**GUIDE SPECIFICATION**

**Paratech Roof Membrane System**

**Mechanically Attached Base Ply over**

**Rigid Insulation**

Prepared by:

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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.

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SECTION 07 52 16 MODIFIED BITUMINOUS MEMBRANE ROOFING (Rev 6/4/2023)

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rigid Insulation Application

B. Roof Membrane Application

C. Roof Flashing Application

1.02 RELATED SECTIONS

A. Section [-----] - Submittals

B. Section [-----] - Rough Carpentry

C. Section [-----] - Roof Decks

D. Section [-----] - Sheet Metal Flashing Components and Roofing Accessories

E. Section [-----] - Sheet Metal Flashing and Trim

F. Section [-----] - Roof Specialties

G. Section [-----] - Temporary Roofs/Vapor Retarder

\* NOTE: A vapor retarder can be an important component in roof systems where climatic and building interior conditions require the prevention of vapor condensation within the roof assembly.

1.03 REFERENCE STANDARDS

References in these specifications to standards, test methods, codes etc., 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 Research Corp.

 Norwood, MA

NRCA National Roofing Contractors Association

 Rosemont, IL

CERTA Certified Roofing Torch Applicator

 Rosemont, IL

OSHA Occupational Safety and Health Administration

 Washington, DC

UL Underwriters Laboratories

 Northbrook, IL

1.04 SUBMITTALS

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

\* NOTE: Coordinate submittal requirements with general provisions. Modify submittals to suit specific project requirements.

A. 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.

1.05 QUALITY ASSURANCE

A. Acceptable Products: Provide primary roofing products, including each type of sheet, all manufactured in the United States, supplied by a single manufacturer. Provide secondary or accessory products which are acceptable to the manufacturer of the primary roofing products.

\* NOTE: Coordinate the desired fire and windstorm rating with the Underwriters Laboratories Roofing Materials and Systems Directory and the relevant independent wind uplift testing agency.

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

1. Underwriters Laboratories Class [-----] acceptance of the proposed roofing system.

2. Evidence by an accredited independent testing agency or agencies that the roof configuration meets a design windload pressure of - [---] psf or greater.

C. Project Acceptance: Submit a completed manufacturer's application for roof guarantee form along with shop drawings of the roofs showing all dimensions, penetrations, and details.

D. 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.

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

F. Manufacturer Requirements: The primary roofing materials manufacturer shall provide direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conduct a final inspection upon successful completion of the project.

1.06 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: Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

C. Handling: 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.

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

1.07 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. 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.

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 - cold adhesive: At low temperatures, the specified cold adhesive becomes more viscous, making even distribution more difficult. The optimal temperature of the adhesive at point of application is 70° - 100°F (21° - 38°C). To facilitate application when ambient temperatures are below 50°F (10°C), store the adhesive and roll goods in a warm place immediately prior to use. Bulk warmers, inline heaters, or other pre-heating equipment should be used to maintain the proper viscosity of the adhesive when using mechanical application equipment. Consider "flying in” the pre-cut roofing sheets in by placing them into the adhesive rather than rolling them into position. Roll or broom the sheets to ensure contact with the underlying adhesive. Suspend application in situations where the adhesive cannot be kept at temperatures allowing for even distribution.

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

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

1.08 GUARANTEE

\* NOTE: Choose the guarantee type below as appropriate for the type of coverage desired. “Membrane/System” includes the Siplast Paratherm insulation system and related accessories.

A. Roof Membrane Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's ***[10, 15, or 20]*** year labor and materials membrane guarantee. 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.

> Siplast ***[10, 15, or 20]*** -year Paratech Roof Membrane Guarantee

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 ***[10, 15, or 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.

> Siplast ***[10, 15, or 20]*** -year Paratech Roof Membrane/System Guarantee

PART 2 PRODUCTS

2.01 ROOFING SYSTEM ASSEMBLY/PRODUCTS

A. Substrate Panel/Thermal Barrier: Panels shall be UL and FM approved. Panels shall be approved in writing by the manufacturer for intended use and for use with the specified roof assembly.

