ASTM D 570: max. 0.1% by weight
Puncture Resistance, ASTM E 154: 356 N (80 lbs.) min.
Tear Resistance
Initiation ASTM D 1004: min. 58 N (13.0 lbs.) M.D.
Propagation ASTM D 1938: min. 40 N (9.0 lbs.) M.D.
Lap Adhesion at -4°C (25°F), ASTM D 1876: 880 N/m (5.0 lbs./in.) of width
Low Temperature Flexibility, ASTM D 1970: Unaffected to -43°C (-45°F)
Tensile Strength, ASTM D 412, Die C Modified: min. 5.5 MPa (800 psi)
Elongation, Ultimate Failure of Rubberized Asphalt, ASTM D412, Die C: min. 200%

Acceptable Materials:

Perm-A-Barrier Wall Flashing manufactured by Grace Construction Products or prior approved equal.

AIR & VAPOR BARRIER ACCESSORIES

Description: Water-based primer which imparts an aggressive, high tack finish on the treated substrate

Flash Point: No flash to boiling point
Solvent Type: Water
VOC Content: Not to exceed 10 g/l
Application Temperature: -4°C (25°F) and above
Freezing point (as packaged): -7°C (21°F)

Product: Perm-A-Barrier WB Primer manufactured by Grace Construction Products or prior approved equal.

Description: Two part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/l max. VOC Content.

Product: Bituthene Liquid Membrane manufactured by Grace Construction Products or prior approved equal.

Optional Primers:

Description: High tack water based primer. 10 g/l max. VOC content.

Product: Perm-A-Barrier Liquid Part B manufactured by Grace Construction Products or prior approved equal.

Description: High tack low VOC solvent based primer. <200 g/l max. VOC content.

Product: Bituthene Primer B2 LVC manufactured by Grace Construction Products or prior approved equal.

Description: High tack solvent based primer. 440 g/l max. VOC content.

Product: Bituthene Primer B2 manufactured by Grace Construction Products or prior approved equal.

PART 3 EXECUTION

EXAMINATION

The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

PREPARATION

Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid-applied waterproofing.

Exterior sheathing panels: Ensure that the boards are sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all board joints with 50 - 75mm (2-3 in.) wide, reinforced self-adhesive tape or fiberglass mesh style wallboard tape. Gaps greater than 6mm (1/4 in.) should be filled with mastic or caulk, allowing sufficient time to fully cure before application of the tape and fluid applied membrane.

Masonry Substrates: Apply air and vapor barrier over concrete block and brick with smooth flush mortar joints. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.

Related Materials: Treat construction joints and install flashing as recommended by manufacturer.

INSTALLATION

Refer to manufacturer's literature for recommendations on installation

Application of Fluid Applied Membrane:

Spray or trowel apply a continuous uniform film at min. 60 mils (1.5 mm or .060 in.) dry film thickness using multiple, overlapping passes.
When spraying use a cross-hatching technique (alternating horizontal and vertical passes) to ensure even thickness and coverage.
When spraying use high pressure, multi-component, airless spray equipment approved by material manufacturer.
Carry membrane into any openings a minimum of 50mm (2 in.).
Seal all brick-ties and other penetrations as work progresses.

Application of Transition Membrane:

After allowing the Fluid Applied Membrane to cure to tack-free, apply transition membrane with a minimum overlap of 75mm (3 in.) onto each surface at all beams, columns and joints as indicated in detail drawings.
Tie in to window and door frames, spandrel panels, roof and floor intersections and changes in substrate.
Use pre-cut, easily handled lengths for each location.
Remove silicone-coated release paper and position membrane flashing carefully before placing it against the surface.
When properly positioned, place against surface by pressing firmly into place by hand roller.
Overlap adjacent pieces 50 mm (2 in.) and roll all seams with a hand roller.
Seal top edge of flashing with termination mastic.
When transition flashing is pre-installed prior to application of Fluid Applied Membrane, apply transition flashing as above. Spray or trowel a continuous uniform film of Fluid Membrane at min. 60 mils (1.5 mm or .060 in.) dry film thickness using multiple, overlapping passes, with a minimum overlap of 75 mm (3 in.) onto transition flashing. For sill condition, spray or trowel Fluid Membrane onto pre-installed sill flashing and onto horizontal section of sill.

Application of Flexible Membrane Wall Flashing:

Precut pieces of flashing to easily handled lengths for each location.
Remove silicone-coated release paper and position flashing carefully before placing it against the surface.
When properly positioned, place against surface by pressing firmly into place by hand roller. Fully adhere flashing to substrate to prevent water from migrating under flashing.
Overlap adjacent pieces 50 mm (2 in.) and roll all seams with a hand roller.
Trim bottom edge 13 mm (1/2 in.) back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
At heads, sills and all flashing terminations, turn up ends a minimum of 50 mm (2 in.) and make careful folds to form an end dam, with the seams sealed.
Seal top edge of flashing with termination mastic.
Do not allow the rubberized asphalt surface of the flashing membrane to come in contact with poly-sulfide sealants, creosote, uncured coal tar products or EPDM.

PROTECTION AND CLEANING

Remove any masking materials after installation. Clean any stains on materials that would be exposed in the completed work using procedures as recommended by manufacturer.

Perm-A-Barrier Liquid is not suitable for permanent exposure and should be protected from the effects of sunlight.

Schedule work to ensure that the Perm-A-Barrier Liquid system is covered as soon as possible after installation. Protect Perm-A-Barrier Liquid system from damage during subsequent operations. If the Perm-A-Barrier Liquid system cannot be covered within 60 days after installation, apply temporary UV protection such as dark plastic sheet or tarpaulins.

END OF SECTION

SECTION 07400

PREFORMED METAL ROOF SYSTEM

PART 1 - GENERAL

SCOPE:

Scope: The extent of framing members, roofing, and soffit panel work for this project is as shown on the drawings and as specified herein. Drawings and Specifications are complementary, and what is called for in one shall be called for in the other.

Provide all labor, equipment, materials, accessories, etc. as necessary for a complete and weathertight installation which is engineered and installed to meet specified design criteria and can achieve the system warranty as specified herein. Coordinate as required with all other trades.

> Assembly Description: The roofing assembly shall be provided complete and fully weathertight, including, but not limited to, flat preformed sheet metal roof panels, soffit panels, framing members and components, plates, metal decking, attaching devices/ fasteners, caps, eaves, corners, rakes, and trims, gutters and downspouts, penetration boots, miscellaneous flashing, and all other system related accessories.

