

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Rigid Board thermal insulation.
- B. Batt thermal insulation.
- C. Loose fill blown insulation
- D. For locations described below and on the drawings.

1.02 RELATED SECTIONS

- A. Section 09260 - Gypsum Board Systems: Acoustical insulation for stud walls.
- B. Section 04300 – Unit Masonry: masonry anchors and ties
- C. Section 07610 – Standing Seam Metal Roofing

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

- A. Rigid Insulation: Extruded Polystyrene insulation board **for use in cavity wall construction**, conforming to the following:
 - 1. Board Thickness: **1 ½" inches**, except as otherwise noted.
 - 2. Board Edges: square.
 - 3. Manufacturer: Tenneco Building Products or approved equal for cavity wall applications.
- B. Rigid Insulation: Polyisocyanurate rigid insulation board **for use in roof assembly**, conforming to the following:
 - 1. Board Thickness: 3" inches unless otherwise indicated on drawings.
 - 2. Tapered Insulation min 1-1/2" at edges, tapered as indicated on drawings.
 - 3. Board Edges: square.
 - 4. Manufacturer: Manufacturer as approved by roof manufacturer for roof assembly. Top with perlite as required for given roof system and roof manufacturer's requirements.
- C. Batt Insulation: ASTM C665, pre-formed glass fiber batt, friction fit. **For Miscellaneous Areas (ceilings, interior walls, etc. – see drawings)** conforming to the following:
 - 1. Thermal resistance of R-19 or as indicated on drawings.
 - 2. Facing: Faced one side with asphalt treated Kraft paper.
 - 3. Batt size: 22-1/2 inches wide.
 - 4. Manufacturer: Owens Corning or approved equal.
- D. Loose-Fill Blowing Insulation: for use with pneumatic blowing machine. **As indicated on drawings**. Conforming to the following:
 - 1. Thermal resistance of R-30 or as noted. (depth per mfgrs. Requirements)
 - 2. Manufacturer: Guardian Fiberglass or approved equal.

2.02 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type.
- B. Insulation Fasteners: Impale clip of galvanized steel, mechanically fastened.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

3.03 INSTALLATION - CAVITY WALLS - BOARD INSULATION

- A. Adhere a strip of polyethylene sheet over control joints.
- B. Install boards horizontally between wall reinforcement.
- C. Butt edges and ends tight to adjacent board and to protrusions.

General: Install all insulating materials and accessories in accordance with manufacturer's recommendations for the given application.

3.04 SCHEDULES

- A. As described above.
- B. See drawings, wall types, wall details, roof details, interior details, related sections, etc.

END OF SECTION

SECTION 07260
VAPOR RETARDERS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Provide total air/vapor barrier system to complete the Work as shown on the Drawings and as specified herein to bridge and seal air leakage pathways and gaps:
 - 1. Vapor Permeable Air and Water Barriers
 - 2. Liquid Applied Detailing Compound
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry"

1.02 SUBMITTALS

- A. Product Data:
 - 1. Submit Spec-Data, details, and installation procedures.
 - 2. Manufacturer's installation instructions for placement, seaming and penetration repair instructions.
- B. Show Drawings: Show locations and extent of air barrier. Include details for substrate joints, cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
- C. Include details of interfaces with other materials that form part of the air barrier.
- D. Test Reports: Indicating compliance with the performance requirements of this section.
- E. Samples: Submit representative samples of all components as specified herein for approval.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with manufacturer's written instructions and this specification.
- B. Maintain one copy of manufacturer's written instructions on site.
- C. Systems used shall contain components from one manufacturer only (example: sheet membrane, air barrier sealants, primers, mastics, and adhesives). NOTE: Different manufacturers may be used for different systems.
- D. Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).
- E. 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. Preinstallation conference shall include the Contractor, installer, Architect, and system manufacturer's field representative. Agenda for meeting shall include but not be limited to the following:

1. Review of submittals.
2. Review of surface preparation, minimum curing period and installation procedures.
3. Review of special details and flashings.
4. Sequence of construction, responsibilities and schedule for subsequent operations.
5. Review of inspection, testing, protection and repair procedures.

F. Provide an independent laboratory per Division 1 Section "Testing Laboratory Services" to perform field tests as specified herein in Part 3.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's recommendations for storage and handling of each product.
- B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- C. Store roll materials on end in original packaging. Protect rolls from direct sunlight until ready for use.
- D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.
- E. E. Keep solvent away from open flame or excessive heat.

1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Apply vapor and air barriers within the range of ambient and substrate temperatures recommended by manufacturer. Protect substrates from environmental conditions that affect performance. Do not apply barriers to a wet substrate or during snow, rain, fog, or mist.

1.06 WARRANTY

- A. Material Warranty:
 1. Manufacturer's standard form in which manufacturer agrees to replace membrane materials that fail within specified warranty period when installed and used in strict conformance with written manufacturer's instructions.
 - a. Minimum 10 year product warranty required.

PART 2 – PRODUCTS

2.01 UNDER SLAB VAPOR BARRIER

A. Vapor Barrier

1. Vapor Barrier must have the following qualities:
 - a. Permeance of less than 0.01 Perms as tested in accordance with ASTM E 1745 Section 7.
 - b. Other performance criteria:
 - (1) Strength: ASTM E 1745 Class A.
 - (2) Thickness: 15 mils minimum
2. Vapor Barrier Products:
 - a. "Stego Wrap (15 mil yellow)"; Stego Industries.
 - b. "Vaporblock VB15 (15 mil blue)"; Raven Industries.

c. "Viper II (15-mil blue)"; Insulation Solutions.

B. Accessories:

1. Seam Tape

- a. Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
- b. Equal to "Stego Tape" by Stego Industries

2. Vapor Proofing Mastic

- a. Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
- b. Equal to "Stego Mastic" by Stego Industries

2.02 VAPOR PERMEABLE AIR AND WATER BARRIER – WALL APPLICATION

A. A fluid-applied, vapor permeable, acrylic membrane that cures to form a resilient, monolithic, fully bonded elastomeric membrane when applied to construction surfaces. Product shall have the following minimum physical properties:

- 1. Membrane Air Permeance: ASTM E2178: Not to exceed 0.0004 cfm/sq. ft. under a pressure differential of 0.3 in. water (1.57 psf).
- 2. Assembly Performance: Provide a continuous air barrier assembly that has an air leakage not to exceed 0.0008 cfm/sq. ft. of surface area under a pressure differential of 0.3 in. water (1.57 psf) when tested in accordance with ASTM E2357.
- 3. Membrane Vapor Permeance: ASTM E96, Method B: 11.2 perms
- 4. Peel Adhesion: ASTM D903: min. 5 pli or substrate failure to glass faced wall board, min. 20 pli to concrete/CMU
- 5. UV Exposure Limit: Not more than 180 calendar days

B. Products:

- 1. "Perm-A-Barrier VP"; Grace Construction Products
- 2. "Air-Shield LMP"; W.R. Meadows
- 3. "Air-Bloc 31MR"; Henry Company
- 4. Enershield-HP; BASF
- 5. R-Guard MVP; Prosoco

2.03 SELF ADHERING ROOF MEMBRANE

A. Furnish a 40 mil minimum, cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive. An embossed, slip resistant surface to be provided on the polyethylene. Material to be interwound with a disposable silicone-coated release sheet. Provide one of the following manufacturer's:

- 1. "Ice and water shield"; Grace Construction Products

2. "Lastobond Shield HT"; Soprema
3. "DryDek"; Imetco

B. Provide under all metal roofing areas and other areas indicated.

2.04 SELF ADHERING WALL MEMBRANE – VAPOR PERMEABLE – NOT USED IN THIS PROJECT

A. Location: Provide in all locations as indicated on Drawings to receive "selfadhering wall membrane".

B. Product:

1. "Perm-A-Barrier VPS"; Grace Construction Products.
2. "Blueskin Breather"; Henry Company
3. Equal as approved

C. Description:

1. A self-adhered membrane consisting of a breathable carrier film with a specially designed adhesive, which permits the transfusion of water vapor. Product shall have the following minimum physical properties:

- a. Air Permeance, ASTM E2178: Not to exceed 0.004 cfm/sq. ft. under a pressure differential of 0.3 in. water. (1.57 psf)
- b. Assembly Air Permeance, ASTM E2357: Not to exceed 0.04 cfm/sq.ft. under a pressure differential of 0.3 in. water (1.57 psf)
- c. Water Vapor Permeance, ASTM E96: Not less than 15 perms
- d. Water Resistance, AATCC-127: No less than 5 hrs at 55 cm/21 inch
- e. Breaking Force, ASTM D5034: 55 lbf MD, and 44 lbf CD
- f. Pull Adhesion, ASTM D4541: min. 15 psi to primed glass faced gypsum sheathing, min. 12 psi to primed CMU
- g. Peel Adhesion, ASTM D903: min. 5 pli to primed glass faced gypsum sheathing, min. 4 pli to Perm-A-Barrier VPS, min. 2.5 pli to primed CMU
- h. UV Exposure Limit: Not more than 150 calendar days
- i. Water Penetration Resistance Around Nails, ASTM D1970 Modified: Pass

2.05 SELF ADHERING FLASHING MEMBRANE

A. Location: Provide around windows, doors, and other openings whether indicated on drawings or not, and as indicated on Drawings to receive "self-adhering flashing membrane".