1. Gypsum Sheathing Panel: A non-structural gypsum panel composed of fiber reinforced synthetic gypsum. Provide panels having a nominal thickness of [---] inch. Acceptable types are as follows:

> Securock Gypsum-Fiber Roof Board by United States Gypsum; Chicago, IL

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 [---] inch. Acceptable types are as follows:

> DensDeck Gypsum Roof Board, by Georgia Pacific Corporation; Atlanta, GA

3. 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 [---] inch. Acceptable types are as follows:

> DEXcell® Glass Mat Roof Board by National Gypsum, Charlotte, NC

B. 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. Maintain a maximum panel size of 4 feet by 4 feet where polyisocyanurate insulation and cover panels are specified to be installed in insulation adhesive.

1. Polyisocyanurate: A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers *[polymer bonded glass fiber facers]*, in full compliance with ASTM C1289, Type II, Class 1 *[Class 2]*, Grade 2 (20 psi) *[Grade 3 (25 psi)]*. Panels shall have a nominal thickness of [--] inches. Acceptable types are as follows:

> Paratherm by Siplast; Dallas, TX

2. Polyisocyanurate Tapered Roof Insulation: Tapered panels and standard fill panels composed of a closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers *[polymer bonded glass fiber facers]*, in full compliance with ASTM C1289, Type II, Class 1 *[Class 2]*, Grade 2 (20 psi) *[Grade 3 (25 psi)]*. The tapered system shall provide for a roof slope of [---] inch per foot. Acceptable types are as follows.

> Tapered Paratherm by Siplast; Dallas, TX

3. Gypsum Cover Panel: A non-structural gypsum panel composed of fiber reinforced synthetic gypsum. Provide panels having a nominal thickness of [---] inch. Acceptable types are as follows:

> Securock Gypsum-Fiber Roof Board by United States Gypsum; Chicago, IL

4. Gypsum Cover 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 [---] inch. The panel surface shall be factory primed with a non-asphaltic primer. Acceptable types are as follows:

> DensDeck Prime Gypsum Roof Board, by Georgia Pacific Corporation; Atlanta, GA

5. Gypsum Cover Panel: A highly durable, reinforced 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 5/8 inch. The panel surface shall be factory primed with a non-asphaltic primer, . Acceptable types are as follows:

> DensDeck StormX Prime Gypsum Roof Board, by Georgia Pacific Corporation; Atlanta, GA

6. Gypsum Cover 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 [---] inch. The panel surface shall be factory primed with a non-asphaltic primer. Acceptable types are as follows:

> DEXcell® FA Glass Mat Roof Board by National Gypsum, Charlotte, NC

7. Fiberboard: A high density panel composed of interlocking wood fibers and waterproofing binders, having a top surface that is pre-treated with a paraffin-based coating. Fiberboard panels shall be in full compliance with ASTM C208, Type II, Grade 2, and ASTM C209 (water absorption - 10% volume maximum) requirements. Panels shall have a nominal thickness of [--] inch. Acceptable types are as follows:

> Structodek HD by Blue Ridge Fiberboard, Inc.; Danville, VA

8. High Density Polyisocyanurate: A closed cell, rigid polyisocyanurate foam core material, integrally laminated between polymer bonded glass fiber facers, in full compliance with ASTM C1289, Type II, Class 4, Grade 1 (80 psi). Panels shall have a nominal thickness of 1/2 inch. Acceptable types are as follows:

> Paratherm HD by Siplast; Dallas, TX

9. Tapered Edge Panels: A tapered panel composed of polyisocyanurate or expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The panels shall have a dimension sufficient to provide for a smooth transition and provide proper support for the membrane layer or subsequent layer of insulation when there are transitions of 1/4 inch or greater.

2.02 DESCRIPTION OF SYSTEMS

\* NOTE: For Item A, choose the base and finish membrane plies in accordance with the project design requirements (ASTM D6163 or ASTM D6164 criteria).

A. Roofing Membrane Assembly: A roof membrane assembly consisting of two plies of a prefabricated, reinforced 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.

> Siplast Paratech Roof System

\* NOTE: For Item 1, choose one of the following base ply options to meet the desired design criteria.

1. Polyester Mat Reinforced Modified Bitumen Base Ply, Stripping Ply and Flashing Reinforcement Ply, manufactured in accordance with ASTM D6164 Type I, Grade S criteria.

> Paratech 180 Base by Siplast; Dallas, TX

\* NOTE: For Item 2, choose one of the following finish ply options to meet the desired design criteria.