Related Work Specified Elsewhere:

> Demolition: Section 02110.
> Rough Carpentry: Section 06100.
> Building Insulation: Section 07210.
> Flashing and Sheet Metal: Section 07600.
> Sealants: Section 07900.
> Painting: Section 09900

GENERAL REQUIREMENTS:

Deviations: In the event these Specifications deviate from the manufacturer's current specifications, the manufacturer's specifications shall prevail in all areas affecting system performance to meet specified design criteria and warranty requirements. In any case, all deviations shall be listed and described in writing to the Architect when submittal information is delivered.

Contractor Acceptance: The Contractor shall ascertain to his satisfaction that all aspects of the Drawings and these Specifications (and possible modifications by Addenda) are workable and do not conflict with the manufacturer's requirements for meeting design criteria and the specified guarantee. Upon commencement of the work, it will be presumed that these specifications, project drawings, and addenda are satisfactory to both the Contractor and the Manufacturer in their entirety.

Supplied Materials: The Contractor shall supply all materials of the roofing system including accessory products. The bidding Contractor, by making his bid, represents that his bid price is based on the use of the materials listed in Part 2 - Products, and all project details as shown in the documents.

Pre-Roofing Conference: A pre-roofing conference shall be held prior to commencement to include the Architect, Contractor, Owner's representative, roofer, and roofing system manufacturer's technical representative to discuss project sequencing, roofing procedures, detailing, etc.

QUALITY ASSURANCE:

Manufacturer: Company specializing in Architectural Sheet Metal Products with fifteen (15) years minimum experience. Being listed as pre-qualified manufacturer does not release manufacturer from providing complete, current and acceptable test data for each performance, thermal, and wind load requirement specified for specific profile proposed.

Installer:

Preformed metal roof system installer shall have five (5) years minimum experience and must be a current Authorized Installer, unconditionally acceptable to roof system manufacturer. Manufacturer will determine initial acceptability of installer qualifications for specified roofing systems.

Installer must have successfully completed a minimum of five (5) significant installations of preformed metal roofing systems, including installation of long, field-formed panels. Submit complete description of each previous project, including name and phone numbers of representatives of the Owner, Architect, Manufacturer, and Contractor.

Installer must execute 100% of metal roof system installation with installers own employees.

System Weathertightness Warranty:

Manufacturer: Manufacturer shall provide a twenty (20) year weathertightness written warranty limited to the value of the installed roof assembly, signed by the Manufacturer of primary roofing materials and his authorized Installer, agreeing to replace/repair defective materials and workmanship as required to maintain roofing system in watertight condition.

Warranty shall not exclude system provided framing members, attachments, flashings, sheet metal work, and installed roof accessories as specified in Section 07600. Warranty shall cover leakage associated with rooftop mounted equipment (flashings, not equipment), penetrations, gutters, downspouts, roof panels, fascias, soffits, flashings and trims, etc.

Primary roofing material manufacturer shall review installation details and perform on-site inspections as required to assure a proper, watertight and performance complying installation. He shall furnish to Architect a written report of findings following each and every visit.

All disputes arising out of or in any way connected to this Warranty, its validity, interpretation and performance and remedies for breach of contract, or any other claims related to this Warranty shall be governed by the laws of the State of Louisiana.

Installer: Installer shall furnish a separate warranty covering weathertightness of the roofing system, subject to the requirements as stated above for manufacturer's warranty, for the period of two (2) years from the date of substantial completion.

System Material Warranties:

Paint finish shall have a twenty (20) year guarantee against cracking, peeling and fade (not to exceed 5 N.B.S. units).

Galvalume material shall have a twenty (20) year guarantee against failure due to corrosion, rupture or perforation.

SUBMITTALS:

Shop Drawings: Architectural drawings and details show design concept and relationship of roof to other conditions and construction. It is the responsibility of the Manufacturer to prepare detailed shop drawings, sealed by registered engineer (State of Louisiana), that engineer and adapt proposed roof system and configuration of roof system to conditions of this Project and specified requirements.

Show roofing system and include all accessory framing members, standing seam roof panels, soffit panels, flashings, accessories, etc in plan, elevation, sections and details.

Include metal thicknesses and finishes, panel lengths, joining details, anchorage details, fastenings, flashings and special fabrication provisions for terminations and penetrations. Also, indicate structural members, furrings, metal decking, thermal expansion provisions, and special supports. Submittal shall include all anchor/fastener descriptions and spacings, sealant description and locations, metal thicknesses, and other pertinent information.

Indicate relationships with all abutting construction, including methods of anchorage.

Distinguish between factory and field assemble work.

Submit erection drawings showing proposed sequence of laying panels. Provide manufacturer's instructions for storage, handling, and installation, and their standard construction details for condition for this Project.

Shop drawings must be submitted and returned as acceptable prior to beginning field or factory fabrication.

Initial shop drawing submittal must be reviewed by the System Manufacturer and bear his approval stamp for compliance with requirements for warranty, system engineering and installation of all materials associated with the roof and wall/soffit panel system.

Product Data: Submit manufacturer's detailed material and system description, sealant and closure installation instructions, engineering performance data, and specifications.

Submit a sample of each type of roof/wall/soffit panel, complete with factory finish. Submit one (1) sample of each sealant type, indicating location of intended use.

Design Calculations: Submit design calculations sealed by registered engineer (State of Louisiana) indicating compliance with specified performance criteria for all system components. Indicate anchor and fastener types, spacings and number required for each framing member, furring member, clip, rib, etc. Pullout calculation shall be for all anchors and fastening devices.

Empirical calculations for roof panel and clip-to-panel performance will not be accepted.

Test Reports: Submit reports from independent testing laboratory that bears stamp of registered engineer (P.E., State of Louisiana) to certify compliance with specified performance criteria.

Each pre-qualified manufacturer shall provide complete and current data for specified roof system as follows:

Thermal cycle testing of metal roof panels and panel clips as specified.

Uniform ultimate wind uplift load capacity test for metal roof panels and structural members as specified.

Ultimate pull-out capacity for panel clips, tested as specified.

IBC 2006 test data as specified.

Model Load Test per ASTM E-1592.

Static air infiltration resistance test data as specified.

Water penetration test data as specified.

Anchor and fastener pull-out calculations as specified.

Manufacturer's Weathertightness Warranty:

Submit complete log of field reports prepared by manufacturer.

Include initial report and final report.

STANDARDS

Follow specific recommendations for handling, detailing, and installing the specified framing, roofing, panel and flashing systems as per the following standards:

System manufacturer's printed application instructions, recommendations details, etc.

"Manual of Steel Construction", latest edition, by the American Institute of Steel Construction (AISC).

Specification for the Design of Cold-Formed Steel Structural Members, latest edition, by the American Iron and Steel Institute (AISI).

"Architectural Sheet Metal Manual", latest edition, by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

American Society for Testing and Material (ASTM):

A653: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

A792: Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

E283-04: Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.