B. Product:

1. "Perm-A-Barrier Wall Flashing"; Grace Construction Products.
2. "Air-Shield Thru Wall Flashing"; W.R. Meadows
3. "Blueskin TWF"; Henry Company

C. Description:

1. 1 mm (40 mil) of self-adhesive, cold applied tape consisting of 0.8 mm (32 mil) of rubberized asphalt integrally bonded to a 0.2 (8 mil) high density, cross laminated polyethylene film. Membrane shall be interleaved with disposable silicone-coated release paper until installed.

D. Water Vapor Transmission: ASTM E 96, Method B 29 ng (0.5 perms) maximum.

E. Water Absorption: ASTM D 570 Max. 0.1% by weight

F. Puncture Resistance: ASTM E 154 178 N (40 lbs.)

G. Tear Resistance:

1. Initiation ASTM D 1004 min. 58 N (13.0 lbs.) M.D.

2. Propagation ASTM D 1938 min. 40 N (9.0 lbs.) M.D.

H. Lap Adhesion at -4°C (25°F): ASTM D 1876 875 N/m (60 lbs. /ft.) of width.

I. Low Temperature Flexibility ASTM D 1970 Unaffected to -43°C (-45°F).

J. Tensile Strength: ASTM D 412, Die C Modified: Min. 5500 kPa (800 psi).

K. Elongation, Ultimate Failure of Rubberized Asphalt: ASTM D 412 Die C Min. 200%.

2.06 FLUID APPLIED DETAILING COMPOUND

A. Two component, elastomeric, cold applied, trowel grade material.

B. Physical Properties:

1. Solids Content: 100% per ASTM D1644

2. Elongation: 250% minimum per ASTM D412

3. Peel Strength: 880 N/m (5 lbs/in) minimum per ASTM D903

C. Product:

1. "Bituthene Liquid Membrane"; Grace Construction Products

2. "Fast Flash R Guard"; Prosoco

2. Equal as approved.

2.07 ACCESSORIES

A. Provide all accessories for a complete system application.

B. Provide stainless steel termination bars per Division 7 Section "Flashing and Sheet Metal" where sheet goods terminate on CMU or concrete.

C. Surface Conditioner (Primer):

1. Provide manufacturer's standard, equal to "Perm-A-Barrier WB Primer" manufactured by Grace Construction Products or as recommended by supplied manufacturer.

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

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

D. Termination Mastic:

- 1. Provide manufacturer's standard, equal to "Bituthene Mastic" manufactured by Grace Construction Products
- 2. Description: Rubberized asphalt-based mastic with 200 g/l max VOC Content.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that substrates and conditions are ready to accept the Work of this section. Notify architect in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates.
- B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the membranes. Fill voids, gaps and spalled areas in substrate to provide an even plane. Strike masonry joints full-flush.
- C. Curing compounds or release agents used in concrete construction must be resin based without oil, wax or pigments.

3.02 PREPARATION

- A. 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 grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the system.
- B. Exterior sheathing panels:
 - 1. Ensure that the boards are sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all board joints with 2-3 inch wide, manufacturer's recommended mesh-style (fiberglass) tape. Gaps greater than 1/4 inch, but less than 1/2 inch should be filled with mastic or caulk, allowing sufficient time to fully cure before application of the mesh-style tape and air barrier system.
 - a. Refer to Division 9 Section "Gypsum Board Assemblies" for additional information.

C. Concrete/Masonry Substrates:

1. Apply air and vapor barrier over concrete block and brick with smooth trowel cut mortar joints, struck full and flush. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.
2. New concrete should be cured for a minimum of 14 days and must be dry before air/vapor barrier membranes are applied.
3. Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C1193 and air barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D4258 before coating surfaces.
4. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate patching membrane.
5. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

D. Liquid applied only: Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

E. At changes in substrate plane, apply sealant or manufacturer's standard liquid membrane at sharp corners and edges to form a smooth transition from one plane to another.

F. Cover gaps greater than 1/2 inch and form a smooth transition from one substrate plane to another with min 22 gauge stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

G. Apply primer at rate recommended by manufacturer to all areas to receive selfadhering sheet air/vapor barrier membrane and or through-wall flashing membrane as indicated on drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day must be re-primed.

3.03 INSTALLATION

A. General: Install air & vapor barrier to dry surfaces at air and surface temperatures of -25°F and above in accordance with manufacturer's recommendations, at locations indicated on Drawings.

1. Do not allow rubberized asphalt surfaces to come in contact with polysulfide sealants, creosote, uncured coal tar products or EPDM.

B. Under Slab Vapor Barrier:

1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98.
2. Unroll Vapor Barrier/Retarder with the longest dimension parallel with the direction of the pour.
3. Lap Vapor Barrier/Retarder over footings and seal to foundation walls.
4. Overlap joints 6 inches and seal with manufacturer's approved tape.
5. Seal all penetrations per manufacturer's instructions.

6. No penetration of the Vapor Barrier/Retarder is allowed except for reinforcing steel and permanent utilities.
7. Repair damaged areas by cutting patches of Vapor Barrier/Retarder, overlapping damaged area 6 inches and taping all four sides with tape.

C. Vapor Permeable Air And Water Barrier:

1. Apply air barrier membrane to achieve a continuous air barrier according to air barrier manufacturer's written instructions.
2. Apply air barrier membrane within manufacturer's recommended application temperature ranges.
3. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.
 - a. Vapor-Permeable Membrane Air Barrier: 90-mil (2.4-mm) wet film thickness, 42~45-mil (1.2-mm) dry film thickness.
4. Do not cover air barrier until it has approved by Independent Testing Agency in writing. Refer to field tests required as specified herein.
5. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

D. Self-adhering wall membrane:

1. Precut pieces of air & vapor barrier into easily-handled lengths.
2. Remove silicone-coated release paper and position membrane carefully before placing length horizontally against the surface.
3. Begin installation at the base of the wall placing top edge of membrane immediately below any masonry reinforcement or ties protruding from substrate.
4. When properly positioned, place against surface by pressing firmly into place. Roll membrane with extension-handled countertop roller immediately after placement.
5. Overlap horizontally-adjacent pieces 2" and roll seams.
6. Subsequent sheets of membrane applied above shall be positioned immediately below masonry reinforcement or ties. Bottom edge shall be slit to fit around reinforcing wires or ties, and membrane shall overlap the membrane sheet below by 2". Roll firmly into place.
7. Seal around masonry reinforcing or ties and all penetrations with termination mastic.
8. Continue the membrane into all openings in the wall, such as doors, windows, etc., and terminate at points that will prevent visibility from interior.
9. Coordinate the installation of air & vapor barrier with roof installer to ensure continuity of membrane with rooftop air & vapor membrane.
10. At end of each working day seal top edge of air & vapor barrier to substrate with termination mastic.
11. Do not allow the rubberized asphalt surface of the air & vapor barrier membrane to come in contact with polysulfide sealants, creosote, uncured coal tar products or EPDM.
12. Do not expose air & vapor barrier membrane to sunlight for more than thirty days prior to enclosure.
13. Inspect installation prior to enclosing and repair punctures, damaged areas and inadequately lapped seams with a patch of the membrane sized to extend 6" in all directions from the perimeter of the affected area.

E. Self-adhering Flashing Membrane:

1. Install as thru-wall water stop in exterior walls above and around all openings, at all breaks in masonry back-up, at wall base, and all other locations indicated on Drawings.
2. Installation: All surfaces to receive the flashing shall be reasonably smooth, free from irregularities and deleterious materials. On all horizontal surfaces the flashing shall be laid either in a fresh bed of mortar above and below or a trowel coat of mastic. Vertical surfaces shall be pressed firmly in place by hand roller.
3. Over Concrete Foundations: The flashing shall be laid either in a fresh bed of mortar above and below or a trowel coat of mastic. At the intersection with column, the flashing should be brought a minimum of 10" up the column only and not on sides of column and secured with a metal termination bar and sealant.
4. Spandrels: Flashing shall start at the outside toe of the shelf angle, go up the face of the beam and through the wall turning up on the inside face of the wall not less than 2" and be secured with a metal termination bar and sealant.
5. Around openings: Flashing shall start ½" from outside face of wall, then through the wall turning up at the inside not less than 6" and extend 6" on each side of the opening. It shall be turned at the ends forming a 2" deep pan running entirely through the wall. Flashing shall be secured with a metal termination bar and sealant.
6. Coping: overlap flashing a minimum of 3 inches down the side of each wall.
7. Joints: The material shall be lapped at least 2" and rolled with a steel hand roller.