2. Fiberglass Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6163 Type I, Grade G criteria.

> Paratech Glass Cap FR by Siplast; Dallas, TX

2. Polyester Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6164 Type I, Grade G criteria.

> Paratech 180 Cap FR by Siplast; Dallas, TX

2. Polyester Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6164 Type II, Grade G criteria.

> Paratech 250 Cap FR by Siplast; Dallas, TX

2. Fiberglass Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6163 Type I, Grade G criteria.

> Paratech Glass Cap FR TG by Siplast; Dallas, TX

2. Polyester Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6164 Type I, Grade G criteria.

> Paratech 180 Cap FR TG by Siplast; Dallas, TX

2. Polyester Mat Reinforced Modified Bitumen Finish Ply, manufactured in accordance with ASTM D6164 Type II, Grade G criteria.

> Paratech 250 Cap FR TG by Siplast; Dallas, TX

B. Flashing Membrane: A flashing membrane consisting of a prefabricated, reinforced 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.

\* NOTE: For Item 1, choose one of the following flashing ply options to meet the desired design criteria.

1. Torch-applied Polyester Mat Reinforced Modified Bitumen Flashing Ply, manufactured in accordance with ASTM D6164 Type I, Grade G criteria.

> Paratech 180 Cap FR TG by Siplast; Dallas, TX

1. Torch-applied Polyester Mat Reinforced Modified Bitumen Flashing Ply, manufactured in accordance with ASTM D6164 Type II, Grade G criteria.

> Paratech 250 Cap FR TG by Siplast; Dallas, TX

1. Torch-applied Aluminum Foil-surfaced Modified Bitumen Flashing Ply, manufactured in accordance with ASTM D6298 criteria.

> Veral Aluminum by Siplast; Dallas, TX

1. Adhesive-applied Polyester Mat Reinforced Modified Bitumen Flashing Ply, manufactured in accordance with ASTM D6164 Type I, Grade G criteria.

> Paratech 180 Cap FR by Siplast; Dallas, TX

1. Adhesive-applied Polyester Mat Reinforced Modified Bitumen Flashing Ply, manufactured in accordance with ASTM D6164 Type II, Grade G criteria.

> Paratech 250 Cap FR by Siplast; Dallas, TX

C. Catalyzed Acrylic Resin Flashing System: A specialty flashing system consisting of a PMMA-based, fully reinforced 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 use of the specialty flashing system shall be specifically approved in advance by the membrane manufacturer for each application.

> Parapro 123 Flashing System by Siplast; Dallas, TX

2.03 ROOFING ACCESSORIES

A. Roofing Adhesives

1. Membrane Cold Adhesive: An asphalt, solvent blend conforming to ASTM D4479, Type II requirements.

> Siplast Paratech Adhesive by Siplast; Dallas, TX

2. Mastic: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D4586 Type II requirements.

> Siplast PA-1021 Plastic Cement by Siplast; Dallas, TX

3. Flashing Adhesive: A slump resistant, asphalt cutback flashing adhesive, reinforced with non-asbestos fibers, conforming to ASTM D4586 Type II requirements.

> Siplast PA-828 Flashing Cement

4. Non-toxic Membrane Adhesive: A single component, non-toxic modified asphalt adhesive designed for application of the specified roof membrane system.

> Siplast SFT Adhesive by Siplast; Dallas, TX

5. Flashing Adhesive: A single-component, modified adhesive. The adhesive blend shall be formulated in a grade for application of flashing materials.

> Siplast SFT Cement by Siplast; Dallas, TX

B. Primers

1. Primer: An asphalt/solvent blend meeting ASTM D41, South Coast Air Quality District and Ozone Transport Commission requirements.

> PA-917 Primer by Siplast; Dallas, TX

2. Primer: An asphalt, solvent blend conforming to ASTM D41 requirements.

> PA-1125 Asphalt Primer by Siplast; Dallas, TX

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:

> PS-209 Elastomeric Sealant by Siplast; Dallas, TX

D. Sealant (vertical and horizontal 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:

> PS-715 NS Elastomeric Sealant by Siplast; Dallas, TX

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

F. 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.

G. Fasteners

1. Modified Bitumen Base Sheet Fasteners: Fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. Acceptable insulation fastener manufacturers for specific deck types are listed below.

a) Metal Decks: Mechanical fasteners for metal 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 metal decks are listed below.

\* NOTE: Choose one of the following fastener options to meet the desired design criteria.