E331-00: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

E1592-05: Test Method for Structural Performance of Sheet Metal Roofs and Siding Systems by Uniform Static Air Pressure Difference.

Underwriters Laboratories (UL) Building Materials Directory

UL 580: Tests for Uplift Resistance of Roof Assemblies.

Basis of Design:

Submit calculations with registered engineer seal (State of Louisiana), verifying that the entire roofing system, including structural framing members, roof, wall and soffit panels, attachment methods, etc. resist wind pressures imposed on it pursuant to the International Building Code, 2006 Edition, with specific criteria as follows:

130 MPH (3-second gust) Wind Speed
Occupancy Category II
Exposure Category B (suburban in Gretna, La)

SYSTEM & MANUFACTURER:

The basic work descriptions (including design concept, engineering, components, and attachment methods) required in this specification are referenced below. Roofing system and products are based upon those as manufactured by Berridge Manufacturing Company, Houston, Texas. See Parts 2 & 3 for specific products, preparation, application and details.

Single Source System:

The roofing manufacturer shall design, engineer and provide erection drawings for the entire roofing and wall/soffit panel system, including all required framing members and components, etc. as necessary to meet performance and warranty criteria as specified herein.

> The roofing manufacturer shall be the single source supplier for roof and wall/soffit panel system materials, including all required structural members and components, etc.

The roofing design shall meet local building codes as dictated by the IBC-2006 Edition.

All roofing components shall be manufactured by the roofing manufacturer, including framing members, components and metal roof panels in continuous lengths with job-site roll forming as required.

The roofing manufacturer shall provide all associated services, including specified testing approvals, review and approval of shop drawings prepared by manufacturer or others and on-site inspections as required for Manufacturer's Weathertightness Warranty.

Design Requirements:

Continuous, one-piece, preformed, pre-finished, single length roof panels.

Panels, anchor clips or ribs and other components required for specific project conditions.

Roof Framing System, including (but not limited to) cold-formed framing and furring members, bent plates, etc., designed in accordance with necessary live, wind, and dead loads.

Manufacturer is responsible for providing evidence acceptable to Architect that Manufacturer's specified roof system is capable of meeting thermal, wind uplift, and performance requirements specified.

Thermal Movement:

Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress of structure, anchors or fasteners, or reducing performance ability.

Interface between panel and expansion clip shall provide for applicable thermal movement in each direction along the longitudinal direction.

Location and sizes of metal roofing rigid connectors shall be as indicated on engineer's certification and located on shop drawings.

Design Standards:

Design Loads (Panels and Clips): Pressures are normal to roof surface in accordance with ANSI A 58.1. Where load tests are required to certify performance, factor of safety shall be 2.5 on panel buckling or on clip-to-panel connections. For Wind Loads, an allowable increase factor of 4/3 may be employed (this results in net factors of safety of 1.875 on panel bending or clip failure from wind loads). Factor of safety for panel capacity for Live Loads shall be 2.0.

Panel Clip/ Rib Requirements: Connection of panel anchor clips/ ribs to purlins shall be designed to resist loads developed by pressures with proper regard for prying forces and/ or bending due to eccentric loading. Performance shall be evaluated at extreme positions of thermal movement. A 1/3 increase in allowable load is permitted for wind pressures. Allowable stresses for design shall be in accordance with specifications in AISI "Cold Formed Steel Design Manual"; factor of safety on testing of connections shall be 2.5.

Deflection Limits: Installed roof system, including framing and deck, shall carry positive uniform design loads with maximum system deflection of L/240 as measured at rib (web) of panel.

Performance Requirements:

Roof System Basis of Design: Shall be the International Building Code, 2006 Edition, with specific criteria as follows; 130 MPH (3-second gust) Wind Speed, Occupancy Category II, Exposure Category B (suburban in Gretna, La).

Completed metal roof system shall have maximum static pressure air infiltration of 0.02 cfm/square foot with 6.24 psf air pressure differential when tested in accordance with ASTM E 1680.

No measurable water penetration (dynamic pressure), other than condensation, when exposed to dynamic rain and at 6.24 PSF air pressure differential for not less than fifteen minutes duration, when tested in accordance with ASTM E 1646.

Calculated pull-out capacities for anchors and fasteners shall be certified by registered professional engineer. Minimum safety factor for anchoring fasteners into metal shall be 2.35. Minimum safety factor for anchoring fasteners into concrete shall be 4.0.

Entire roofing system (metal panels, flashings, expansion joints, and roof framing subsystem) are to be detailed to provide weather tight roof under peak weather conditions.

ACCEPTABLE MANUFACTURERS:

Systems by other manufacturers shall be considered, and it shall remain the Architect's judgement to determine what is equivalent. Manufacturers submitting systems for review shall clearly identify all system components intended for use as substitutes to those outlined and described herein.

Equivalent systems by the following manufacturers may be considered, provided that minimum specifications as designated herein are met and that their systems are recommended for installation over the specific conditions of this project, and that they can perform and be fully warranted as specified herein.

Berridge Manufacturing
Butler
MBCI
American Building (Eufala, AL)

Project Specifications and Details: Should a manufacturer other than the prime specified be judged acceptable for use, the installation specifications herein and details shown on drawings must be adhered to.

DELIVERY, STORAGE, AND HANDLING

Deliver prefabricated accessories to Project site in manufacturer's unopened containers.

Protect components during shipment, storage, handling, and erection from mechanical abuse, stains, discoloration and corrosion.

Provide protective interleaving between contact areas of exposed surfaces to prevent abrasion during shipping, storage, and handling.

Store materials off ground, providing for drainage, under cover providing for air circulation, and protected from wind movement, foreign material contamination, mechanical damage, cement, lime, or other corrosive substances.

Provide covered storage off ground on Project Site for storage of pre-finished metal coils. Maintain availability of equipment to off-load and store metal coils as they are delivered to Project Site.

Handle materials to prevent damage to surfaces, edges and ends of roofing sheets, sheet metal items and substructural framing members. Damaged material shall be rejected and removed from site.

Protect field fabricated panels from wind-related damage. Provide on-site storage, or other acceptable protection, for fabricated panels prior to installation.

Examine materials upon delivery. Reject and remove physically damaged, stained or marred material from project site.

Panels with strippable film must not be stored in the open exposed to the sun.

Stack all materials to prevent damage and to allow for adequate ventilation.

SITE CONDITIONS

Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for preformed metal roofing system.

Protection:

Provide protection or avoid traffic on completed roof surfaces.

Do not overload roof with stored materials.

Support no roof-mounted equipment directly on roofing system.

Determine that work of other trades which penetrate roof or is to be made watertight by roof is in place and accepted prior to installation of roofing system.

Smoking is prohibited on roof areas.