F. Termination Sealant:

1. Seal membrane terminations, seams, cuts, heads of mechanical fasteners, masonry tie fasteners, around penetrations, duct work, electrical and other apparatus extending through the primary water resistive air barrier membrane and around the perimeter edge of membrane terminations at window and door frames with specified termination sealant.

3.04 FIELD QUALITY CONTROL

A. Inspections: Air barrier materials and installation are to be inspected by an Independent Laboratory for compliance with manufacturer and project requirements. Inspections to include the following:

1. Continuity of air barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Continuous structural support of air barrier system has been provided.
3. Masonry and concrete surfaces are smooth, clean and free of cavities, protrusions, and mortar droppings.
4. Site conditions for application temperature and dryness of substrates have been maintained.
5. Maximum exposure time of materials to UV deterioration has not been exceeded.
6. Surfaces have been primed, if applicable.

7. Laps in strips and transition membrane have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fish-mouths.
8. Termination sealant has been applied on cut edges.
9. Strips and transition membrane have been firmly adhered to substrate.
10. Compatible materials have been used.
11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

- B. Remove and replace deficient air barrier components and retest as specified above at no cost to the Owner.

3.05 PROTECTION

- A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Repair holes, fishmouths, tears, and damage to membrane with a round patch of membrane extending past the damaged area 6 inches in all directions. If fasteners are removed leaving holes in the membrane, they must be patched.

- B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer.

1. Remove and replace air barrier material exposed for more than 30 days.

- C. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

- D. Remove masking materials after installation.

END OF SECTION

SECTION 07550

MODIFIED BITUMINOUS SHEET ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheathing over deck surface.
- B. Insulation, roofing system and base flashings.
- C. Roof accessories.
- D. Roof drains and/or gutters.
- E. Deck preparation, replacement and/or repair.
- F. Warranty Requirements.
- G. Submittal Requirements.
- H. Wind Uplift Requirements

1.02 MANUFACTURER'S APPROVAL OF PRODUCTS AND INSTALLATION (SOME FURNISHED IN OTHER SECTIONS)

- A. Contractor shall verify prior to bid and provide a letter (during the submittal process) from the roofing manufacturer (along with the roofing submittal indicating): manufacturer's approval of all flashings, membrane(s), trim, perimeter metal, "gravel guards", curbs, vents, anchors, anchor pattern and roof accessories to be provided according to the Contract Documents and existing conditions. Manufacturer's approval will confirm the submitted roof system's compliance with manufacturer's roof system recommendations, the required warranty and FM I-90 conformance for the given conditions. All manufacturer's approvals are the responsibility of the Contractor.

1.03 RELATED SECTIONS

- A. Wood Blocking and Curbing
- B. Sheet Metal Flashing and Trim
- C. Re-roofing Preparation – **Not in this Project**
- D. Roof Deck Insulation
- E. Gutters and Downspouts
- F. All applicable Roof Accessories
- G. Division 1 sections relating to product options, substitutions, submittals, shop drawings, etc.

1.04 REFERENCES

- A. ANSI/ASTM D312 – Asphalt Used in Roofing.
- B. ANSI/ASTM D2178 – Asphalt Impregnated Glass (Felt) Mat used in roofing and waterproofing.
- C. National Roofing Contractors Association (NCRA) – Roofing and Waterproofing Manual.
- D. Underwriters Laboratories (UL) – Fire Hazard Classifications.

- E. Factory Mutual (FM) – Wind Uplift Requirements.

1.05 SUBMITTALS

- A. Submit under all provisions of Division 1. It is the Contractor's responsibility to familiarize himself and comply with the requirements for: Shop Drawings, Product Data, Samples, Substitutions and Product Options and other similar sections and/or requirements.
- B. All submittals shall be specific to this project and indicate all actual conditions. Submittals shall not be general installation details for generic conditions that do not accurately reflect the conditions of this project.
- C. Shop Drawings: Indicate setting and anchorage plan for flat/tapered insulation if applicable. Indicate the anchorage requirements for insulation on the main field of the roof, roof edge conditions and corner conditions for the required uplift rating and the given deck type. Verify fastener type and penetration required for the conditions of this project.
- D. Manufacturer's Installation Instructions: Indicate special precautions required for the membrane(s), all flashings, insulation and anchorage required to meet the specified warranty, FM I-90 and all other requirements.
- E. Manufacturer's Certificate: The manufacturer of the roof system is to certify that the system (the submitted assembly for this particular project) meets or exceed specified requirements of design and warranty as required for this project by the manufacturer. Also, certify that the "system" (project specific submitted assembly) meets the uplift requirements of Factory Mutual Engineering Corporation (FM) I-90 classification. All components of roof systems must be approved by manufacturer, as a system, in writing. The Contractor is responsible for making all changes necessary to meet these requirements.
- F. Submit manufacturers' literature for all system components for approval. All components are to be submitted and approved as a "system" that meets uplift and warranty requirements.
- G. Provide a copy of the required warranty, for this system, as approved by the manufacturer.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in the design and manufacturing the products specified in this section with ten year documented experience. This company must be able to provide the required warranty and meet all other design requirements (FM uplift requirements, UL fire resistance, ASTM testing requirements, NRCA recommendations, etc.)
- B. Applicator: Company specializing in performing the work of this section with five years documented experience as an approved, licensed, or authorized applicator by the roof system manufacturer for the required level of warranty, installation and all other stated requirements.
- C. Work of this section to conform to NCRA Roofing and Waterproofing Manual, Contract Documents, Drawings and manufacturer's instructions.

1.07 REGULATORY REQUIREMENTS

- A. Underwriters Laboratories, Inc. (UL): Conform to Class A fire hazard classification and U.L. Assembly P225.

- B. Factory Mutual Engineering Corporation (FM): Roof assembly classification, of Class 1 construction, wind uplift requirement of I-90 and in accordance with FM construction bulletin #1-28.

1.08 PRE-INSTALLATION CONFERENCE

- A. Convene one week prior to commencing work of this Section.
- B. Review installation procedures (as dictated by construction documents and approved shop drawings) and coordination required with related or existing construction.
- C. Roofing contractor must accept deck substrate and drainage conditions as acceptable prior to beginning roof work. It is the contractor's responsibility to make all necessary corrections to the deck before beginning work as recommended for the required warranty and to meet FM I-90 uplift requirements.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of the Quality Control, Material and Equipment, Product Handling and similar Specification Sections.
- B. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.
- C. Store products in weather protected environment, clear of ground and moisture.
- D. Stand roll materials on end.
- H. No loose items/materials shall be left unsecured on the roof at the end of the work day.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing membrane during inclement weather ambient temperatures below 32 degrees F or above 100 degrees F (follow manufacturer's recommendations for additional or more stringent recommendations).
- B. Do not apply roofing membrane to damp or frozen deck surface.
- C. Do not expose materials that vulnerable to weather, water or sun damage in quantities greater than can be weatherproofed during same day.

1.11 COORDINATION

- A. Coordinate the work with installing associated metal flashings and all other roof accessories as the work of this Section proceeds.
- B. Coordinate with other trades for phases of work to avoid damage to roof surface and insulation. Also, coordinate with other trades to allow for the proper installation of all work.
- C. Coordinate with mechanical and electrical requirements for roof penetrations and acceptability of flashings, heights of curbs, acceptability of penetrations, etc. It is the Contractor's responsibility to raise all curbs (and associated equipment) as recommended by roof manufacturer to achieve the recommended flashing condition. The Contractor is also responsible for the service connections to all electrical/mechanical conditions located on the roof.

1.12 WARRANTY

- A. Provide two-year contractors' unlimited warranty under provisions of all appropriate Division 1 Specification Sections to be supplied by roofing contractor to cover entire roof assembly including flashings and other accessories (labor and materials) for watertightness.
- B. Cover damage to building resulting from failure to prevent penetration of water through any component of the roof system. Warranty must cover labor (workmanship) and materials. The completed roof shall be inspected by the manufacturer prior to issuing this warranty.
- C. Project Warranty (Manufacturer): Provide written warranty, signed by Manufacturer of primary roofing materials and his authorized installer, agreeing to replace/repair defective materials, installation and workmanship. Warranty must be a no dollar limit, watertightness warranty on entire roof system (all components, accessories, etc.). Warranty must meet all additional requirements set forth in all appropriate Division 1 Specification Sections (Warranties and Bonds, Contract Closeout, etc.)

