Roofing Specification
For:

Nogales High School
Gymnasium

La Puente, California

Prepared by:
Siplast
1000 Rochelle Blvd.
Irving, Texas 75062
(800) 922-8800

This specification is provided as a general guide for use of Siplast products based on typical building conditions and standard roofing practices. Siplast is strictly a manufacturer of roofing systems and has no experience, training or expertise in the areas of architecture/engineering or in the area of consulting with respect to matters related to such areas. Siplast recommends that the Owner's representative independently verify the accuracy and appropriateness of a specification provided for a specific project.

February 20, 2020

ROOFING SPECIFICATION (Rev 01/2011)pq

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Deviations: In the event this Specification deviates from the manufacturer's current specification, this specification prevails, except where they conflict with the manufacturer's requirements for the specified guarantee. In this case, the manufacturer's specification prevails.

B. Specification Amendments: Drawings, addenda and modifications may be issued subsequent to the printing of this Specification.

C. Contractor Acceptance: Prior to the project start, ascertain that all aspects of this Specification and possible modifications are workable and do not conflict with the manufacturer's requirements for the specified guarantee. Upon commencement of the work, it will be presumed that this Specification and drawings, addenda and modifications are satisfactory to both the Contractor and the manufacturer in their entirety.

D. Supplied Materials: 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. Refer to Part 1.03 Description of Work for specific use within each roofing assembly outlined.

1.02 REFERENCE STANDARDS

References in these specifications to standards, test methods, and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout this specification section.

ASTM American Society for Testing and Materials
Philadelphia, PA

FM Factory Mutual Engineering and Research
Norwood, MA

NRCA National Roofing Contractors Association
Rosemont, IL

OSHA Occupational Safety and Health Administrations
Washington, DC

SMACNA Sheet Metal and Air Conditioning Contractors National Association
Chantilly, VA

UL Underwriters Laboratories
Northbrook, IL

ANSI American National Standards Institute
Washington, DC

SPRI Single Ply Roofing Industry
Waltham, MA

1.03 DESCRIPTION OF WORK

The basic work descriptions (components, layering and attachment methods) required in this specification are referenced below.

Project Type: Tear-off

Deck: Plywood **Slope:** 1/2 inch

Insulation - bottom layer: Approved polyisocyanurate, having a thickness of 2.5 inches, mechanically attached.

Insulation - top layer: Gypsum sheathing panel, having a thickness of 1/4 inch, applied in insulation adhesive.

Roof system (Primary): Torch-grade SBS modified bitumen base ply with radio frequency identification (RFID) tags, torch applied;

Torch-grade granule surface SBS modified bitumen finish ply with radio frequency identification (RFID) tags, torch applied.

Roof system (Valley Areas): Torch-grade SBS modified bitumen base ply coated on top with a factory applied acrylic coating;

Reinforced PMMA roof membrane system.

Flashing system: Aluminum foil surfaced SBS modified bitumen flashing ply, torch applied.

RELATED WORK

A. Furnish and install C-Port pipe/conduit supports by Cooper B-Line, Inc. at a minimum 8 feet o.c. Install the specified walktread material under pipe/conduit supports, extending a minimum of 2 inches beyond the support unit.

B. Furnish and install tapered crickets behind curbed units.

C. Furnish walktread material and install from roof access points to mechanical units and around the perimeter of each unit.

D. Flash all penetrations (other than heat stack and soil pipes) using the specified liquid resin flashing system.

E. Install lead flashings at soil stacks.

F. Where necessary extend penetrations in order to provide a minimum of 8-inch flashing height above the top of the insulation.

G. Provide a unit cost to install roofing manufacturer-supplied aluminum drain inserts. All drain inserts are to be covered under the terms and conditions of the guarantee.

H. Provide a unit cost for plywood deck replacement.

I. On the lower roofs remove the counter flashing. Replace with new counter flashing to match existing.

J. Install new metal counter flashing at all HVAC units.

1.04 QUALITY ASSURANCE

A. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years.

B. Product Quality Assurance Program: Primary roofing materials shall be manufactured under a quality management system that is monitored regularly by a third party auditor under the ISO 9001 audit process. A certificate of analysis for reporting/confirming the tested values of the actual material being supplied for the project will be required prior to project close-out.

C. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted.

1. Underwriters Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings.

1. The roof perimeter coping system shall be certified through third party verification by the manufacturer/supplier to meet performance design criteria according to the most recent edition of ANSI/SPRI/FM 4435/ES-1: Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

> *NOTE: Verify the Windstorm Classification for the appropriate metal component dimension and gauge per the third party testing agency's ANSI/SPRI/FM 4435/ES-1 test report for the specified factory fabricated metal roof perimeter systems.

D. Acceptable Contractor: Contractor shall have a minimum of 2 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.

E. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.

F. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

G. Manufacturer Requirements: Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conducts a final inspection upon successful completion of the project. Factory fabricated metal components must be labeled with the roofing membrane manufacturer's logo.

1.05 GUARANTEE/WARRANTY

A. Roof Membrane/System Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's 20 year labor and materials guarantee covering the rigid insulation, insulation fasteners/plates, insulation adhesive, and roof membrane/flashing system. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner.