Prefabricated concrete structures (modules) must be maintained fully weathertight during all phases of roof framing and panel work. Provide all materials, methods, temporary closures, sealants, etc. as necessary. Contractor shall be responsible for any and all damage to module units and contents caused by roofing related work.

SCHEDULING

Coordinate staging and setup area required for field fabrication equipment provided by metal roofing manufacturer.

Provide temporary equipment (cranes, hoists, forklifts) in accordance with provisions of Division One.

SUBSTITUTIONS:

Substitution of manufacturer's products for those specified will not be allowed at any time during bidding or construction.

PART 2 - PRODUCT

SHEET METAL MATERIALS:

Prefinished Metal: Shall be Hot-Dipped Galvanized ASTM A446-85 Grade C G90 Coating A525-86 24 Gauge (unless noted heavier elsewhere or as otherwise required to meet roof design criteria), core steel.

Unfinished metal: Shall be Grade C Galvalume ASTM 792-86 AZ-55.

Finish: Shall be full strength Kynar 500 fluoropolymer coating, applied by the Manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.70 to 0.90 mil over 0.25 to 0.35 mil prime coat, to provide a total dry film thickness of 0.95 to 1.25 mil. Bottom side shall be coated with primer with a dy film thickness of 0.25 mil. Finish shall conform to all tests for adhesion, flexibility, and longevity as specified by the Kynar 500 finish supplier.

Color - Roof Panels (Including Associated Fascias, Trims, Etc.): Shall be as selected by Architect from Manufacturer's full range of available Standard colors (excluding Premium and Metallic colors).

Color - Soffit Panels (Including Associated Fascias, Trims, Etc.): Shall be as selected by Architect from Manufacturer's full range of available standard colors (excluding Premium and Metallic colors).

Strippable film shall be applied to the top side of the painted coil to protect the finish during fabrication, shipping and field handling. This strippable film must be removed before installation.

METAL PANELS:

Standing Seam Roof Panels: Berridge Zee-Lock Panel; mechanically locked (single or double locked, as required to meet engineering design) structural standing seam system with 2" high vertical legs spaced at 16" on-center.

Certification shall be submitted, based on independent testing laboratory, indicating no measurable water penetration or air leakage through the system when tested in accordance with ASTM E-1646 and E-1680.

Soffit Panel: Berridge Thin-Line Panel (Soffit), 3-5/8" wide x 3/8" deep, flat smooth prefinished panel with interlocking sidelap design, hidden fasteners.

Panel Corners, Trims, Caps, Closures, Drip Flashings, Etc.: As recommended by Berridge to trim out and fully weatherproof panel corners, terminations, and misc. conditions of the job.

FRAMING SYSTEM MATERIALS

Roofing System Manufacturer shall engineer, provide and install all cold-formed framing members, shapes, components etc. as necessary to secure new roof and soffit panels to building structures. These shall include (but not be limited to) purlins, bent plates, zee and/or hat shapes, clips, plywood panels, etc.

System members shown on drawings are for design concept. Roof System Manufacturer shall engineer and design all required members as necessary to meet design and performance standards as specified herein. This shall include member design, types, gauges, spacings, methods of anchoring and fastening, etc.

Material (Cold-Formed Members): Hot Dipped G-90 Coating Galvanized Steel, Grade C ASTM 525-86.

Metal Decking (At Penetrations): Berridge Straight "S" Deck; 24 ga. Panel steel conforming to ASTM A446-85 Grade C, 7/8" deep with nominal 31-1/2" coverage.

16 Ga Section: For use in areas where Berridge "S" deck is installed (both sides of valleys, penetrations larger than 4", etc.); sized by manufacturer to fit over framing members, also to accommodate the depth of the "S" deck.

Continuous Roof Panel Clip Rib: 1" wide and 1-7/16" in height running continuous at each endlap.

Standing seam metal roof shall be fastened to framing members with concealed anchor ribs of minimum G 90 galvanized steel.

Ribs shall accompany panel movement in each direction along longitudinal direction to adequately accommodate temperature differential and panel movement for this Project.

Manufacturer shall design fastener device and spacing of fasteners to maintain required wind uplift resistance at connection.

ACCESSORY MATERIALS

Vinyl Weatherseal (Roof Panel): Standard Berridge Zee-Lock compatible product, to be installed at all single locked and/or double locked seams.

Bolts, Anchors and Fasteners: Galvanized steel with washers where required. Pre-drilled, self-drilling or self-tapping, of sufficient strength, length, diameter, and spacing for the chosen support member and attachment condition. Provide and install in accordance with System Manufacturer's engineering requirements and as further necessary to maintain design and performance standards as specified herein.

Exposed fasteners shall be kept to a minimum (approved by Architect only), and shall have suitable long life neoprene gaskets for complete weather seal, in color to match prefinished metal.

Sealants: In accordance with standard practice and as recommended by Manufacturer, for use wherever necessary to suit job conditions as required for a complete weathertight installation.

Vinyl-Faced Thermal Insulation: As specified in Section 07210 and installed by this roof contractor.

Self-Adhering Membrane Flashing: Grace Ice & Water Shield by Grace Construction Products, Tamco Metal, or Berridge Ice & Water Guard. A self-adhering membrane meeting UL R-7910 Class A and HUD Materials Release 1056c, for installation behind metal wall panels, over decked areas of roof at penetrations and valleys, and elsewhere as recommended by Roofing System Manufacturer.

Thickness:	40 mils-60 mils
Tensile Strength	250 psi
Permeance:	0.05 Perms max.

Accessories, Trim Items, Etc.: Metal flashings, fascias, caps, J-clips, Zee flashing, closures, fillers, trims, accessories, etc. shall be provided as drawn and as recommended by Manufacturer for a complete and weathertight installation. Materials shall be formed from the same material, gauge (unless heavier is shown or required to meet performance and design standards), and finish as the associated roofing panels.

Misc. Products and Materials: Provide all misc. products, materials, etc. as recommended and required by Roof System Manufacturer for the specific conditions and details of this project to provide a complete, weathertight condition for the specified warranty period, and to meet specified performance and design standards.

ASSOCIATED COMPONENTS:

Rubberized Roof Penetration Boots: Rubberized boots by Dektite, Portals Plus, or approved equal; premanufactured EPDM pipe flashing, set into continuous bead of caulk and fastened to deck panels. Coordinate penetration size with manufacturer's recommended boot sizes. Silicone pipe flashing shall be provided for high temperature applications. Fasteners as recommended by boot manufacturer.

FABRICATION:

Structural Framing: All roof structural system framing materials to be pre-cut to required length and piece marked to facilitate assembly.

Panels:

Panels shall be job roll-formed in continuous lengths. No horizontal overlap joints are permitted in roof panels lengths.

Provide pans in full lengths from peak to eave as indicated.

Transverse or endlap seams will not be permitted.