Warranty period is 20 years after date of final acceptance of project, no dollar limit.

Manufacturer shall review project prior to bidding. Any condition which may negatively affect the warranty must be identified by the contractor prior to bidding so that nonconforming condition can be corrected or otherwise accounted for. No exceptions to the required warranty will be allowed. Otherwise, the Contractor will be responsible for all corrections.

PART 2 PRODUCTS

2.01 MANUFACTURERS OF MATERIALS AS PART OF A TOTAL ROOF SYSTEM

- A. Acceptable manufacturers of roof systems that must meet the requirements as defined in these Contract Documents (specifications and drawings):

THIS APPLICATION WILL BE FOR A MANUFACTURER'S TWO PLY SYSTEM CONSISTING OF BASE SHEET(S) AND CAP SHEET AS DEFINED HEREIN AND MEETING THE WARRANTY AND PERFORMANCE REQUIREMENTS AS DEFINED.

HOT MOPPED – N/A for Safe Room Project

1. **Soprema**, www.soprema.us - Elastophene sanded (base), Sopralene 180 FR GR (cap), Sopralast 50 TV ALU Sanded flashing.
2. **Firestone**, www.firestonebpc.com – SBS Base (base), SBS FR (cap), Metal Flash AL flashing.
3. **Johns Manville**, www.jm.com – DynaBase (base), DynaLastic 180 FR (cap), DynaClad flashing

TORCH APPLIED

- 1 **Soprema**, www.soprema.us – Elastophene Flam (base), Sopralene Flam 180 FR GR (cap), Sopralast 50 TV Aluminum flashing
- 2 **Firestone**, www.firestonebpc.com – SBS Glass Torch Base, SBS FR Torch (cap), Metal Flash AL flashing
- 3 **Johns Manville**, www.jm.com – DynaWeld (base), DynaWeld Cap 180 FR, DynaClad flashing

These membranes were chosen as equals based on ASTM designation, thickness and weight. If the manufacturer requires a superior/premium membrane to meet any of the requirements listed in this specification, then it is the Contractor's responsibility to provide this (and any other accessories/materials) in order to meet these requirements.

- B. It is the Contractor's responsibility to supply and install any and all additional components of the manufacturer's roof system for this particular application (as required for the warranty and performance requirements) whether specifically defined or not. This includes items such as: slip sheets, vapor barriers, ice and water shield in certain locations, rosin paper, specific flashing membranes, sheathing, special anchors/adhesives, etc. It is the Contractor's responsibility to verify such items (along with the primary roofing components) and allow for these materials and installation in their bid.

2.02 MEMBRANE MATERIALS

- A. Membrane: Asphalt and polymer modifiers of styrene-butadiene-styrene (SBS) type reinforced with non-woven fiber glass and/or polyester, as specified; smooth surfaced and mineral granule; hot mop applied unless otherwise noted. Cap sheet must be fire resistant "FR" with a minimum Class A rating.
- B. Membrane (when noted): Aluminum foil clad, high performance, modified bitumen cap sheet. This sheet is to consist of a fiberglass scrim/fiberglass mat composite impregnated and coated with a high quality styrene-butadiene-styrene (SBS) modified bitumen and surfaced with a protective aluminum coating. Product must be equal to Soprema Sopralast 50 TV Alu.
- C. Fluid/Liquid Applied Flashing Membrane- One component asphalt extended polyurethane resin used in conjunction with 100% polyester reinforcement. System requires base layer resin, embedment of polyester reinforcement into wet base layer resin, top layer resin completely covering and encapsulating reinforcement. After drying finish layer of resin is applied and granules broadcast into wet finish layer. (coordinate with Architect to verify if granules are required for this particular application) Fluid/Liquid applied Flashing System must be equal to Soprema's Alsan Flashing System.

Fluid/Liquid Applied Flashing System may be used when specifically called for by the Architect or when approved by the Architect for particular applications. In some cases Fluid Applied flashings may be necessary due to existing conditions on a roof that physically do not work well for traditional flashing membranes or where the vertical height of flashing is restricted by existing conditions. Consult with the Architect's office for approval for use in any conditions in question. The liquid flashing system and application thereof must be installed as recommended by the manufacturer as necessary for the required warranty of the overall roof system.

- D. Finish System (equal to Alsan Finish by Soprema): two component, chemically cured aliphatic urethane. Used for repair, touch-up for membranes and/or as a finish coat for Alsan Flashing System. All handling, mixing and preparation as recommended by the manufacturer for the given conditions and substrate. Use quality equipment for application as recommended. Mask off the edges of the area which the finish is to be applied to create a sharp, neat edge and to protect surfaces not intended to receive the finish. Follow manufactures recommendations for flashing height.

2.03 BITUMINOUS MATERIALS

- A. Asphalt bitumen: ANSI/ASTM D312, Type 4. Asphalt shall be low odor (or low fume) type with an additive that aids in eliminating the odor rather than just masking it. This product shall not alter any other physical characteristics of the asphalt and shall not reduce the flash point.
- B. Asphalt Primer: ANSI/ASTM D41.

2.04 INSULATION

- A. Roof Insulation System (Typical Roof): Rigid insulation with manufacturers' standard facing laminated to both sides. R-values (or thicknesses) as designated at mean temperature indicated, after conditioning. All attachment, anchorage and accessories required to meet FM 1-90 wind uplift requirements.

- B. Roof System: New construction –
 - Base Layer: Primer for Concrete Deck.
 - 2nd layer: 3" polyisocyanurate foam with facer sheets. R17.4 Min
 - 3rd Layer: ¼" Tapered Insulation Min 1.5"
 - 4th Layer: ½" Perlite recovery board.
 - Surface Burning Characteristics: Max. flame spread of 25.
 - Thermal resistivity: 16.7 at 75 degrees F for 2" thick insulation

- C. Roof System: **See drawings and details for complete requirements.**

2.05 BASE FLASHINGS

- A. Base Flashing(s): Flexible sheet flashings, SBS modified bitumen, type as compatible with membrane sheeting and for this application's specific conditions. Number of layers as required by system (manufacturer's requirement for wind uplift and warranty).

2.06 SURFACING

- A. Mineral Surfacing (unless noted otherwise): Fine mineral granules, shop applied, color – **WHITE**.
- B. Dress all bleed-outs and seams with matching mineral surfacing.

2.07 CANTS

- A. Cant: Asphalt impregnated wood fiberboard, pre-formed to 45 degree angle. Consult manufacturer's recommendations for additional requirements or materials for cant strips as necessary for warranty and FM wind uplift requirements.

2.08 ACCESSORIES

- A. Mechanical Fasteners: Appropriate for purpose intended and approved by Factory Mutual and system manufacturer; length required for thickness of material as necessary for FM I-90. It is the Contractor's responsibility to verify and coordinate all anchorage with exposed interior decks, finishes, electrical, mechanical equipment or ducts, etc. to ensure that no items are penetrated or otherwise damaged.

- B. Prefabricated Control of Expansion Joint Flashing: Sheet butyl reinforced with closed cell urethane foam backing seamed into metal flashing flanges, including sheet butyl counter-flashing each side. Provide pre-formed terminations and accessories as required to meet warranty requirements. See drawings and details for any additional specific expansion joint requirements.

- C. Masonry wall flashing of Fibrated Aluminum Roof Coating as indicated on the drawings. Properly clean surface of all loose debris and mastics that would prevent proper adhesion. All preparation of existing surfaces are to be in compliance with the manufacturer's recommendations. Apply in areas indicated in construction documents and in thicknesses recommended by manufacturer with proper mesh reinforcement. Prepare all surfaces and

apply a protective coating of Fibrated Aluminum Roof Coating as recommended by the manufacturer. Equal to Fibrated Aluminum Roof Coating by Johns Manville.

- D. Wall Flashing and other vertical joints: Manufacturer recommended foil faced flashing membrane as required for warranty (unless a particular material is specifically noted). See details for application.
- E. Cover Boards are specified per NRCA and manufacturer's recommendations. When cover boards are mechanically attached, hot asphalt or insulation adhesive shall be used to attach subsequent layers of insulation and cover boards.
1. For Hot Mopped Applications: Soprema – ¼" Sopraboard; Firestone – ½" Dens Deck Prime adhered with insulation adhesive; Johns Manville – ½" Dens Deck Prime adhered with insulation adhesive. **Not for this project.**
 2. For Torch Applications: Soprema – 1/2" Dens Deck Prime applied with insulation adhesive; Firestone – 1/2" Dens Deck Prime adhered with insulation adhesive; Johns Manville – 1/2" Dens Deck Prime adhered with insulation adhesive.
 3. See drawings, notes and details for additional, specific information that may supersede these requirements.
 4. All installation and anchorage to be as recommended by the manufacturer for the given deck type and other conditions. All anchorage must also comply to wind uplift requirements.