- A fluorocarbon coated #12 screw type roofing fastener having a minimum 0.220 inch thread diameter. Plates used in conjunction with the fastener shall be a metal barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast Fastener by Siplast; Dallas, TX

> #12 Standard RoofGrip Drill Point Fastener by OMG; Agawam, MA

- A fluorocarbon coated #14 screw type roofing fastener having a minimum 0.245 inch thread diameter. Plates used in conjunction with the fastener shall be a metal barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast HD Fastener by Siplast; Dallas, TX

> Heavy Duty Roofing Fastener by OMG; Agawam, MA

- A fluorocarbon coated #15 screw type roofing fastener having a minimum 0.275 inch thread diameter. Plates used in conjunction with the fastener shall be a metal barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast XHD Fastener by Siplast; Irving, TX

> Extra Heavy Duty Roofing Fastener by OMG; Agawam, MA

b) Wood/Plywood Decks: 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.

\* NOTE: Choose one of the following fastener options to meet the desired design criteria.

- A fluorocarbon coated #12 screw type roofing fastener having a minimum 0.220 inch thread diameter. Plates used in conjunction with the fastener shall be a metal barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast Fastener by Siplast; Dallas, TX

> #12 Standard RoofGrip Drill Point Fastener by OMG; Agawam, MA

- A fluorocarbon coated #14 screw type roofing fastener having a minimum 0.245 inch thread diameter. Plates used in conjunction with the fastener shall be a metal, barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast HD Fastener by Siplast; Dallas, TX

> Heavy Duty Roofing Fastener by OMG; Agawam, MA

c) Structural Concrete Decks: Mechanical fasteners for structural concrete 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 structural concrete decks are listed below.

\* NOTE: Choose one of the following fastener options to meet the desired design criteria.

- A fluorocarbon coated non-threaded, hammer-driven roofing fastener. Plates used in conjunction with the fastener shall be a metal, barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast CD-10 Fastener by Siplast; Dallas, TX

> CD-10 by OMG; Agawam, MA

- A fluorocarbon coated #14 screw type roofing fastener having a minimum 0.245 inch thread diameter. Plates used in conjunction with the fastener shall be a metal, barbed type having a minimum 2 3/8-inch diameter, as supplied by the fastener manufacturer.

> Parafast HD Fastener by Siplast; Dallas, TX

> Heavy Duty Roofing Fastener by OMG; Agawam, MA

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.

> Hot-Dip Galvanized Square Cap by Maze Nails; Peru, IL

> Simplex Cap Nail by Simplex Nails, Inc., Americus, GA

\* NOTE: Contact Siplast for further information regarding approved base sheet fasteners for specific substrates.

I. 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: 1.4 lb/ft² (6.8 kg/m²)

3. Width: 30 in (76.2 cm)

> Paratread by Siplast; Dallas, TX

PART 3 EXECUTION

3.01 PREPARATION

\* NOTE: Edit this section to address specific job conditions which may affect the scope of work.

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

B. Asphaltic Primer: Prime metal, concrete and masonry surfaces with a uniform coating of the specified asphalt primer at the rate specified by the manufacturer.

3.02 SUBSTRATE PREPARATION

\* NOTE: See the Siplast Rigid Insulation and Base Sheet Usage Guide for information regarding approved rigid insulation and applicable installation methods.

\* NOTE: Select the substrate panel fastening frequency, if applicable, to meet project-specific design criteria.

A. 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. Install only as much insulation as can be made watertight within the same work day.

1. Insulation - multiple layer: Mechanically attach the insulation layers simultaneously to the substrate, using the specified fasteners, as necessary to hold the panels firmly in place during installation of the modified bitumen base sheet.

2. Crickets: Construct crickets of tapered insulation panels in a layout as indicated on the roof plan.

3. Tapered Edge at Transitions: Field-cut, shape and install tapered edge strip at transitions of 1/4 inch or greater between substrate components to provide a smooth transition and proper support for the subsequent insulation layer or membrane/flashing system components.

3.03 ROOF MEMBRANE INSTALLATION

\* NOTE: This specification is limited to projects having a maximum roof slope of 2.5 inches. Contact Siplast for specifications to meet higher slope requirements.

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 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. Membrane Adhesive Application: Membrane adhesive can be applied by roller, squeegee or spray unit. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids. Utilize an application rate of 1 1/2 to 2 gal/sq (0.6 to 0.8 kg/m²) for interply applications. Double the adhesive application rate at the end laps of granule surfaced sheets. Refer to the manufacturer’s inter-ply flashing detail at the locations that are to receive the specified catalyzed acrylic resin primer/flashing system.