Design panels to use concealed fasteners. Exposed fasteners in roofing pans will not be permitted.

Standing seam must prevent water capillary action, or otherwise prevent water infiltration.

Examine panels as they are formed to ensure panels are being formed within acceptable tolerances.

Fabricate roofing and related sheet metal work in accordance with accepted shop drawings and applicable standards.

Provide linear sheet metal items in minimum 10'-0" sections except as otherwise noted. Form flashing using single pieces for full width. Provide shop fabricated, mitered and joined corners.

Flashing:

All exposed adjacent flashing shall be of the same material and finish as the roof panels. Coordinate fully with work specified under Section 07600.

All flashings, hem exposed edges on underside 1/2 inch.

PART 3 - EXECUTION

GENERAL:

Inspection: Roofer is responsible for thorough inspection of abutting construction, substrates, conditions, and other related elements.

Contact General Contractor and Architect about any conditions which would adversely affect the performance of new work.

Commencement shall be considered an acceptance of all work by others.

Coordination: Coordinate all roof and wall located mechanical and electrical items, equipment, etc. with new roof and wall/soffit panel work as it proceeds from one area to the next. Comply with all prevailing mechanical and electrical codes, using licensed mechanics.

INSPECTION:

Align slope of roof structure framing subsystem to 1/4" in 20" to true before proceeding with installation of preformed metal roofing.

Examine substrates before starting installation. Substrates must be clear, clean and smooth, free of depressions, waves, or projections, dry and must remain dry and free of ice and snow, after roofing application commences. Remove any and all projections and construction in conflict with new framing and roof/wall/soffit panels as necessary. All connections to pre-fabricated building modules must be made watertight until roof and walls are closed in.

Structural supports shall be in place and sag rods, diagonal bracing, and connections shall be tightened before work can proceed.

Field check dimensions and check support alignment with taut string or wire. Support misalignment will cause panel to oil can.

Do not proceed with installation until conditions are satisfactory. Notify Architect in writing of unsatisfactory conditions.

INSTALLATION:

General Installation Requirements:

Install roofing and flashings in accordance with accepted shop drawings and manufacturer's product data, within specified tolerances.

Isolate dissimilar metal and masonry or concrete from metals with bituminous coating. Limit exposed fasteners to extent indicated on shop drawings. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate and panels.

Anchorage shall allow for temperature expansion and contraction movement without stress or elongation of panels, clips, or anchors. Attach clips to structural substrate using anchors and fasteners of size and spacing as determined by manufacturer's design analysis to resist specified uplift and thermal movement forces.

Coordinate flashing and sheet metal work to provide weathertight conditions at roof terminations. Fabricate and install in accordance with Roofing System Manufacturer's standards and the SMACNA Manual, using continuous cleats at all exposed edges.

Framing System:

Assemble framing system members as designed and engineered by the roofing system manufacturer to meet performance and design standards as specified herein.

Include all necessary anchorage and bracing to abutting building structural systems.

Field verify all conditions in the field prior to bidding, and include all costs to provide a complete and performing system, capable of achieving warranty and performance standards as specified herein.

Metal Decking and Accessories:

After placement of framing system, install metal "S" decking in valleys, around penetrations, and elsewhere as required by the Manufacturer to insure proper roof panel supports and system watertightness. Follow their written recommendations for panel sizes, layout, edge support, fastening, etc.

To support decking at valleys an around penetrations, install 16 ga. sections sized to fit over framing members to accommodate the depth of the "S" deck. Secure in place per manufacturer's recommendations.

Sheathing and joints shall be staggered. End joints shall meet at a continuous structural support member. Minimum of 3/4" exterior grade B or C (not CDX).

Self-Adhering Membrane Flashing:

Prepare areas to receive flashing in accordance with Manufacturer's recommendations. Plywood and decking shall be clean, dry, and primed where necessary. Provide complete coverage for a full watertight seal.

Install self adhering membrane flashing over plywood wall substrates, at valleys, around penetrations, and elsewhere as recommended by Manufacturer. This generally includes, but is not to be limited to, plywood and metal deck areas.

Vinyl-Faced Insulation: Install for full coverage under all metal panels. All seam, penetrations, etc. must be taped.

Preformed Metal Roof Panels:

Fasten clips/ribs with fasteners as recommended by manufacturer and at spacings as required for wind uplift.

Verify with manufacturer locations of fixed connections and expansion connections.

Roll form panels on site with Portable Roll Former in continuous, eave to ridge lengths.

Install starter and edge trim before installing roof panels.

Remove protective strippable film prior to installation of roof panels.

Install panels to continuous ribs per manufacturer's details, with mechanical seaming (single or double locked, as determined by Manufacturer to meet performance and design standards).

Vinyl Weatherseal shall be factory-installed on continuous clip (for single locked seams).

Erect metal roofing with lines, planes, rises and angles sharp and true, and plane surfaces free from objectionable wave, warp, dents, buckle or physical defects with minimum oil canning.

Do not allow traffic on completed roof. If required, provide cushioned walk boards.

Protect installed roof panels and trim from damage caused by adjacent construction until completion of installation.

Remove and replace any panels or components which are damaged beyond successful repair.

Preformed Metal Soffit Panels:

Supply and install panels in continuous, factory formed lengths, in full accordance with Manufacturer's design and specifications.

Install soffit framing system (type, thickness and attachment as engineered and directed by roofing system Manufacturer).

Install starter and edge trim before installing panels.

Install trims and flashings at all penetrations for a weathertight seal.

Remove protective strippable film prior to installation of panels.

Erect metal panels with lines, planes, rises and angles sharp and true, and plane surfaces free from objectionable wave, warp, dents, buckle or physical defects with minimum oil canning.

Protect installed panels and trim from damage caused by adjacent construction until completion of installation.

Remove and replace any wall panels or components which are damaged beyond successful repair.

Flashing:

Comply with Berridge recommended details and performance criteria for installation of work.

Conceal fasteners and expansion provisions wherever possible. Exposed by Architect approval only.

Fold back edges 1/2" to form hem.

Insert metal flashings into reglets, anchor with fasteners and wedges and seal joints.

Set sheet metal items level, true to line, and plumb.

Secure to wood with screws.

Set metal already partly formed in place and fasten to by means of cleats.

Use continuous cleats when face width is greater than 4 inches for 24 gauge steel. Maximum face width to be 8".

RELATED COMPONENTS AND ACCESSORIES:

General: Coordinate the setting of roof equipment and accessories, plumbing penetrations, integral curb flashings, metal fascias, rubberized boots, and any other conditions affecting performance and warranty of roof/wall/soffit panel system with licensed tradesmen hired and directed by Contractor. Roof Installer shall provide crickets or other approved methods for diverting water around roof curbs, roof jacks, etc.