In some cases these materials may also be required as a cover board/sheathing on vertical surfaces for the proper attachment of the modified bitumen roofing/flashing. In these cases a mechanical attachment may be required (depending on the surface material). All attachment is to be as recommended by NRCA and the manufacturer for the given condition and must comply with the required uplift requirements. See the details and drawing notes for additional information.

- F. Adhesive for insulation and/or cover board in cold applied or torch applied applications: Equal to Insta Stik commercial roofing adhesive. Adhesive to be a single component polyurethane adhesive. Must be compatible with insulation and/or cover boards. All application as recommended by the manufacturer for the given deck and material conditions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work and that the deck is supported and secured. Correct all deficiencies before proceeding with work.
- B. When re-roofing over existing construction, it is the Contractor's responsibility to inspect and become thoroughly familiar with existing conditions. It is the Contractor's responsibility to verify that the existing roof deck and all associated conditions meet the roofing manufacturer's recommendations. Correct any non-complying conditions to the satisfaction of the roof system manufacturer for the required warranty and other performance requirements.
- C. Verify that the installation of all materials (membrane, flashings, or any other accessories/components) will be installed in such a manner that any existing flashing conditions, masonry weeps, drains, etc. will not be covered or compromised. For example; do not cover existing masonry weeps or restrict (make smaller) roof drains or scuppers). It is the Contractor's responsibility to alter any details so that they will not

negatively affect any flashing, moisture or drainage condition. All such details must be coordinated with the roof manufacturer so that the required warranty will not be affected.

- D. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains, valleys, or eaves and correct all conditions as recommended by the roof system manufacturer and required by the contract documents.
- E. Verify deck surfaces are dry and free of snow or ice. Verify flutes of metal deck are clean and dry. Confirm dry deck by moisture meter with 12 percent moisture maximum.
- F. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and cant strips are in place. Penetrations, which are not high enough to maintain an 8" projection from finished roof are to be extended. Correct all nonconforming conditions.
- G. It is the Contractor's responsibility to verify that the roofing bitumen kettle arrives on the job site in a clean, operable and complete condition. No old bitumen materials are to be brought to the job site in the kettle. All temperature controls and accessories shall be operable and properly calibrated. The kettle shall have an operable thermometer to ensure that no asphalt is to be heated within 10 degrees F of its flash point. Kettles are not allowed on the roof. Operable and inspected fire extinguishers must be readily available at all times at the kettle location.
- H. Safety and protection of property is the Contractor's responsibility. All workers shall be required to perform all work in compliance with industry standards to protect themselves and all construction. All workers are to be provided and wear proper clothing and protection. No flammable liquids are to be stored on the roof.

3.02 PREPARATION-DECK

- A. Core information (when provided) is available for the convenience of the Contractor and to aid the Professional in the design of the new roof. Core information (and existing roof/insulation thicknesses) are believed to be accurate; but, may not be correct in all cases. Additionally, any original drawing information (when made available to the Professional) is also shown on the drawings/details. However, the Contractor is responsible for verifying any and all conditions that will affect his work or pricing. The roof will be made available for the Contractor to core and otherwise inspect as he feels is necessary. If the Contractor chooses to not visit the site and/or verify any conditions, this does not relieve the Contractor of his responsibility to properly prepare the roof (and remove/dispose of materials) as necessary and install the new roofing system as described.
- B. On surfaces where a non-typical or non-standard roofing material or coating exists, this material/coating must be completely removed prior to any installation that requires adhesion to this surface. If any remnants remain, the contractor is solely responsible for obtaining written permission from the roofing material manufacturer that will be supplying the warranty. This written permission must state that this existing condition is acceptable to the manufacturer and will not alter the required warranty. The manufacturer must also verify in writing that the remnants of the material are completely compatible with the new materials that are being installed.
- C. On nailable decks loose lay base sheet and mechanically fasten to deck. In some re-roof conditions this base sheet may have to be installed over 9 mil min. rosin paper to prevent bitumen materials from bleeding through the roof deck, see drawings. Embed into flood coat mopping of hot bitumen the first (and second, if applicable) layer of insulation in accordance with insulation manufacturer's instructions. If applicable, lay second layer of insulation with joints staggered from first layer.

- D. Lay insulation boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking, adjacent insulation boards and around any penetrations through roof. No voids shall exist in insulation that will cause "bridging" or voids in the roof membrane.
- E. On metal decks, place insulation perpendicular to deck flutes with edges over flute surface for bearing support. On existing decks (re-roof projects), place insulation perpendicular to decking or per manufacturer's recommendations for existing substrate conditions. Place fasteners as required by manufacturer of insulation, roof, and as recommended by FM for an I-90 rating.
- F. Apply no more insulation than can be sealed with membrane in same day.

3.03 MEMBRANE APPLICATION

- A. Lay one ply base sheet at a time, coated side down. Lap sides and ends in accordance with membrane manufacturer's instructions. Apply all following membranes in a similar manner, following all manufactures recommendations for the system.
- B. Equivalent Temperature of Bitumen at Point of Application: Within 25 degrees F of bitumen rating labeled on bitumen container.
- C. Apply membrane; seal seams and ends permanently waterproof. Apply the asphalt at the recommended rate to ensure that all membranes are properly adhered
- D. Apply membrane smooth, free from air pockets, wrinkles, tears, or fishmouths.
- E. Extend membrane up cant strips and minimum of 6 inches onto vertical surfaces or per manufacturer's recommendations, if greater. Never extend roof materials up a masonry wall in such a manner that will cover masonry weeps or allow weeps to drain under the roof surface.
- F. Install waterproof cut-off to membrane at end of day's operation. Remove cut-off before resuming roofing.
- G. Mop and seal membrane around roof penetrations.
- H. No loose items or materials are to be left unsecured on the roof at the end of the work day.
- I. Take all precautions to prevent the ignition of combustible materials during all roofing activities (in particular, torching activities). Install materials using the techniques recommended by the NRCA Roofing Torch Applicator Program and the Asphalt Roofing Manufacturers Association. Application must comply with NFPA 241, OSHA 29 CFR: 1910, 1910.12, 1926.16 & 1926. Fully operational and inspected fire extinguishers (type and size as recommended) must be readily available at the point of torching activities.

ADDITIONAL REQUIREMENTS FOR TORCH APPLICATION

- J. Only NRCA/MRCA CERTA certified roofing applicators are allowed to operate any torching equipment. It is the Contractor's responsibility to verify that all such applicators maintain and are currently carrying a valid Certified Roofing Torch Applicator (CERTA) card. All personnel on the roof during torch applications must be properly trained to use a fire extinguisher. Provide a fire watch for a minimum amount of time after torch operations as necessary to ensure that no potential ignition conditions exist at the end of each shift and during breaks. Coordinate access to the underside of the roof as necessary to inspect for ignition sources/conditions. Fire safety is the Contractor's responsibility. Do

not torch in areas of poor and/or no visibility where voids and or penetrations may exist which could allow a torch flame to ignite combustible materials hidden from view or within the underside of the roof deck or building interior. Use cold applied materials in these areas whenever necessary and per manufacturer's printed instructions.

- K. Torches and other open flame equipment must be specifically designated for use in the application of modified bitumen materials and approved by the modified bitumen sheet manufacture for use with their product. Open flame equipment must not be ignited (burning) when left unattended. Provide and maintain an operable fire extinguisher next to each and every piece of open flame equipment on the roof. These listed fire safety requirements are intended to be the minimum expected for this project. The Contractor is responsible for any and all additional requirements necessary for fire safety for the specific conditions that exist in this project. The Contractor is responsible for acquiring any permits, approvals and/or inspections that are required by any local authority having jurisdiction. Fire safety is the Contractor's responsibility.
- L. Ensure substrate membrane surfaces are warmed, either naturally or by torch during the installation. Apply heat evenly to the underside of the roll membrane being installed and exposed side lap area of previously installed sheet. Provide for slight, uniform flow of bitumen in front of roll and full width of roll as the material is being rolled out or set into place. Apply uniform and positive pressure to ensure membrane is fully adhered and all laps are sealed. Prior to forming lap over granulated surfaces, embed granules of the receiving sheet by heating and troweling-in the granules to form a uniform black compound surface. Roll all lap areas immediately after forming lap. Avoid overheating the membrane or burning through to the membrane reinforcement. Inspect and insure that all lap areas are fully sealed.

3.04 FLASHINGS AND ACCESSORIES

All edge metals must be tested and certified in compliance with ANSI/SPRI ES-1 and IBC 2006. Contractor shall provide certification and testing of all edge metal conditions to the Architect as part of the submittals. All "special" shapes (radiused, decorative, etc.) shall be pre fabricated.