B. Roof Membrane Guarantee Addendum: In addition to the specified guarantee, furnish the Owner with the roofing manufacturer's inclusion addendum to the guarantee offering coverage of the factory fabricated coping system under the standard terms of the roofing membrane/system guarantee.

1.06 SUBMITTALS

All submittals which do not conform to the following requirements will be rejected.

A. Submittal of Equals: Submit primary roof systems to be considered as equals to the specified roof system no less than 10 days prior to bid date. Primary roof systems which have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. Submittals shall include the following:

1. Two 3 inch x 5 inch samples of the primary roofing and flashing sheets.

2. Latest edition of the roofing system manufacturer's specifications and installation instructions.

3. Evidence that the manufacturer of the proposed roofing system utilizes a quality management system that is ISO 9001 certified. Documentation of ISO 9001 certification of foreign subsidiaries without domestic certification will not be accepted.

4. Evidence and description of manufacturer's quality control/quality assurance program for the primary roofing products supplied. The quality assurance program description shall include all methods of testing for physical and mechanical property values. Provide confirmation of manufacturer's certificate of analysis for reporting the tested values of the actual material being supplied for the project prior to issuance of the specified guarantee.

5. Descriptive list of the materials proposed for use.

6. Evidence of Underwriters' Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings. No other testing agency approvals will be accepted.

7. Letter from the proposed primary roofing manufacturer confirming that a phased roof application, with only the modified bitumen base ply in place for a period of up to 10 weeks, is acceptable and approved for this project.

8. List of 3 of the proposed primary roofing manufacturer's projects, located in the United States, of equal size and degree of difficulty which have been performing successfully for a period of at least 10 years.

9. Letter from the proposed primary roofing manufacturer confirming that the filler content in the elastomeric blend of the proposed roof membrane and flashing components does not exceed 35% in weight.

10. Submit a letter from the roofing membrane manufacturer confirming that the factory fabricated metal accessory systems furnished for the project are supplied or manufactured by the roofing membrane manufacturer and that each component section is labeled with the roofing membrane manufacturer's logo. Include copies of the manufacturer's color selection chart with the letter showing the manufacturer's full range of standard colors as well as physical samples of each standard color.

11. Complete list of material physical and mechanical properties for each sheet including: weights and thicknesses; low temperature flexibility; peak load; ultimate elongation; dimensional stability; compound stability; Compound stability; granule embedment and resistance to thermal shock for foil faced products.

12. Evidence that the roof system shall pass 500 cycles of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14°F (-10°C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D 5849 after heat conditioning performed in accordance with ASTM D 5147.

13. Sample copy of the proposed guarantee and factory fabricated metal inclusion addendum.

14. Completed Product Substitution Request Form included with this specification section.

B. Submittals Prior to Contract Award:

1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.

2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.

C. Submittals Prior to Project Close-out:

1. Certificate Of Analysis from the testing laboratory of the primary roofing materials manufacturer, confirming the physical and mechanical properties of the roofing membrane components. Testing shall be in accordance with the parameters published in ASTM D 5147 and ASTM D 7051 and indicate Quality Assurance/Quality Control data as

required to meet the specified properties. A separate Certificate Of Analysis for each production run of material shall indicate the following information:

a) Material type
b) Lot number
c) Production date
d) Dimensions and Mass (indicate the lowest values recorded during the production run);
   - Roll length
   - Roll width
   - Selvage width
   - Total thickness
   - Thickness at selvage (coating thickness)
   - Weight
e) Physical and Mechanical Properties;
   - Low temperature flexibility
   - Peak load
   - Ultimate Elongation
   - Dimensional stability
   - Compound Stability
   - Granule embedment
   - Resistance to thermal shock (foil faced products)

2. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.07 PRODUCT DELIVERY STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage - general: Store materials out of direct exposure to the elements on pallets placed over clean, flat and dry surfaces. Storage of pallets over dirt, grass-covered ground or newly placed concrete may result in upward moisture transpiration and contamination of product. Store rolls of roofing on end. For roof-top storage, avoid overloading of deck and building structure. Factory packaging is not intended for job site protection. Slit factory packaging immediately upon arrival at the job site to prevent build-up of condensation and cover materials using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings shall not be used. Store flammable or temperature sensitive materials away from open flame, ignition sources or excessive heat.

C. Storage – PMMA resin components: Store closed containers in a cool, dry area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Do not store resins or catalyst at temperatures below 32°F (0°C) or above 85°F (29°C). Keep away from open fire, flame or any ignition source. Store in a well ventilated area.

D. Handling– PMMA resin components: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes when above the Threshold Limit Value (TLV). Do not eat, drink, or smoke in areas where roofing materials are stored or applied.

E. Handling - general: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.

F. Strippable Film Masking: Do not remove the strippable film masking on the factory fabricated metal components until immediately following installation. Do not allow extended UV or heat exposure to metal components covered with strippable film masking.

G. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.08 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start

1. **Notification:** Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

2. **Permits:** Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

3. **Safety:** Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

4. **Safety – PMMA resin components:** Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NIOSH, NRCA and other industry or local governmental groups. Workers shall wear a long sleeve shirt with long pants and work boots. Workers shall use only butyl rubber or nitrile gloves when mixing or applying PMMA products. Safety glasses with side shields are required for eye protection. Use local exhaust ventilation to maintain worker exposure below the published Threshold Limit Value (TLV). If the airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements published under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentration. A filtering face piece or dust mask is not appropriate for use with this product if TLV filtering levels have been exceeded.

5. **Factory Fabricated Metal Component Substrate Condition:** Mounting surfaces shall be straight and secure and provide adequate widths to properly support the factory fabricated metal components.

B. Environmental Requirements

1. **Precipitation:** Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

2. **Temperature Restrictions – self-adhesive sheets:** The minimum required substrate temperature at point of application is 40°F (4°C). Maintain a minimum roof membrane material temperature above 60° F (16° C). In low temperature conditions, materials should be kept warm prior to application. In temperatures below 60° F (16° C) the specified tacky primer, required for vertical applications, should be considered to facilitate proper bonding of self-adhered membrane for horizontal applications. The minimum ambient temperature range at the time of tacky primer application is 45°F to 105°F (7°C - 40°C). Suspend application in situations where the self-adhered base ply cannot be kept at temperatures allowing for proper adhesion.

3. **Temperature Restrictions – PMMA-based Materials:** Do not apply catalyzed resin materials if there is a threat of inclement weather. Follow the resin manufacturer's specifications for minimum and maximum ambient, material and substrate temperatures. Do not apply catalyzed resin materials unless ambient and substrate temperatures fall within the resin manufacturer's published range.

C. Protection Requirements

1. **Membrane Protection:** Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.

2. **Torch Safety:** Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractor's Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

3. **Limited Access:** Prevent access by the public to materials, tools and equipment during the course of the project.

4. **Debris Removal:** Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

5. **Site Condition:** Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

PART 2 PRODUCTS

2.01 ROOFING SYSTEM ASSEMBLY/PRODUCTS

A. Rigid Roof Insulation: Roof insulation shall be UL and FM approved. Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly.

1. **Polyisocyanurate:** A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, in full compliance with ASTM C 1289, Type II, Class 1, Grade 2 (20 psi). Panels shall have a nominal thickness of 2.5 inches. Acceptable types are as follows:

2. **Gypsum Sheathing Panel:** A panel composed of a gypsum based, non-structural water resistant core material integrally bonded with fiberglass mats on both sides having a nominal thickness of 1/4 inch. The panel surface shall be factory primed with a non-asphaltic primer. Acceptable types are as follows:

2.02 DESCRIPTION OF SYSTEMS

A. Roofing Membrane Assembly (Primary): A roof membrane assembly consisting of two plies of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, applied over a prepared substrate. Reinforcement mats shall be impregnated/saturated and coated each side with SBS modified bitumen blend. The modified bitumen finish ply shall be coated one side with a torch grade SBS bitumen blend adhesive layer. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen. The adhesive layer shall be manufactured using a process that embosses the surface with a grooved pattern to provide optimum burn-off of the plastic film and to maximize application rates. The roof system shall pass 500 cycles of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14°F (-10°C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D 5849 after heat conditioning performed in accordance with ASTM D 5147. The assembly shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system. The roof membrane base and finish plies shall have radio frequency identification (RFID) chips encapsulated within each roll of modified bitumen material. The RFID chips shall enable wireless, non-contact scanning identification through a standard ultra-high frequency (UHF) scanning device or smart phone app, and contain specific production information pertaining to the lot number, manufacturing date, and product name.

1. Modified Bitumen Base and Stripping Ply

a) Thickness (avg): 114 mils (2.9 mm) (ASTM D 5147)
b) Thickness (min): 110 mils (2.8 mm) (ASTM D 5147)
c) Weight (min per 100 ft² of coverage): 76 lb (3.7 kg/m²)
d) Maximum filler content in elastomeric blend: 35% by weight
e) Low temperature flexibility @ -15ºF (-26ºC): PASS (ASTM D 5147)
f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D 5147)
i) Dimensional Stability (max): 0.1% (ASTM D 5147)
j) Compound Stability (min): 250ºF (121ºC) (ASTM D 5147)
k) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
l) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
m) Product Verification: radio frequency identification (RFID) tag

2. Modified Bitumen Finish Ply

a) Thickness (avg): 138 mils (3.5 mm) (ASTM D 5147)
b) Thickness at selvage (coating thickness) (avg): 118 mils (3.0 mm) (ASTM D 5147)
c) Thickness at selvage (coating thickness) (min): 114 mils (2.9 mm) (ASTM D 5147)
d) Weight (min per 100 ft² of coverage): 112 lb (5.4 kg/m²)
e) Maximum filler content in elastomeric blend: 35% by weight

f) Low temperature flexibility @ -15ºF (-26ºC): PASS (ASTM D 5147)
g) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
h) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
i) Ultimate Elongation (avg.) @ 73ºF (23ºC): 55% (ASTM D 5147)
j) Dimensional Stability (max): 0.1% (ASTM D 5147)
k) Compound Stability (min): 250ºF (121º C) (ASTM D 5147)
l) Granule Embedment (max loss): 2.0 grams per sample (ASTM D 5147)
m) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
n) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
o) Surfacing: Noxite Roofing Granules
p) Product Verification: radio frequency identification (RFID) tag