Roof Curbs:

Curbs shall be of size and design to accommodate the various projecting elements to be retained or installed new. The Contractor is responsible for verification of the various sizes, configurations, and requirements. It is expected that the Contractor use existing conditions, surfaces, and elements as a source material for these requirements.

Roof curbs shall of the size and design required for each specific piece of equipment. Support the equipment above the weather surface of the roof to adequately deflect storm drainage around its periphery.

Contractor shall raise curbs (with treated blocking) to maintain minimum vertical clearances above new roof system as required by Manufacturer for warranty and performance purposes.

All sealants, closures, fasteners, etc. shall be included for proper installation and performance. Provide for expected expansion and contraction of roof panels at fixed penetrations.

Flashings and Preformed Boots:

All penetrations through new roof and wall/soffit panels shall be flashed fully weathertight. Use matching materials when working within field of roof.

Provide premanufactured boots at pan of panel only, coordinated with penetration type. Install in accordance with manufacturer's recommendations, sized to specific dimension and shape of penetrating work. Boot type must be pre-approved by panel system manufacturer to allow incorporation into the specified weathertightness warranty.

Boots at flues and other hot pipes shall be temperature resistant and specifically designed for that use.

SEALANTS:

Apply sealant in accordance with standard practice and detailing as recommended by Manufacturer, and wherever necessary to suit job conditions as required for a complete weathertight installation.

PAINTING:

The installer shall be responsible for painting all penetrations and equipment that cannot be fabricated from prefinished sheet metal and which falls within limits of metal panels. Paint color shall match selected roofing finish.

FIELD QUALITY CONTROL:

Tolerances:

Applicable erection tolerances: Maximum variation from true places or lines shall be 1/4" in 20' - 0", 3/8" in 40'-0" or more.

Manufacturer's Weathertightness Warranty Service:

Manufacturer's representative shall jointly examine existing conditions with installer prior to beginning roof system installation, ensuring installer follows manufacturer's installation requirements, recommendations and shop drawings.

Examine completed installation for conformance to shop drawings. Notify installer and Contractor in writing of discrepancies.

CLEANING

Clean exposed surfaces of work promptly after completion of installation. To prevent rust staining on finished surfaces, immediately remove filings produced by drilling or cutting.

Clean roof in accordance with manufacturer's recommendations.

Clean exposed surfaces of roofing and accessories after completion of installation. Leave in clean condition at Date of Substantial Completion for Project. Touch up minor abrasions and scratches in finish.

Remove all scrap and construction debris from the site.

JOB COMPLETION:

Repair: Remove and replace any panels or components which are damaged beyond successful repair. Only minor paint touch-ups shall be allowed.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 - GENERAL

SCOPE:

The complete installation of sheet metal work, flashing, and accessories as specifically detailed and as necessary to accommodate details of all roofing, exterior opening, and misc. conditions as called for in this project. This shall include, but not be limited to, the following:

Sheet metal flashings, counterflashings, caps, gutters, downspouts, subsills, wall and roof penetration flashings, etc. Also provide all cleats, clips, and accessories, as detailed in drawings and as required, for complete and weathertight installations.

Base, through-wall, and exterior opening membrane flashing.

Lead flashing and other misc. metals as detailed in drawings.

Coordination With Sheet Metal Work Specified Elsewhere:

All sheet metal and flashing work falling within or trimming out preformed metal roof, fascia, vertical panel, and associated metal systems as specified elsewhere shall be prefinished to match selected metal colors. This shall include electrical and mechanical penetration flashings, curb flashings, shop fabricated caps, exhausts, etc. Refer to and coordinate with Section 07400-Preformed Metal Roofing System.

Related Work Specified Elsewhere:

Carpentry: Section 06100
Fluid-Applied Membrane Air Barrier, Vapor Impermeable: section 07272
Preformed Metal Roofing System: Section 07400
Sealants: Section 07900
Painting: Section 09900

QUALITY ASSURANCE:

General: Unless conflicting and more restrictive requirements are indicated, comply with standards and recommendations of the following industry standards:

N.R.C.A. "Roofing and Waterproofing Manual" and "Handbook of Accepted Roofing Knowledge". (Latest Edition).

"SMACNA "Architectural Sheet Metal Manual". (Latest Edition).

The written recommendations of the specified roofing system manufacturers.

Installer: In order to assure undivided responsibility and proper coordination with related work, subcontract associated work of Section 07600 to the installer of Preformed Roofing (Section 07400).

Wind Resistance: Comply with requirements of ASCE 7-98, "Minimum Design Loads for Buildings and Other Structures, Category III (Essential Building)". Fabricate and install roof metal work to resist the following, while remaining in place (comply with the greater requirements):

Force of map wind load speed plus forty (40) mph, with an importance factor of 1.0 and other standards as specified herein.

Design resistance (in Lbs./ft.) for roof edge metal as established by the SPRI publication "Wind Design Guide for Edge Systems" (current edition).

SUBMITTALS:

General: Comply with Division 0 and Division 1 requirements.

Product Data: Submit manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product. Include specifications for finish system.

Samples: Submit 8 inch square samples of prefinished sheet materials, for verification of selected color.

Shop Drawings: Show layout, profiles, methods of joining, and anchorage details, including major counter flashings, copings, and gutter systems. Provide layout at 1/4 inch scale and details at 3 inch scale. Coordinate with roofing submittal.

PROJECT CONDITIONS:

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

Do not proceed with the installation of flashing and sheet metal work until curb and substrate construction, cant strips, blocking, reglets and other construction to receive the work is completed.

The Installer must examine the substrate and the conditions under which flashing and sheet metal work is to be performed and notify the Contractor and Architect in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Contractor is responsible for providing all sheet metal and flashing work necessary for complete and weathertight installations at roofing, walls, gutters, and misc. conditions of the subject building, in accordance with the best standard practices of the industry.

Details as shown on drawings generally cover typical conditions. They are not meant to be all inclusive. Conditions not specifically detailed shall be fabricated and installed in accordance with the reference standards indicated above.

The Installer shall cooperate with roofing installers to secure watertight connections at drains and pipes passing through roofs or membranes. Flashings to be soldered to pipes wherever necessary or directed by referenced standards.

GUARANTEE:

Guarantee (in writing) that the work of this Section is free from defects in material and workmanship for a period of two (2) years after completion and that all such defects discovered during this period shall be made good. Issue guarantee in conjunction with roofer's guarantee as required by Section 07400.

PART 2 - PRODUCTS

MATERIALS:

Base, Through Wall, and Exterior Opening Membrane Flashing: See Section 07272.

Metal Trim, Flashings, Etc. - All Exposed Metal:

Provide galvanized sheet metal with the following factory-applied finish. Gauges of metal to be as shown in drawings (24 gauge min., if not specifically called out). Also coordinate with Section 07400-Preformed Metal Roofing System.