- A. Apply surfaced membrane base flashings to seal membrane to all vertical elements. Perform no work in such a manner that will cover masonry weeps and allow weeps to drain. Perform all work in such a manner that will allow mechanical, electrical, ventilation, moisture barriers, etc. to function properly and meet the manufacturer's recommendation for minimum flashing height. Coordinate all work with other trades and existing conditions. Any variation must be approved by Architect and manufacturer prior to application.
- B. Secure at 4 inches min. and additionally as required for required wind uplift rating.
- C. Install all roof expansion joints in accordance with manufacturer's instructions and as detailed.
- D. Coordinate installation of related flashings with other roof system components, existing construction, other trades, etc. Properly tie-in to other roof systems and types.
- E. Seal flashings and flanges of items penetrating membrane.

3.05 CLEANING

- A. Remove bituminous markings from finished surfaces. Clean all splatter, spills, etc. from all surfaces and adjacent materials/construction.
- B. In areas where finished surfaces are soiled by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.06 PROTECTION

- A. Protect building surfaces against damage from roofing work.
- B. Where traffic must continue over finished roof membrane, protect surfaces.
- C. Install traffic pads to and around all roof-mounted equipment from access point unless shown otherwise.

END OF SECTION 07550

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cap, roof, sill flashings, counter-flashing, and related accessories.
- B. Fascias, gravel guards, drip-edges, coping, scuppers, perimeter metal, edging, parapet caps, pre-finished metal coverings (cladding), etc.
- C. Counterflashings over base flashings, curbs, vent stacks, etc.
- D. Cladding or wrapping around wood or metal framing components.

1.02 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. SMACNA - Architectural Sheet Metal Manual.
 - 2. National Roofing Contractors Association (NRCA) – Roofing and Waterproofing Manual.

1.03 STORAGE AND HANDLING

- A. Stack preformed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Aluminum Sheet: ASTM B209, 3003 alloy, H14 temper, .040 inch thick, **Kynar color to match roof color as approved by Architect's office and the Owner.**
- B. Precoated (kynar) galvanized steel roofing flashings and accessories that are part of the roof system or approved by the manufacturer for use with the roof system.
- C. Copper Sheet: as indicated on drawings, in accordance with SMACNA, compatible with manufacturer's roof system for required warranty.
- D. All sheeting shall be compatible with the system that it is being in (roofing materials, aluminum storefront system, etc.) and shall be approved by system manufacturer.

2.02 ACCESSORIES

- A. Fasteners (exposed): same material and finish as flashing metal and as recommended by manufacturer.
- B. Underlayment: Min. of 30# roofing felt and red rosin paper (where necessary or required) or more stringent requirements per manufacturer's warranty.
- C. Protective Backing Paint: Zinc chromate alkyd or as required by manufacturer.
- D. Sealant: Polyurethane type, specified in Section 07900 approved by system mfg.

- E. Reglets: Surface mounted of same material as adjacent flashing or metal; face and ends properly hemmed and sealed.

2.03 FABRICATION

- A. Form components true to shape, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.
- B. Fabricate cleats and starter strips of same material as sheet, minimum 6 inch wide, interlockable with sheet.
- C. Hem exposed edges and seams on underside 1/2 inch; miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- D. Form material with cover plate seam.
- E. Fabricate corners in one piece, 6 inch long legs; seam for rigidity, seal with sealant.
- F. Form sheet metal pans with upstand, and flanges. Fill pans watertight with plastic cement.
- G. All components, configurations, and dimensions are to comply with manufacturer's recommendations.

2.04 FINISH

- A. Back-paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil .

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify existing and proposed roof openings, curbs, pipes, sleeves, ducts, or vents through substrate are solidly set, cant strips and reglets in place, and nailing strips located. Make all required adjustments, alterations and installations to accommodate all existing and proposed conditions as required by the system being installed.

3.02 INSTALLATION

- A. Conform to drawing details included in the SMACNA manual.
- B. Install starter and edge strips, and cleats.
- C. Install surface mounted reglets. Seal top of reglets with sealant. Insert flashings to form tight fit. Seal flashings into reglets with approved sealant.
- D. Secure flashings in place using concealed fasteners seal all edges.
- E. Apply plastic cement compound between metal work and felt flashings.
- F. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- G. Seal metal joints watertight.

END OF SECTION 07620

SECTION 07631

GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pre-coated Aluminum Gutters and downspouts.
- B. Copper Collector Heads, downspouts and associated straps and flashing.
- C. Pre-cast concrete splash pads.

1.02 RELATED SECTIONS

- A. See related roof specification sections for coordination of all installations.

1.03 REFERENCES

- A. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- B. SMACNA - Architectural Sheet Metal Manual.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate locations of conductor heads, downspouts, configurations, jointing methods, fastening methods, locations, and installation details.
- B. Product Data: Provide data on prefabricated components.
- C. Samples: Submit one sample, 6 inches long illustrating component design, finish, color, and configuration.

1.05 QUALITY ASSURANCE

- A. Conform to SMACNA Manual for sizing components for rainfall intensity determined by a storm occurrence of 1 in 10 years. See details in appendix for sizing and configuration.

1.06 REGULATORY REQUIREMENTS

- A. Conform to standard building code for size and method of rain water discharge.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site as required by contract documents.
- B. Stack preformed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.07 COORDINATION

- A. Coordinate work with all related trades.
- B. See drawings and details

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. As Approved

2.02 MATERIALS

- A. 0.040 gauge aluminum, prefinished as shown on detail in drawings. Color to be selected by Architect.
- B. 20 oz. copper unless otherwise noted. **–NOT USED FOR THIS PROJECT**

2.03 COMPONENTS

- A. SMACNA **Style as detailed or selected by Architect, in some cases match existing unless otherwise notes, pre-finished** metal or per drawings.
- B. Downspouts: Round or rectangular sections (see drawings) section (to match existing), or per drawings.
- C. Collector head: **prefinished, see drawings.**
- D. Splashblocks: Pre formed concrete, if downspouts are not connected to drainage system.

2.04 ACCESSORIES

- A. Anchoring devices: To be same metal and finish as downspouts and shall adequately secure downspouts to walls to match existing if applicable.
- B. Downspout Support: To be strapped in accordance with manufacturer's recommendations with matching metal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install gutters and downspouts and accessories in accordance with manufacturer's instructions.
- B. Seal metal joints watertight.

END OF SECTION 07631

SECTION 07700
ROOF SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide the following:
 - 1. Provide new lead pipe flashing at vent stacks
 - 2. Provide new flashing and accessories at heater (hot) stacks.
 - 3. Provide new premanufactured curbs as necessary or noted.
 - 4. Provide new expansion joints, expansion joint covers and accessories at all building expansion joints.
- B. Related Sections: The following Sections (if applicable) contain requirements that relate to this Section:
 - 1. Section for: Applicable roof deck, Unit Masonry, Metal Fabrications, Sheet Metal Flashing and Trim, Wood Blocking and Curbing, Exterior Insulation & Finish System, Specific Roofing Type Specifications, Flashing and Sheet Metal, Joint Sealers, Aluminum Entrances & Storefronts

1.02 SUBMITTALS

- A. Submit the following in accordance with Conditions of Contract and Division 1 Specification Section 01300.
- B. Product data including manufacturer's technical data, installation instructions and general recommendations for each product specified. Include data substantiating that materials and performance comply with requirements.
- C. Shop drawings indicating layout, joining, profiles, accessories, anchorages, flashing connections, and relationship to supporting structure and to adjoining roof and wall construction.
- D. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected. Provide samples of not less than the following sizes:
 - 1. Length: 8 inches.

1.03 QUALITY ASSURANCE

- A. Insurance Requirements: Provide fascia systems complying with Factory Mutual requirements matching the specified roofing system or as recommended for the zone of the work being performed.
- B. Industry Standards: Provide products which comply with applicable recommendations of SMACNA Architectural Sheet Metal Manual, except as otherwise indicated.

1.04 JOB CONDITIONS

- A. Coordinating work of this Section with adjoining work for proper sequencing of each installation to ensure best possible weather resistance and protection of materials and finishes against damage.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials shall be at a minimum as recommended by the roofing manufacturer for its specified use. Otherwise, follow the recommendations as outlined below.
 - 1. Aluminum Sheet: Alloy and temper recommended by manufacturer for use intended and as required for proper application of finish indicated but with not less than 26 gauge as specified in ASTM B 209 for 5005-H15.
 - 2. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, hot dipped galvanized in accordance with ASTM A 525, with G90 coating designation, mill phosphatized.