B. Roofing Membrane Assembly (Valley Areas): A roof membrane assembly consisting of one ply of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane applied over a prepared substrate, covered with a liquid applied, flexible, PMMA-based monolithic membrane formed by the combination of resin and fleece fabric. The reinforcement mats in the SBS ply shall be impregnated/saturated and coated each side with an SBS modified bitumen blend. The cross sectional area of the SBS sheet material shall contain no oxidized or non-SBS modified bitumen. The adhesive layer of torch-grade membranes shall be manufactured using a process that embosses the surface with a grooved pattern to provide optimum burn-off of the plastic film and to maximize application rates. The top surface of the modified bitumen ply sheet shall be coated with a white acrylic coating to enhance resin bond and to minimize surface temperatures. The composite roof system, including SBS modified bitumen ply sheet and reinforced PMMA, shall pass 500 cycles of ASTM D5849 Resistance to Cyclic Joint Displacement (fatigue) at 14F (-10C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D5849 after heat conditioning performed in accordance with ASTM D5147.

1. Modified Bitumen Ply Sheet

a) Thickness (avg): 114 mils (2.9 mm) (ASTM D5147)
b) Thickness (min): 110 mils (2.8 mm) (ASTM D5147)
c) Weight (min per 100 ft² of coverage): 73 lb (3.6 kg/m²)
d) Maximum filler content in elastomeric blend: 35% by weight
e) Low temperature flexibility @ -15º F (-26º C) - PASS (ASTM D5147)
f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D5147)
g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D5147)
h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D5147)
i) Dimensional Stability (max): 0.1% (ASTM D5147)
j) Compound Stability (min): 250ºF (121ºC) (ASTM D5147)
k) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
l) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
m) Top Surfacing: factory applied acrylic coating

2. Resin for Field Membrane Construction: A flexible, PMMA-based resin for use in combination with fleece fabric to form a monolithic, reinforced roofing membrane.. The values listed below are based upon a 90 mil (2.3 mm) resin thickness.

a) Thickness (avg): 90 mils (2.3 mm) at 0.31 kg/ft² (3.3 kg/m²) coverage rate (ASTM D5147, section 5).
b) Weight (min per 100 ft² of coverage): 68.4 lb (3.3 kg/m²)

c) Peak Load (avg) @ 73°F (23°C): 70 lbf/in (12.3 kN/m) (ASTM D5147 section 6)
d) Peak Load (avg) @ 73°F (23°C): 90 lbf/inch (15.8 kN/m) (ASTM D412, dumbbell)
e) Elongation at Peak Load (avg) @ 73°F: 35% (ASTM D5147, section 6)
f) Elongation at Peak Load (avg) @ 73°F: 35% (ASTM D412, dumbbell)
g) Shore A Hardness (avg): 81 (ASTM D2240)
h) Water Absorption, Method I (24h @ 73°F): 0.8% (ASTM D570)
i) Water Absorption, Method II (48h @ 122°F): 1.2% (ASTM D570)
j) Low temperature flexibility @ 23 F (-5°C): PASS (ASTM D5147, section 11)
k) Dimensional Stability (max): 0.15% (ASTM D5147, section 10)
l) Tear Strength (avg): 90 lbf (0.4 kN) (ASTM D5147, section 7)
m) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)

3. **Fleece for Membrane Reinforcement:** A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer.

C. Flashing Membrane Assembly: A flashing membrane assembly consisting of a prefabricated, reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing. The finish ply shall conform to ASTM D 6298 and the following physical and mechanical property requirements.

1. Cant Backing Sheet and Flashing Reinforcing Ply

a) Thickness (avg): 102 mils (2.6 mm) (ASTM D 5147)
b) Thickness (min): 98 mils (2.5 mm) (ASTM D 5147)
c) Weight (min per 100 ft² of coverage): 72 lb (3.5 kg/m²)
d) Maximum filler content in elastomeric blend: 35% by weight
e) Low temperature flexibility @ -15° F (-26° C) - PASS (ASTM D 5147)
f) Peak Load (avg) @ 73°F (23°C): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
g) Peak Load (avg) @ 0°F (-18°C): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
h) Ultimate Elongation (avg.) @ 73°F (23°C): 50% (ASTM D 5147)
i) Dimensional Stability (max): 0.1% (ASTM D 5147)
j) Compound Stability (min - sheet): 250°F (121°C) (ASTM D 5147)
k) Compound Stability (min – adhesive coating): 212°F (100°C) (ASTM D 5147)
l) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
m) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
n) Back Surfacing: polyolefin film

2. Metal-Clad Modified Bitumen Flashing Sheet

a) Thickness (avg): 150 mils (3.8 mm) (ASTM D 5147)
b) Thickness (min): 146 mils (3.7 mm) (ASTM D 5147)
c) Weight (min per 100 ft² of coverage): 96 lb (4.5 kg/m²)
d) Coating Thickness – back surface (min): 40 mils (1 mm) (ASTM D 5147)
e) Low temperature flexibility @ 0° F (-18° C): PASS (ASTM D 5147)
f) Peak Load (avg) @ 73°F (23°C): 85 lbf/inch (15 kN/m) (ASTM D 5147)
g) Peak Load (avg) @ 0°F (-18°C): 180 lbf/inch (31.7 kN/m) (ASTM D 5147)
h) Ultimate Elongation (avg) @ 73°F (23°C): 45% (ASTM D 5147)
i) Tear-Strength (avg): 120 lbf (0.54 kN) (ASTM D 5147)
j) Dimensional Stability (max): 0.2% (ASTM D 5147)
k) Compound Stability (min): 225°F (107°C) (ASTM D 5147)
l) Cyclic Thermal Shock Stability (maximum): 0.2% (ASTM D 7051)
m) Approvals: UL Approved, FM Approved (products shall bear seals of approval)

n) Reinforcement: fiberglass scrim mat or other meeting the performance and dimensional stability criteria
o) Surfacing: aluminum metal foil

D. Catalyzed Acrylic Resin Flashing System: A specialty flashing system consisting of a liquid-applied, fully reinforced, multi-component acrylic membrane installed over a prepared or primed substrate. The flashing system consists of a catalyzed acrylic resin primer, basecoat and topcoat, combined with a non-woven polyester fleece. The resin and catalyst are pre-mixed immediately prior to installation. The use of the specialty flashing system shall be specifically approved in advance by the membrane manufacturer for each application.

2.03 ROOFING ACCESSORIES

A. Roofing Adhesives

1. **Insulation Adhesive:** A single component, moisture cured, polyurethane foam adhesive, dispensed from a portable, pre-pressurized container used to adhere insulation panels to the substrate as well to other insulation panels.

B. Bituminous Cutback Materials

1. **Primer:** An asphalt/solvent blend meeting ASTM D 41, South Coast Air Quality District and Ozone Transport Commission requirements.

2. **Primer for Self-Adhesive Sheets:** A quick drying, low-VOC, water-based, high-tack primer specifically designed to promote adhesion of roofing and waterproofing sheets to approved substrates. Primer shall meet South Coast Air Quality District and Ozone Transport Commission requirements.

3. **Mastics:** An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D 4586 Type II requirements.

C. Sealant (horizontal applications): A moisture-curing, self-leveling elastomeric sealant designed for roofing applications. The sealant shall be approved by the roof membrane manufacturer for use in conjunction with the roof membrane materials. Acceptable types are as follows:

D. Sealant (vertical and sloped applications): A moisture-curing, non-slump elastomeric sealant designed for roofing applications. The sealant shall be approved by the roof membrane manufacturer for use in conjunction with the roof membrane materials. Acceptable types are as follows:

E. PMMA Resin Accessories

1. **Cleaning Solution/Solvent:** A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin and to clean substrate materials to receive resin.

2. **Preparation Paste:** A PMMA-based paste used for remediation of depressions in substrate surfaces or other irregularities.

3. **Catalyst:** A peroxide-based reactive agent used to induce curing of PMMA-based resins.

F. PMMA Primers

1. **Primer for Wood, Plywood and Rigid Insulation, Masonry and Vertical Concrete Substrates:** A fast-curing PMMA-based primer for use in over wood, plywood and rigid insulation substrates.

2. **Primer for Horizontal Concrete Substrates:** A fast-curing PMMA-based primer for use over horizontal concrete substrates.

3. **Spray Primer for Stainless Steel, Aluminum and Copper Substrates:** An enamel spray primer for metal substrates to receive PMMA-based flashings.

G. Ceramic Granules: No. 11 grade specification ceramic granules of color scheme matching the granule surfacing of the finish ply.

H. Perlite Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

I. Fasteners

1. **Insulation Fasteners:** Insulation fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging. The fastening pattern for each insulation panel to be used shall be as recommended by the insulation manufacturer and approved by the manufacturer of the primary roofing products. Acceptable insulation fastener manufacturers for specific deck types are listed below.

   a) **Wood/Plywood Decks:** Insulation mechanical fasteners for wood/plywood decks shall be factory coated for corrosion resistance. The fastener shall conform meet or exceed Factory Mutual Standard 4470 and when subjected to 30 Kesternich cycles, show less than 15% red rust. Acceptable insulation fastener types for wood/plywood decks are listed below.

      - A fluorocarbon coated screw type roofing fastener having a minimum 0.245 inch thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 inch diameter, as supplied by the fastener manufacturer.

2. **Flashing Reinforcing Sheet Fasteners for Wood/Plywood Substrates to Receive Flashing Coverage:** Fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable fasteners for specific substrate types are listed below.

   a) **Wood/Plywood Substrates**

      - A 12 gauge, spiral or annular threaded shank, zinc coated steel roofing fastener having a minimum 1 inch head.

3. **Wood Nailer Fasteners** Wood blocking fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. Acceptable fastener manufacturers are listed below.

a) Wood Blocking: Mechanical fasteners for wood blocking shall be factory coated for corrosion resistance. Acceptable fastener types are listed below.

- A fluorocarbon coated screw type roofing fastener having a minimum 0.220 inch thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 inch diameter, as supplied by the fastener manufacturer.

J. Walktread: A prefabricated, puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic-coated granule wearing surface.

1. Thickness: 0.217 in (5.5 mm)
2. Weight: 1.8 lb/ft² (8.8 kg/m²)
3. Width: 30 in (76.2 cm)

2.04 RELATED COMPONENTS

A. Rough Carpentry: Lumber used for nailers, curbs, and cants shall be No. 2 kiln dried (19% maximum moisture content after treatment), grade marked, and surfaced on four sides. Lumber shall be salt treated with Wolman Salts (wood shall retain 0.25 lbs. dry salt per cubic foot of wood) or an approved equal.

1. Perimeter Nailers for Edge Metal Securement. Lumber shall have a nominal 6 inch width with a thickness to match the height of the new insulation assembly.

2. Wood Sleepers And Blocking: Lumber blocking, used for supporting small rooftop and light air conditioning units shall have a 4 inch by 4 inch width and thickness. Wood blocking used to support small pipes shall have a minimum 12 inch length. Lengths of wood sleepers for supporting air conditioning units shall be such that a minimum of 12 inches shall extend beyond each unit at both sides.

B. Perlite Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

C. Lead Drain Flashings: Formable type, weighing a minimum of 4 lb. per square foot; in sheets of minimum 30 inch x 30 inch dimension.

D. Lead Pipe Flashings: Preformed from sheet stock weighing a minimum of 4 lb. per square foot, and soldered with a minimum 4 inch perimeter flange with a sleeve opening fabricated to fit closely around the penetration without forcing. Lead sleeve length shall be of sufficient height to allow a minimum of 1 inch to be crimped inside of the pipe stack.

E. Factory Fabricated Metal Coping System: Metal Coping components shall be factory fabricated according to the requirements of the roofing membrane manufacturer and labeled with the roofing manufacturer's logo. The metal coping system shall consist of the following components:

- Factory formed anchor/cleat plates fabricated from 16 gauge, G90 galvanized steel.

- Factory formed splice plates with embossed ribs to prevent lateral water flow at joints between adjacent sections fabricated from 0.032 inch aluminum and having factory applied sealant strips.

- A factory formed coping cap fabricated from minimum 24 gauge galvanized steel having a coil coated Kynar™ finish.

- Factory formed miters and end caps.

F. Fabricated Metal: Fabricate the following fabricated metal components from 24 gauge Type 304-Mill Rolled No. 2B finish stainless-steel, meeting ASTM A 167 specifications.

1. Metal Pipe Flashings: Fabricate metal pipe flashings in a two-component assembly in accordance with the following:

- The first component shall be a metal roof jack having a minimum 4 inch perimeter flange, and a sleeve opening to fit closely around the penetration without forcing, with a minimum 6 inch height. Fasten and solder metal laps.

- The second component shall be a metal, water tight umbrella, fabricated to be mechanically secured tightly around the roof penetration and extend beyond the roof jack opening by a minimum radius of 3 inches. Caulk top edge of the watertight umbrella using an approved sealant.

* NOTE: These components are used to flash heat pipes, equipment supports (round pylons) and pipe penetrations where movement is anticipated.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Pre-Job Conference: Conduct a pre-job conference to include the designer, Owner, roofing Contractor and manufacturer's representative prior to application of roofing.

B. Foremen: Provide the roofing foreman with a copy of these specifications to be available at the job site at all times. The presence of specifications and an inspector shall not relieve the Contractor of strict compliance with the manufacturer's specifications, detail drawings, and/or approved material requirements.

C. Deck Penetrations: Verify that work penetrating the roof deck, or which may otherwise affect the roofing application, has been properly completed.

D. Final Inspection – post installation meeting: Arrange a meeting at the completion of the project to be attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

3.02 PREPARATION

A. General: Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.

B. Remove All Existing:

- Surface gravel
- Roof membrane
- Insulation
- Base flashings
- Edge metal
- Flanged metal flashings
- Cants
- Walkways
- Non functional penetrations/curbs
- Drain assemblies
- Vapor retarder
- Metal trim, counterflashing

C. Damaged And/Or Deteriorated Deck: Inspect decking; make necessary repairs or replace sections of deck that cannot be repaired. Submit a unit price for replacement of sections of roof deck.

D. Wall Preparation: Repair minor cracks, surface irregularities, and open joints in masonry walls using a quick dry grout mix to ensure a smooth, even surface for application of the roofing/flashing membranes.

E. Existing Curbs: Raise all existing curbs to accommodate a new minimum height of 8 inches.

3.03 SUBSTRATE REQUIREMENTS

A. Roof Decks: Structural roof decks should properly provide sufficient strength to support anticipated dead and live loads and normal construction traffic without excessive deflection or movement. All openings, walls or projections through the roof deck should be completed before application of the roof membrane is begun. The deck should be constructed and necessary deck repairs made according to the deck manufacturer's specifications following best established practices.

1. **Plywood Sheathing Panels:** Plywood panel roof sheathing decks should be designed and fabricated in accordance with recommendations of the American Plywood Association. Each panel should have a minimum thickness of fifteen thirty/seconds (15/32) inches and should be identified with the appropriate APA trademark. Each panel should meet the requirements of the latest edition of the U.S. Product Standard PS-1 for Construction and Industrial Plywood, or APA PRP-108 Performance Standards. The panels should always be installed with the long dimension or strength axis of the panel across and with panels continuous over two or more spans. Suitable edge support should be provided according to APA recommendations by use of panel clips, tongue-and-groove edges, or lumber blocking between joists. Panel end joints should occur over framing. Allow 1/8" spacing at ends and edges, unless otherwise recommended by the panel manufacturer. Nail 6" o/c along supported panel edges and 12" o.c. at intermediate supports, except that when supports are spaced 48" o.c. or more; space nails 6" o.c. at all

supports. Use 6d common nails for fifteen thirty-seconds 15/32" panels and 8d for greater thicknesses. When panels are 1-1/8" or greater, use 8d ringshank or 10d common.

B. General Requirements for PMMA Resin Applications: Ensure that substrates are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, bituminous products, release agents, laitance, paint, loose particles/friable matter, rust or any other material that would be detrimental to adhesion of the catalyzed primer and/or resin to the substrate. Some surfaces may require scarification, shotblasting, or grinding to achieve a suitable substrate.

3.04 SUBSTRATE PREPARATION

A. Perimeter Wood Nailers: Anchor all perimeter wood nailers in strict accordance with the guidelines set forth in latest edition of FM Global Property Loss Prevention Data Sheet 1-49. Perimeter nailers shall be flat and level to the building perimeter edge. The front edge of the nailer must be flush with the outside face or wall of the building.

B. Insulation: Install insulation panels with end joints offset; edges of the panels shall be in moderate contact without forcing applied in strict accordance with the insulation manufacturer's requirements and the following instructions. Where insulation is installed in two or more layers, stagger joints between layers.

1. **Insulation - double layer:** Mechanically attach the bottom layer, using the specified fasteners, at a rate of 1 fastener per 2.7 square feet of panel area (12 per 4' x 8' panel). Increase the fastening frequency by 50% at the perimeter of the roof and fasten the corners at a rate of 1 fastener per 1 square foot of panel area (32 per 4' x 8' panel).Set the second layer in an application of the specified insulation adhesive in strict accordance with the requirements of the insulation adhesive supplier. Stagger the panel joints between insulation layers.

C. Preparation of Steel Substrates to Receive PMMA Based Resin: Grind to generate a "bright metal" surface and remove loose particles. Extend preparation area a minimum of 1/2-inch (13 mm) beyond the termination of the roofing/flashing system. Notch steel surfaces to provide a rust-stop where detailed.

* NOTE:	Consider the use of primer and paint to treat the prepared area not covered with resin to prevent corrosion of steel surfaces.

D. Preparation of Stainless Steel, Aluminum and Copper Substrates to Receive PMMA Based Resin: Hand tool (SSPC-SP-2) or power tool (SSPC-SP-3) clean to remove loose rust, mill scale, and deteriorated previous coatings as well as to generate a tooth. Protect surrounding surfaces from overspray. Shake can for one minute after mixing ball is heard. Hold can 10-14 inches from surface. Apply several light coats a few minutes apart to avoid drips and runs. Recoat within 1 hour or after 24 hours; allow more time in cooler temperatures. Monitor ambient and substrate temperatures/conditions to ensure that they are within the paint manufacturer’s acceptable range.

E. Rigid Plastic Flashing Substrates to Receive PMMA Based Resin: Evaluate the plastic for compatibility with the resin materials. Lightly abrade the surface to receive the flashing system, clean plastic substrates using the specified the cleaner/solvent and allow to dry. Extend the preparation area a minimum of 1/2 inch (13 mm) beyond the termination of the flashing system.

F. Preparation of Wood/Plywood Flashing Substrates to Receive PMMA Based Resin: Prime wood/plywood surfaces to receive the specified flashing system with the specified PMMA-based primer at the rate specified by the resin manufacturer and allow primer to cure. Tape the joints between plywood or wood panels using gaffer's tape prior to application of the lashing system.

3.05 ROOF MEMBRANE INSTALLATION - GENERAL

A. Membrane Application: Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing membrane components shall immediately follow application of base sheet and/or insulation as a continuous operation.

B. Aesthetic Considerations: Construction of an aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials including granules, and exercise care in ensuring that the finished application is acceptable to the Owner.

C. Priming: Prime metal and concrete and masonry surfaces with a uniform coating of the specified asphalt primer.

D. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealants will not be permitted.

E. Roofing Application (Primary): Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets.

1. Apply all layers of roofing perpendicular to the slope of the deck.

2. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.

3. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.

4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.

F. Preparation/Mixing/Catalyzing Resin Products: Pour the desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir the liquid for the time period

specified by the resin manufacturer. Calculate the amount of catalyst powder or liquid needed using the manufacturer's guidelines and add the pre-measured catalyst to the resin component. Mix again for the time period specified by the resin manufacturer, ensuring that the product is free from swirls and bubbles. To avoid aeration, do not use a spiral mixer unless the spiral section of the mixer can be fully contained in the liquid during the mixing process. Mix only enough product to ensure that it can be applied before pot life expires.

G. PMMA Primer Application: Apply catalyzed primer resin using a roller or brush at the rate specified by the primer manufacturer over qualified and prepared substrates. Apply primer resin at the increased rate specified by the primer manufacturer over DensDeck Prime or other porous substrates. Do not let resin pool or pond. Do not under-apply or over-apply primers as this may interfere with proper primer catalyzation. Make allowances for waste, including saturation of roller covers and application equipment.

H. PMMA Paste Application: Apply catalyzed preparation paste using a trowel over prepared and primed substrates. Before application of any resin product over cured paste, wipe the surface of the paste using the specified cleaner/solvent and allow to dry. Treat the surface again if not followed up by resin application within 60 minutes.

I. Roofing Application (Valley Areas): Apply the base ply of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets.

1. Apply the base ply of roofing perpendicular to the slope of the deck.

2. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.

3. Using the specified cleaner/solvent, wipe flashing membrane surfaces to be lapped with field membrane. Allow the surface to dry for a minimum 20 minutes before continuing work.

4. Apply an even, generous base coat of field membrane resin to prepared surfaces using a roller at the rate specified by the resin manufacturer. Work the fleece into the wet, catalyzed resin using a 9-inch roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again using a roller, apply an even top coat of catalyzed resin immediately following embedment of the fleece at the rate specified by the resin manufacturer, ensuring that the fleece is fully saturated. Make allowances for waste, including saturation of roller covers and application equipment. Allow 2 hours cure time prior to exposing the membrane to foot traffic.

J. Granule Embedment: Broadcast mineral granules over all bitumen overruns on the finish ply surface, while the bitumen is still hot or the adhesive is soft, to ensure a monolithic surface color.

K. Flashing Application: Cut the cant backing sheet into 12 inch widths and peel the release film from the back of the sheet. Set the sheet into place over the primed substrate extending 6 inches onto the field of the roof area and 6 inches up the vertical surface

utilizing minimum 3 inch laps. Set the non-combustible cant into place dry prior to installation of the roof membrane base ply. Flash walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, prime the base ply surfaces to receive the reinforcing sheet. Fully adhere the reinforcing sheet, utilizing minimum 3 inch side laps onto the primed base ply surface and up the primed wall or curb to the desired flashing height. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall or curb to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the vertical/horizontal surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See manufacturer's schematic for visual interpretation).

L. Catalyzed Acrylic Resin Flashing System: Install the liquid-applied primer and flashing system in accordance with the membrane system manufacturer's printed installer's guidelines and other applicable written recommendations as provided by the manufacturer.

M. Water Cut-Off: At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

3.06 RELATED COMPONENTS - INSTALLATION

A. Factory Fabricated Metal Coping Installation: Install metal components in accordance with the roofing manufacturer's instructions and the following requirements.

1. Place corner support clips at all corners to support the cap. Set the coping system manufacturer's support clips at the corner and fasten in accordance with the coping system manufacturer's installation instructions.

2. Beginning at the corners and/or ends, install the anchor cleats, splice plates, and factory formed miters and end cap components in strict accordance with the coping system manufacturer's installation instructions.

3. Position all remaining anchor cleats for straight sections of coping in strict accordance with the factory fabricated coping system manufacturer's installation instructions and code approval requirements, pulling each cleat snugly against the exterior face of the building.

4. Install splices centered on the anchor cleats in accordance with the coping system manufacturer's installation instructions.

5. Install full length sections of coping cap by hooking the outside leg of the coping cap over the outside face of the cleats first. Rotate the cap over the top of the wall pressing lightly, but firmly, on the top of the cap until the inside leg fully locks over the roof side of the anchor cleats. Allow a 3/8 inch gap between coping sections for thermal movement.

B. Walktread: Cut the walktread into maximum 5 foot lengths and allow to relax until flat. Adhere the sheet using the specified plastic cement. Apply the specified cement in a 3/8 inch thickness to the back of the product in 5 inch by 5 inch spots in accordance with the pattern as supplied by the walktread manufacturer. Walk-in each sheet after application to ensure proper adhesion. Use a minimum spacing of 2 inches between sheets to allow for proper drainage.

C. Sealant: Caulk all exposed finish ply edges at the transition to metal flashings incorporated into the roof system with a smooth continuous bead of the specified sealant.

3.07 SPECIAL CONDITIONS

A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.

B. Notification Of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.

C. Final Inspection

1. **Post-Installation Meeting:** Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

2. **Drain Verification:** At final inspection of all work, verify that all drains and scuppers, are functioning properly. Ensure that roof drains have adequate strainers.

3. **Air Handling Units:** Reconnect all ductwork, electrical and supply connections. At final inspection, verify that all connections are restored to a complete working, watertight, and safe condition, following SMACNA standards.

D. Issuance Of The Guarantee and Addendum: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee and addendum.