General: Apply coating either before or after forming and fabricating items, 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 cover, and retain until installation has been completed.

Fluoropolymer Coating: Shall be full strength Kynar 500, applied by the Manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.70 to 0.90 mil over 0.25 to 0.35 mil prime coat, to provide a total dry film thickness of 0.95 to 1.25 mil. Bottom side shall be coated with primer with a dy film thickness of 0.25 mil. Finish shall conform to all tests for adhesion, flexibility, and longevity as specified by the Kynar 500 finish supplier.

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 (ASTM D 2244).

Colors - Shall be as selected by Architect.

Stainless Steel:

ASTM 666, Type 304 with 18% chromium, 8% nickel, and a maximum of 0.12% copper; 2B finish, dead soft temper, fully annealed. Stainless steel sheet metal gauges to be as shown in drawings (24 gauge min., if not specifically called out).

Solder for Stainless Steel: ASTM B 32, 50% tin and 50% lead, used with rosin flux.

Misc. Metal - Hidden Metal Only:

Zinc-Coated Steel: Commercial quality carbon steel sheets with minimum of 0.20% copper content complying with ASTM A 526; hot-dip galvanized to comply with ASTM A 525, 1.25 Commercial Class, mill phosphatized, thickness as shown on drawings (if not shown, comply with SMACNA manual recommendations, but no case less than 24 gauge).

Solder for Steel: ASTM B 32, 50% tin and 50% lead, used with rosin flux.

Lead: TM B 749, Type L51121, copper-bearing sheet lead, minimum 4 lb./sq. ft. (0.0625-inch thick) except not less than 6 lb./sq. ft. (0.0937 inch thick) for burning (welding) unless otherwise indicated.

Miscellaneous Materials:

Solder & Fasteners: For metal work, provide the type solder and fasteners recommended by the producer of the metal sheets for fabrication and installation.

Sealants: See Section 07900.

Bituminous Coating: Solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

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, non-corrosive, size and gauge required for performance.

Drawbands - Stainless steel, with screw-clamp tightening device.

Roofing Cement: ASTM D 2822, asphaltic.

Asphalt Primer: ASTM D 41.

Paint: All exposed sheet metal and associated items provided under this Section (excluding prefinished metal used in conjunction with metal roofing, fascias, and soffits) shall be properly prepared and painted. All painting shall be in accordance with Section 09900 - Painting, of these Specifications.

FABRICATION:

General: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual", roofing systems manufacturers' recommendations, and other recognized industry practices.

Fabricate 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.

Lengths: Fabricate sections up to 10 feet long in one piece. For sections over 10 feet long, use sheets as long as practicable.

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.

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" deep, filled with mastic sealant (concealed within joints).

Sealant Joints: Where movable, non-expansion 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.

Cap Flashings:

Fabrication: Shop fabricate to sizes and profiles indicated, complete with terminal and transition sections and mitered corners

Faces: Not less than 3 inches high, formed to provide spring action against vertical surfaces.

Joints Locate joints at least 36 inches from corners. Joint adjacent sections with concealed splice sheets at least 6 inches wide centered on joints.

Corners and Intersections: Mitered and soldered prefabricated units, at least 3 feet long on each leg.

Pitch Pans (When Shown): Fabricate with hemmed top edge and minimum 4-inch roof flanges, with all joints lapped and soldered. Pans shall be 3 inches high unless otherwise indicated.

Bonnet Flashings: For pipes, conduits, and similar items at openings with curbs, fabricate 2-piece bonnet flashing with attached collars for penetrating items. Provide drawbands to secure collars to penetrating items.

Enclosures: For penetrating items which are turned horizontally above curbs, fabricate 2-piece enclosures with upper and lower sections notched and fitted with collars to fit penetrating items.

Hoods or Umbrellas: Flash individual items without curbs by 4-inch high metal base flashings with 4-inch roof flanges and watertight counterflashing hoods or umbrellas. Provide drawbands to secure hoods or umbrellas to penetrating items.

PART 3 - EXECUTION

GENERAL INSTALLATION REQUIREMENTS:

Comply with manufacturer's instructions and recommendations for handling and installation of flashing and sheet metal work.

Performance: Coordinate the work with other work for the correct sequencing of items which make up the entire roofing systems or systems of weatherproofing/waterproofing and rain drainage. It is required that the flashing and sheet metal work be permanently watertight and not deteriorate in excess of manufacturer's published limitations.

INSTALLATION OF METAL WORK:

Comply with details and profiles as shown and comply with"SMACNA "Architectural Sheet Metal Manual" recommendations for installation of the work.

All sheet metal and flashing work falling within or trimming out preformed metal roof, fascia, vertical panel, and soffit systems as specified elsewhere shall be prefinished to match selected metal colors. Coordinate fully with requirements of Section 07400-Preformed Roofing.

For embedment of metal flashing flanges in roofing or membrane flashing or stripping, extend flanges for a minimum of 4" embedment.

Provide for thermal expansion of all exposed sheet metal work exceeding 15'-0" running length with expansion joint spacing as follows:

Gutters: 40'-0" maximum spacing and located at high points in drainage system wherever possible.

Cap Flashings and Gravel Stops: Expansion joints shall have 10'-0" maximum spacing and located 3'-0" from corners and intersections.

Flashings and Counterflashings: Lap joint, 10'-0" maximum spacing, with 3" overlap.

Conceal fasteners and expansion provisions wherever possible. Fold back edges on concealed side of exposed edges to form a hem.

Expansion Joints: Provide 1/4" opening between sections covered with 6" matching cover plate embedded in sealant, formed to the profile of the gravel stop or cap flashing. Provide 6" backup plate beneath sections at joints in caps and copings.

Coat flanges of sheet metal in contact with roofing with 15-mil dry film thickness bituminous paint prior to installing.

Fabricate, support and anchor rain drainage in a manner which will withstand thermal expansion stresses and full loading by water or ice, without damage, deterioration or leakage.

Provide 24 gauge continuous edging strips secured to wood blocking for anchoring vertical faces of sheet metal items.

PAINTING:

All exposed metals that cannot be fabricated from prefinished metal to match the roofing/fascia/soffit system shall be prepared and painted in accordance with Section 09900-Painting.

CLEANING:

Remove soil, stain and extraneous materials incidental to sheet metal work from adjacent surfaces. Replace work that cannot be cleaned.

Remove foreign matter and clean sheet metal work to satisfactory conditions to receive specified finish.

Repair any damaged sheet metal to match adjacent sheet metal work. Remove and replace damaged or defective work that cannot be satisfactorily repaired.

END OF SECTION

SECTION 07900

SEALANTS

PART 1 - GENERAL

SCOPE:

Provide the forms and types of sealants indicated on the drawings and herein specified.

SUBMITTALS:

General: Comply with Division 0 and Division 1.

Product Data: Submit manufacturer's product specifications for each joint sealer product proposed, including instructions for joint preparation and sealer application.

Test Reports: When applicable to the project, coordinate with Section 07270-Firestopping. For record purposes, for fire-resistive sealants (when used), provide test reports by an independent testing agency to confirm required fire resistance rating.

Field Mock-Ups: Before starting permanent work, apply elastomeric sealants to Architect-selected joints for further verification of colors selected and to represent completed work for appearance, materials, and application.

QUALITY ASSURANCE:

Installer Experience: Engage an Installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to that of this Project.

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

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

JOB CONDITIONS:

The Installer must examine the joint surfaces and backing and their anchorage to the structure and the conditions under which the joint sealer work is to be performed and notify the Contractor of conditions detrimental to the proper and timely completion of the work and performance of the sealers. Do not proceed with the sealant work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range.

PART 2 - PRODUCTS

MATERIALS - GENERAL:

Colors: For exposed materials, provide color as selected by Architect from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.

Compatibility: Before purchase, confirm compatibility of new sealant materials with other contact materials.

Formulation: Where one-part, two-part and multi-part sealants are specified for the same sealant type, Installer has the option of selecting from the kinds specified.

SEALANTS:

Exterior Sealants:

Polyurethane-based moisture-cured, one-part elastomeric sealant, complying with FS TT-S-00230C, Class A, Type II; recommended by manufacturer for general use as an exposed building construction sealant as follows:

Sikaflex-1A	-	Sika Chemical Corporation
Vulkem 45	-	Mameco, Inc.
Dynaseal W-100	-	Williams Products, Inc.
A-H Polyurethane	-	Anti-Hydro Company

Two-part rubber type chemically curing compound complying with FS TT-S-00227E, Class A, Type II, as follows:

Dymeric	-	Tremco Manufacturing Company
Dynatrol II	-	Pecora Chemical Company

Porous-bond type silicone rubber-based, one-part elastomeric sealant, complying with FS TT-S-001543, Class A; recommended by manufacturer for exterior non-porous joints as follows:

Silpruf SCS 2000 Sealant	-	General Electric Company
790 Building Sealant	-	Dow Corning Company
864 Building Sealant	-	Pecora Chemical Company

Nonporous-bond type silicone rubber-based, one-part elastomeric sealant, complying with FS TT-S-001543, Class A; recommended by manufacturer for exterior nonporous joints as follows:

Silglaze 1200 Sealant	-	General Electric Company
Silicone Rubber Sealant	-	Dow Corning Company

Polysulfide-based, two-part elastomeric sealant, complying with FS TT-S-00227E, Class A, Type II (non-asg) unless Type I recommended by manufacturer for the application shown as follows:

Lasto-Meric	-	Tremco Manufacturing Company
GC-5	-	Pecora Chemical Company
Chem-Calk 200	-	Woodmont Products, Inc.
Sonolastic Two-Part	-	Sonneborn/Contech, Inc.

Interior Sealants:

First grade latex acrylic gun grade compound complying with FS TT-C-598B as follows:

Sonolac	-	Sonneborn Building Products
AC20 Acrylic Latex Caulk	-	Pecora Chemical Company
Chem-Calk 600	-	Woodmont Products, Inc.
Acrylic Latex Caulk	-	Tremco Manufacturing Co.

MISCELLANEOUS MATERIALS:

Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or caulking compound manufacturer for the joint surfaces to be cleaned.

Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

Sealant Backer Rod: Compressible closed cell rod stock of polyethylene; "Ethaform" (Dow Chemical Co.), "Minicel" (Haveq Industries) or open cell polyurethane (Denver Foam) as recommended by the sealant manufacturer in published data.

PART 3 - EXECUTION

MANUFACTURER'S INSTRUCTIONS:

Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

JOINT PREPARATION:

Examination: Examine joints indicated to receive joint sealers for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or caulking compound.

Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/ sealer to spill or migrate onto adjoining surfaces.

INSTALLATION:

General: Comply with joint sealant manufacturers' printed installation instructions applicable to products and applications indicated, except where more restrictive requirements are specified.

Preparation: Application surfaces shall be sound, clean and dry at time sealants are applied.

Prime surfaces, if recommended by sealant manufacturer, using recommended material.

Installation Standards: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

Backer Rods: Install sealant backer rod for sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown. Backer rod shall be accurately positioned with the joint to establish and control the uniform designated thickness of the sealant.

Exercise care in the installation of the joint backing to see that the backing is not set too far below the surface, thereby increasing the depth of the sealant.

All joint backing shall be used 25-30%, as recommended by the sealant manufacturer, 30% under compression and care shall be taken that the backing is not stretched so that it will, at a later time, recover and damage the sealant applied over it.

Bond Breaker Tape: Install bond breaker tape wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly and when backer rod cannot be implemented.

Sealants: Install sealants to depths as shown, as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:

> For normal moving joints sealed with sealants, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.

Apply sealant with sufficient pressure to completely fill the void space and to assure complete wetting of contact area to obtain uniform adhesion. During the application, keep the tip of nozzle at the bottom of joint, forcing sealant to fill from bottom to top. Move tip along joint at a rate as to completely fill the joint. Tool all caulking smooth and flush with adjacent surfaces unless detailed to be finished below the surface.

Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces or to migrate into the voids of adjoining surfaces. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

EXTERIOR SEALANT:

Exterior Openings: At areas of new work where indicated, caulk perimeter joints of exterior openings, such as doors, windows, louvers, storefront, glass block openings, wall penetrations, connections, automatic doors, rolling doors, grilles, etc.

Expansion, Control, and Construction Joints: At areas of new work where indicated, caulk all expansion, control, and construction joints in exterior wall construction.

Flashing at Roofing: Caulk joints, etc. at roofing work as recommended by system manufacturers.

INTERIOR CAULKING:

Door Frames: Caulk perimeter joints of metal frames set in wall construction.

Windows: Caulk at perimeter of windows, storefront, glass block, etc. set in exterior and interior walls.

Interior Joints: Joints and gaps formed by the intersection of dissimilar finishes and materials.

Janitor's Sinks, Restroom Fixtures, and Watercoolers: Caulk at contact with wall construction with fungicidal, mildew-resistant silicone by Dow Corning Corporation or General Electric.

CURE, PROTECTION AND CLEANING:

Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

Advise the Contractor of procedures required for the cure and protection of sealants during the construction period so that they will be without deterioration or damage (other than normal wear and weathering) at the time of Owner's acceptance.

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

Repair, or remove and replace, other work damaged by joint sealer work and cleaning.

END OF SECTION