2.02 MISCELLANEOUS ITEMS

- A. Exposed Fasteners: Stainless steel, nonmagnetic, of type and size recommended manufacturer for product and application indicated. Match finish of exposed heads with material being fastened.
- B. Concealed Fasteners: Same metal as item fastened or other noncorrosive metal as recommended by manufacturer. Expansion anchors are required at all masonry connections.
- C. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- D. Foam Rubber Seal: Manufacturer's standard foam.
- E. Ice and Water Shield: Equal to Grace Ice and Water Shield. Cold applied, self adhering membrane composed of a high strength polyethylene film coated on one side with a layer of butyl rubber. Install in areas noted on drawings or as recommended by the roof system manufacturer.

2.03 ASSEMBLIES

- A. Curb assemblies of all welded 14 gage galvanized steel construction. 1-1/2 inch fiberglass sound attenuating/ thermal insulation. Custom sized to match roof pitch indicated. Minimum curb height: 8" on shortest vertical. 2" x 2" treated wood nailer. 2" self flashing base for single pitch. Suitable for specified roof application for the project conditions.
 - 1. Subject to compliance with requirements, provide curbing from one of the following:
 - a. L M Curbs; Longview TX
 - b. FastCurbs; Claremore OK
 - c. Fields Company LLC; Tacoma WA

- B. Parapet Wall Coping Interlocking Multi-Part System: Manufacturer's system consisting of aluminum sheet to profile and of thickness indicated, minimum 24 gage (nominal 0.0276-inch-thick, unless otherwise noted), zinc-coated steel anchor plate or cleat located at coping joint, and formed aluminum gutter chair or gutter/splice plate or compression pad/gutter; with prefabricated inside and outside corners, miters welded before finishing; without exposed fasteners.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Type AP Standard Coping; Architectural Products Co.
 - b. Permasnap Coping; W.P. Hickman Co.
 - c. Pac-Loc Coping; Petersen Aluminum Corp.
- C. Lead Pipe Flashing at vent stacks: Install new 16 oz lead sized for penetration at all vent stacks.
- D. Roof Edge Accessories: perimeter edge metal, coping, gravel stops, reglets and trim. Manufacturer's system consisting of kynar prefinished sheet aluminum to profile and of thickness indicated, (minimum .040, unless otherwise noted).
- E. Continuous Soffit Vent. Strip type intake vent for ventilation. Must be equal to Air Vent Inc. Continuous Soffit Vent, aluminum. Product must be for new/retrofit as necessary for specific project. Color as chosen by owner.
- F. Roof Drain components: Where roof drain components require replacement, the new components are to match Jay R Smith series 1300 roof drain components. Flashing clamps (rings) are to be cast iron material that holds the roof membrane without puncturing. Flashing clamp is to also serve as a gravel stop. Dome is to be cast iron, low profile that protects the sump and intercepts debris. All replacement components must be compatible to the existing drain bowl (when it is not being replaced). Otherwise, other cast iron options will be considered.
- G. Retro Fit Roof Drains (when specifically allowed): If allowed, these drains must be matched to the existing drain line to maximize the ability of the new roof drain to properly drain the roof. Must be one piece aluminum/stainless steel construction. Must have an integral seal that provides a watertight connection to the existing PVC or cast iron pipes to prevent water from "backing up". Drain stem length must accommodate all existing conditions. Contractor is responsible for all work necessary to the existing conditions to allow the new drain to be properly installed.
- H. Some cases may also be require a fire rated gypsum board or a DensDeck board or roofing attachment or sheathing on vertical surfaces for the proper attachment of the specified roofing/flashing. In these cases a mechanical attachment may be required (depending on the material to which the board is to be attached). All attachment is to be as recommended by NRCA and the manufacturer for the given condition and must comply with the required uplift requirements. These materials are to be protected from the weather until they are covered with roofing material. Any damaged boards must be removed and replaced. See the details and drawing notes for additional information.
 ½" Dens Deck Prime or equal to be used for the attachment of roofing.
 ½" Type X gypsum board to be used as a fire barrier as indicated.
- I. Assemblies shown and/or described on the drawings. See drawings, details and notes for specific item such as ladders, hatches, roof drains, roof drain accessories, downspout nozzles, downspout boots, pipe supports, etc.

2.04 FABRICATION

- A. Provide items designed and fabricated to fit applications indicated on drawings and to perform optimally with respect to weather resistance, water tightness, durability, strength, and uniform appearance.
- B. Expansion Provisions: Fabricate running lengths to allow controlled expansion not only for movement of metal components in relationship to one another but also to adjoining dissimilar materials, including flashing and roofing membrane materials, in a manner sufficient to prevent water leakage, deformation or damage.

2.05 ALUMINUM FINISHES

- A. Comply with ASP 501 "Finishes for Aluminum" and AMP 505 "Applied Coatings" for finish designations and application recommendations, except as otherwise indicated. For components which are assembled or welded in factory, apply finish after fabrication is completed.
- B. Color of aluminum finish to match approved color sample. Color to be determined by Architect.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's written installation instructions and recommendations. Coordinate with installation of roof deck and other substrates to receive work of this Section, with vapor retarders, roof insulation, roofing membrane, flashing, and wall construction; as required to ensure that each element of the work performs properly, and that combined elements are waterproof and weathertight. Saw cut masonry for installation of wall flashing and install flashing in step configuration. Anchor products included in the Section securely to structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.
- B. Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation as recommended by aluminum producer.

3.02 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces in accordance with manufacturer's instructions. Touch-up damaged metal coatings.
- B. Protection: Provide protective measures as required to ensure that work of this Section will be without damage or deterioration at time of substantial completion.

END OF SECTION 07700

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and joint backing.

1.02 SYSTEM DESCRIPTION

- A. System performance to achieve moisture and air tight joint seals.

1.03 SUBMITTALS

- A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and colors available and compatibility with system to be sealed (window, metal, door, etc.). Provide manufacturer's descriptive data to include storage requirements, shelf life, curing time, instructions for mixing and application, and primer data (if required). Provide a copy of the Material Safety Data Sheet for each solvent, primer or sealant material.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SWRI (Sealant, Waterproofing and Restoration Institute) requirements for materials and installation.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.01 SEALANTS

- A. Butyl Sealant (Type A): ASTM C920, single component, solvent release, non-skinning, non-sagging, color as selected.
 - 1. Elongation Capability- 7 to 10 percent.
 - 2. Service Temperature Range- 13 to 180 degrees F.
 - 3. Shore A Hardness Range- 10 to 30.
- B. Polyurethane Sealant (Type B and Type B-P): ASTM C920, single component, chemical curing, non-staining, non-bleeding, non-sagging, (pourable or self-leveling; Type B-P only); color as selected.
 - 1. Elongation Capability- 25 percent.
 - 2. Service Temperature Range- 40 to 180 degrees F.
 - 3. Shore A Hardness Range- 20 to 35.

- C. Silicone Sealant (Type C): ASTM C920, single component, solvent curing, non-sagging, non-staining, non-bleeding; color as selected.
 - 1. Elongation Capability- 25 percent.
 - 2. Service Temperature Range- 65 to 180 degrees F.
 - 3. Shore A Hardness Range 15 to 35.

- D. Siliconized Acrylic Sealant (Type D): ASTM C834, single component, solvent curing, non-sagging, non-staining, non-bleeding; color as selected
 - 1. Elongation Capability (min.)- 25 percent
 - 2. Service Temperature Range- 0 to 180 degrees F.
 - 3. Shore A Hardness Range- 10 to 30.

- E. Pourable, Elastomeric Concrete Expansion Joint Sealer: Resilient, grey in color (for sidewalks and other finished concrete) or to match surrounding color (adjacent to precast or rubbed concrete of a particular color), crack and shrink resistant, water proof and UV resistant. Shall be a product specifically formulated for the particular application. Typically used in exterior applications in concrete stair, ramp, sidewalk and similar construction. All products subject to Architect's approval.

Note: Do not use silicon sealants in any roofing situations. All caulking and joint sealants shall be in strict accordance with roof manufacturer's specifications and approved by roof manufacturer.

2.02 ACCESSORIES

- A. Primer: Provide a nonstaining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

- C. Joint Backing: Provide glass fiber roping or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Provide 25 to 33 percent oversized backing for closed cell and 40 to 50 percent oversized backing for open cell material, unless otherwise indicated. Make backstop material compatible with sealant. Do not use oakum or other types of absorptive materials as backstops.

- D. Bond Breaker: Provide pressure sensitive tape if approved by sealant manufacturer to suit application. Otherwise, provide the type and consistency recommended by the sealant manufacturer to prevent adhesion of the sealant to backing or to bottom of the joint.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.

- B. Remove loose materials and foreign matter which might impair adhesion of sealant.

- C. Verify that joint backing and release tapes are compatible with sealant.