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

E. Roofing Application: 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.

*\* NOTE: Use the following items 1-5 for applications incorporating sheets applied perpendicular to the slope of the roof.*

1. Apply all layers of roofing perpendicular to the slope of the deck. For metal deck assemblies, fasteners must engage the top flutes of the metal deck.

\* *NOTE*: Retain one of the fastening options below for item 2, as required to meet the specified wind uplift criteria. Modify field, perimeter and/or corner zone fastening patterns **[in brackets]** based on individual project design requirements.

2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the **[field]** zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 18-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the **[perimeter]** zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 18-inch centers. At the **[corner]** zones, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 18-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.

2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the **[field]** zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 12-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the **[perimeter**] zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 12-inch centers. At the **[corner]** zones, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 12-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.

2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the **[field]** zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 6-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the **[perimeter]** zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 6-inch centers. At the **[corner]** zones of the roof, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 6-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.

2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the **[field]** zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 12-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  In the **[field]** zone of the roof, mechanically attach the ply in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 12-inch centers. At the **[perimeter]** zones, mechanically attach the ply in 3 additional staggered rows using the specified fasteners/plates on 12-inch centers. At the **[corner]** zones, mechanically attach the ply through the field of the roll in 4 additional staggered rows using the specified fasteners/plates on 12-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.

3. After the ply is fastened, position adjacent plies over the fasteners in the laps of the proceeding plies ensuring minimum 4-inch side and end laps.  Offset adjacent end laps a minimum of 3 feet.  Cut a dog ear angle at the end laps of overlapping selvage edges. Fully heat-weld all side and end laps with a minimum 1/8-inch to maximum 1/4-inch continuous bleed out to ensure that all laps are watertight.  Using a clean trowel, apply top pressure to top seal T-laps immediately following ply application.  Roll all laps with a weighted steel roller and check laps after cooling to ensure full lap adhesion has been achieved.

4. Fasten the base ply every 12 inches on center at walls, curbs, drain sumps, and at penetrations with a minimum of 4 fasteners per penetration. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified modified bitumen base ply, fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip to encapsulate the fasteners in the center of the ply, extending a minimum of 3 inches beyond the plate edges in all directions.

5. Fully bond the finish ply to the modified bitumen base ply, utilizing minimum 3 inch side and end laps. Apply each ply directly behind the cold adhesiveapplicator. 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 ply 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.

*\* NOTE: Use the following items 1-5 in for applications incorporating sheets applied parallel to the slope of the roof.*

*1. Apply all layers of roofing parallel to the slope of the deck. For metal deck assemblies, fasteners must engage the top flutes of the metal deck.*

*\* NOTE: Retain one of the fastening options below for item 2, as required to meet the specified wind uplift criteria. Modify field, perimeter and/or corner zone fastening patterns* ***[in brackets]*** *based on individual project design requirements.*

*2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the* ***[field]*** *zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 18-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the* ***[perimeter]*** *zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 18-inch centers. At the* ***[corner]*** *zones, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 18-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.*

*2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the* ***[field]*** *zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 12-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the* ***[perimeter]*** *zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 12-inch centers. At the* ***[corner]*** *zones, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 12-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.*

*2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the* ***[field]*** *zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 6-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  At the* ***[perimeter]*** *zones, mechanically attach the ply through the field of the roll in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 6-inch centers. At the* ***[corner]*** *zones of the roof, mechanically attach the ply through the field of the roll in 2 additional staggered rows placed 12 inches from the side laps using the specified fasteners/plates on 6-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.*

*2. Unroll the specified modified bitumen base ply and allow to relax prior to mechanical attachment. Beginning at the low point of the roof, set the rolls in position utilizing minimum 4-inch side and end laps.  Stretch out and hold each ply firmly at both ends to prevent wrinkles.  Starting in the middle of the ply and working toward both ends, in the [****field]*** *zones of the roof mechanically attach the ply through the side laps using the specified fasteners/plates on 12-inch centers, ensuring that the outer edges of the plates are approximately ¼ inch from the edge of the ply and spaced according to the specified fastening pattern.  In the [field] zone of the roof, mechanically attach the ply in 1 additional row placed 16.5 inches from the side laps using the specified fasteners/plates on 12-inch centers. At the* ***[perimeter]*** *zones, mechanically attach the ply in 3 additional staggered rows using the specified fasteners/plates on 12-inch centers. At the* ***[corner]*** *zones, mechanically attach the ply through the field of the roll in 4 additional staggered rows using the specified fasteners/plates on 12-inch centers in each row. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified base ply fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip encapsulating the fasteners in the center of the ply extending 3 inches beyond the plate edges in all directions.*

*3. After the sheet is fastened, position adjacent sheets over the fasteners in the laps of the proceeding sheets ensuring minimum 4-inch side and end laps.  Offset adjacent end laps a minimum of 3 feet.  Cut a dog ear angle at the end laps of overlapping selvage edges. Fully heat-weld all side and end laps with a minimum 1/8-inch to maximum 1/4-inch continuous bleed out to ensure that all laps are watertight.  Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application.  Roll all laps with a weighted steel roller and check laps after cooling to ensure full lap adhesion has been achieved.*

*4. Fasten the base sheet every 12 inches on center at walls, curbs, drain sumps, and at penetrations with a minimum of 4 fasteners per penetration. Strip in all exposed fasteners and plates with a minimum 9-inch wide cover strip of the specified modified bitumen base sheet, fully adhered to extend a minimum of 3 inches beyond plate edges in all directions. For areas with high fastening frequencies, use one cover strip to encapsulate the fasteners in the center of the sheet, extending a minimum of 3 inches beyond the plate edges in all directions.*

*5. Fully bond the finish ply to the modified bitumen base sheet, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the cold adhesive 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.*

6. 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. 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.

G. Torch-applied Flashing Application - masonry surfaces: Flash masonry parapet walls and curbs using the reinforcing sheet and the flashing membrane. After the base ply has been applied to the top of the cant, fully adhere the reinforcing sheet, utilizing minimum 3 inch side laps and extend a minimum of 3 inches onto the base ply surface and up the flashing substrate in accordance with the membrane manufacturer’s requirements. 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 flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the 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 to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets. 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).

H. Torch-applied Flashing Application - wood surfaces: Flash wood or plywood parapet walls and curbs using the reinforcing sheet and the flashing membrane. The reinforcing sheet shall have minimum 3 inch side laps and extend a minimum of 3 inches onto the base ply surface and up the flashing substrate in accordance with the membrane manufacturer’s requirements. Nail the reinforcing sheet through the field of the sheet to the vertical wood surface on 12 inch centers from the top of the cant to top of the wall or curb. Fully adhere the remainder of the flashing reinforcing sheet that extends over the cant and roof level. 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 flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. 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 to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets. 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).

I. Adhesive-applied Flashing Application - Masonry Surfaces: Flash masonry parapet walls and curbs using the reinforcing sheet and the flashing membrane. Fully adhere the reinforcing sheet to the substrate. Incorporate minimum 3 inch laps; extending the sheets a minimum of 3 inches onto the base ply surface and 3 inches up the parapet wall above the cant. Terminate the finish ply at the top of the cant. Cut the flashing membrane into lengths that can be easily handled. Apply a uniform coat of the specified flashing cement to the area to receive flashing coverage. Set the flashing in place while exerting pressure on the flashing sheet to ensure complete contact with the wall/roof surfaces and to prevent air pockets. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers.

J. Adhesive-applied Flashing Application – Wood/Plywood Surfaces: Flash wood/plywood parapet walls and curbs using the reinforcing sheet and the flashing membrane. Apply the reinforcing sheet to incorporate minimum 3 inch laps, extending the sheets a minimum of 3 inches onto the base ply surface and to the top of the parapet wall, curb, etc. Nail the reinforcing sheet on 12 inch centers in all directions to the vertical wood surface from the top of the cant to top of wall, curb, etc. Fully adhere the remainder of sheet that extends over the cant and roof level. Terminate the finish ply at the top of the cant. Cut the flashing membrane into lengths that can be easily handled. Apply a uniform coat of specified flashing cement to the area to receive flashing coverage. Set the flashing in place while exerting pressure on the flashing sheet to ensure complete contact with the wall/roof surfaces and to prevent air pockets. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers.

K. 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.

L. 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.

M. Sealant: Apply a smooth continuous bead of the specified sealant at the exposed finish ply edge transition to metal flashings incorporated into the roof system.

3.04 FIELD QUALITY CONTROL AND INSPECTIONS

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/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.

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