3.02 INSTALLATION

- A. Clean joints in accordance with manufacturer's instructions.
- B. Install sealant in accordance with manufacturer's instructions.
- C. Measure joint dimensions and size materials to achieve 2:1 width/depth ratios.
- D. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width. Cut-back or trim the joint backing/separator to achieve an adequate depth as necessary for proper installation and as recommended by sealant manufacturer.
- E. Install bond breaker where joint backing is not used.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- G. Tool joints concave, unless otherwise noted or recommended for the particular application.

3.03 SCHEDULES

In general, where sealant is visible and is intended to be painted, color shall be either white or a base color appropriate for the final intended finish coat color. Where sealant is visible and not intended to be painted, color shall be selected by Architect. Where sealant is not visible, color shall be gray.

The following schedule is provided as a general guideline for sealant usage. In no case shall this schedule be interpreted as superceding any manufacturer's recommendation for sealant use with their particular system(s) or product. Follow all sealant recommendations for the product or item being installed. Always use sealants that are compatible with the item or system for which the sealant is being used. If, for instance, a storefront or window manufacturer recommends a specific sealant, contractor shall supply and use such sealant, and in the manner recommended, in order not to void manufacturer's warranty. Any specialty sealants must be used that are recommended by the manufacturer of any item specified or otherwise approved for use in this project.

INTERIOR SEALANTS - Provide sealant type(s) at locations indicated:

- a. Small voids between walls or partitions and adjacent lockers, casework, shelving, door frames, built-in or surface-mounted equipment and fixtures, and similar items. Type D
- b. Perimeter of frames at doors, windows, and access panels which adjoin exposed interior concrete and masonry surfaces. Type D
- c. Joints of interior masonry walls and partitions which adjoin columns, pilasters, concrete walls, and exterior walls unless otherwise detailed. Type D
- d. Joints between edge members for acoustical tile and adjoining vertical surfaces. Type D

- e. Interior locations, not otherwise indicated or specified, where small voids exist between materials specified to be painted. Type D
- f. Joints between bathtubs and ceramic tile; joints between shower receptors and ceramic tile; joints formed where nonplaner tile surfaces meet. Type C
- g. Joints formed between tile floors and tile base cove; joints between tile and dissimilar materials; joints occurring where substrates change. Type C
- h. Behind escutcheon plates at valve pipe penetrations and showerheads in showers. Type C

EXTERIOR SEALANTS - Provide sealant type(s) at locations indicated:

- a. Joints and recesses formed where frames and vents adjoin masonry, concrete, or metal frames. Use sealant at both exterior and interior surfaces of exterior wall penetrations. Type A
- b. Joints between new and existing exterior masonry walls. Type B
- c. Masonry joints where shelf angles occur. Type A
- d. Joints in wash surfaces of stonework. Type B
- e. Expansion and control joints. Type B
- f. Interior face of expansion joints in exterior concrete or masonry walls where metal expansion joint covers are not required. Type D
- g. Voids where items pass through exterior walls. Type A or B
- h. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels. Type B
- i. Metal-to-metal joints where sealant is indicated or specified. Type A
- j. Joints between ends of gravel stops, fascias, copings, and adjacent walls. Type A or B
- k. Seats of metal thresholds for exterior doors. Type B-P
- l. Sidewalk expansion joints Type E

END OF SECTION 07900

Sections 07901 – Preformed Sealant System

Preformed, Pre-Compressed, Self-Expanding, Sealant System with Silicone Pre-Coated Surface Watertight, Energy-Efficient, Exterior and Interior Above-Grade Wall Joints

PART 1 – GENERAL

1.01 Work Included

- A. The work shall consist of furnishing and installing waterproof expansion joints in accordance with the details shown on the plans and the requirements of the specifications. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, sealant system.
- B. Related Work
 - Division 4 - Masonry
 - Division 7 - Thermal & Moisture Protection
 - Division 7 - Sealants, caulking and waterproofing

1.02 Submittals

- A. General – Submit the following according to Division 1 Specification Section.
- B. Standard Submittal Package – Submit typical expansion joint drawing(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.
- C. Sample of material is required at time of submittal.
- D. Product must be certified by independent laboratory test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, and E331. Product must meet or exceed hurricane-force wind loading with no deflection at both positive and negative pressures up to 4954 Pascals - equal to 200 mph winds (ASTM E330-02 procedure A).
- E. Product must be certified by independent laboratory test report to meet or exceed STC 56 in an STC 72 wall and OITC 53 in an OITC 61 wall in accordance with ASTM E90-09.
- F. Products shall be certified in writing to be: a) capable of withstanding 150°F (65°C) for 3 hours while compressed down to the minimum of movement capability dimension of the basis of design product (-25% of nominal material size) without evidence of any bleeding of impregnation medium from the material; and b) that the same material after the heat stability test and after first being cooled to room temperature will subsequently self-expand to the maximum of movement capability dimension of the basis-of-design product (+25% of nominal material size) within 24 hours at room temperature 68°F (20°C).

1.03 Product Delivery, Storage and Handling

- A. Deliver products to site in Manufacturer's original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer's installation instructions.

1.04 Basis-of-Design

- A. All joints shall be designed to meet the specified performance criteria of the COLORSEAL product as manufactured by: (USA & International) EMSEAL JOINT SYSTEMS, LTD 25 Bridle Lane, Westborough, MA 01581-2603, Toll Free: 800-526-8365. (Canada) EMSEAL, LLC 120 Carrier Drive, Toronto, Ontario, Canada M9W 5R1 Toll Free: 800-526-8365. www.emseal.com
- B. Alternate manufacturers must demonstrate that their products meet or exceed the design criteria and must submit certified performance test reports performed by recognized independent laboratories as called for in section 1.02 Submittals. It is the manufacturers responsibility to meet all performance criteria and all other items in the design that will have to be modified for their products use to be correct as required by their written documentation.

1.05 Quality Assurance

- A. The General Contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, mechanical, electrical, HVAC, landscaping, masonry, curtain wall, waterproofing, fire-stopping, caulking, flooring and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The General Contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of watertightness or life safety at expansion joints in any way.
- B. Warranty – Manufacturer’s standard warranty shall apply.

PART 2 – PRODUCT

2.0 Manufacturers

- A. EMSEAL Joint Systems, LTD – Colorseal (Basis of Design) 2” or otherwise indicated
- B. Balco Inc. – BCSW Wall/Floor Seals 2” or otherwise indicated
- C. Schul International Company, Inc – Sealtite Color Econoseal – 2” or otherwise indicated

2.01 General

- A. Provide watertight, energy-efficient exterior and interior joints in vertical-plane walls (above-grade). Typical locations include, but are not limited to the following: applications in window perimeters, other façade penetrations such as doors, store fronts, vents, HVAC units, panel to panel joints, curtain walls, control joints, between dissimilar materials, structural expansion joints, acoustic partition barriers, and new-to-existing connections.
- B. Provide COLORSEAL as manufactured by EMSEAL JOINT SYSTEMS, LTD. and as indicated on drawings for vertical expansion joint locations, or equal.
- C. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, sealant system. Expanding foam to be cellular foam impregnated with a water-based, non-drying, 100% acrylic dispersion. Seal shall combine factory-applied, low-modulus silicone and a backing of acrylic-impregnated expanding foam into a unified hybrid sealant system.
- D. Material shall be capable of movements of +25%, -25% (50% total) of nominal material size

- E. Silicone external color facing to be factory-applied to the foam while it is partially pre-compressed to a width greater than maximum joint extension and cured before final compression. When compressed to final supplied dimension, a bellow(s) to handle movement must be created in the silicone coating. Silicone coating to be available in a range of not less than 26 standard colors for coordination with typical building materials.
- F. Select the sealant system model appropriate to the movement and design requirements at each joint location that meet the project specification or as defined by the structural engineer of record.
- G. Manufacturer's Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

2.02 Fabrication

- A. COLORSEAL by EMSEAL must be supplied precompressed to less than the joint size, packaged in shrink-wrapped lengths (sticks) with a mounting adhesive on one face.
- B. Directional changes and terminations into horizontal plane surfaces to be provided by factory-manufactured universal-90-degree single units containing minimum 12-inch long leg and 6-inch long leg or custom leg on each side of the direction change or through field fabrication in strict accordance with installation instructions.

PART 3 – EXECUTION

3.01 Installation

- A. Preparation of the Work Area
 1. The contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer's standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.
 2. The contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Ensure that there is sufficient depth to receive the full depth of the size of the COLORSEAL being installed plus at least ¼-inch (6mm) for the application of corner beads. Refer to Manufacturers Installation Guide for detailed step-by-step instructions.
 3. No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.

3.02 Clean and Protect

- A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION