



Section 3 - Application

Table of Contents

<u>Section Titles</u>	<u>Page Number</u>
3.00 General.....	3-3
3.01 Submittals.....	3-3
3.02 On Site Conditions.....	3-3
3.02.1 Weather.....	3-3
3.02.2 Protection.....	3-4
3.03 Delivery, Storage, & Handling.....	3-4
3.04 Safety.....	3-4
3.04.1 Training.....	3-4
3.05 Roof Decks - New Construction & Complete Tear-Off.....	3-5
3.05.1 Correcting Substrate Defects.....	3-5
3.05.2 Steel Decks.....	3-5
3.05.3 Concrete Decks.....	3-5
3.05.4 Wood Decks.....	3-5
3.05.5 Gypsum Decks.....	3-6
3.05.6 Lightweight Insulating Concrete Decks (LWIC).....	3-6
3.05.7 Lightweight Insulating Cellular Concrete Decks (LWICC).....	3-6
3.05.8 Structural Wood Fiber Decks.....	3-6
3.06 Re-cover Assemblies.....	3-6
3.06.1 Smooth Surface Built-Up Roofs.....	3-6
3.06.2 Mineral Surface Built-Up Or Modified Bitumen Roofs.....	3-6
3.06.3 Coal Tar Pitch &/Or Gravel Surface Built-Up Or Modified Bitumen Roofs.....	3-7
3.06.4 Sprayed-In-Place Urethane Roofs.....	3-7
3.07 Vapor Retarder Installation.....	3-7
3.07.1 Vapor Retarder Installation Over Steel Decks.....	3-7
3.07.2 Vapor Retarder Installation Over Concrete Decks.....	3-8
3.07.3 Vapor Retarder Installation Over Wood & Structural Wood Fiber Decks.....	3-8
3.08 Asphalt Installation.....	3-9
3.08.1 Asphalt Grades.....	3-9
3.08.2 Asphalt Application.....	3-9
3.09 Wood Nailer Installation.....	3-10
3.10 Insulation Installation.....	3-10
3.11 Insulation Fastening.....	3-11
3.12 Single Ply Membrane Installation - General.....	3-11
3.12.1 Installation of Mechanically Fastened Single Ply Roof Systems	3-11
3.12.2 Installation Of Adhered Single Ply Roof Systems - Non-Fleeceback.....	3-12
3.12.3 Installation Of Adhered Single Ply Roof Systems - Fleeceback.....	3-13
3.13 Flashing Installation - General Guidelines.....	3-13
3.13.1 Flashing Installation Techniques.....	3-14
3.13.2 Walls, Curbs, & Expansion Joints	3-14
3.13.3 Cast Iron Roof Drains.....	3-15
3.13.4 Roof Edge Metal - TPO Or PVC Coated Metal.....	3-15
3.13.5 Roof Edge Metal - Uncoated Metal.....	3-15
3.13.6 Inside Corners.....	3-15
3.13.7 Outside Corners & Curbs.....	3-16



Section 3 - Application

Table of Contents

<u>Section Titles</u>	<u>Page Number</u>
3.13.8 Pipes With Prefabricated Boots.....	3-16
3.13.9 Welded Watertight Scuppers.....	3-16
3.13.10 Penetration Pocket.....	3-17
3.14 Sheet Metal Installation.....	3-17
3.14.1 Coated Edge Metal.....	3-17
3.14.2 Uncoated Edge Metal.....	3-17
3.14.3 Counterflashing.....	3-18
3.14.4 Termination Bar.....	3-18
3.15 Temporary Closures.....	3-18
3.16 Membrane Repair.....	3-18
3.17 Roof Walkways.....	3-19
3.18 Protected Membrane Roof Installation.....	3-19



Section 3 - Application

3.00 - General

- A. This section of the Soprema Technical Specification Manual shall be used in conjunction with Section 2 - General Requirements, Section 4 - Single Ply System Selection, and Single Ply Flashing Details as they are applicable to project design and installation.
- B. Furnish and install the specified Soprema roofing system in accordance published specification and details as well as the project specification by the Designer of Record. This section of the specification is designed to address procedural and application issues when applying mechanically fastened and adhered roofing systems.

3.01 - Submittals

- A. Submit the completed Soprema **Project Registration Form** (PRF) a minimum of two weeks prior to beginning installation of the roof. The PRF may be completed on the Soprema web site, www.soprema.us, or filled out manually and faxed to 330-334-7903 as well as the local Soprema sales representative.
- B. Submit the completed **Project Information Form** (PIF), along with the PRF, when a Wind Rider has been specified for the project. A roof plan, project specification, exposure condition photographs (Photos taken from the roof top are required showing North, South, East, and West exposure conditions are required if the project exposure condition is specified on the roof plan or within the specifications), and field fastener pull-out test report (required for re-roof and re-cover projects involving mechanical fasteners) or bonded pull test report (required for re-roof projects involving adhesives).
- C. Request a final inspection for warranty when the project is complete. This may be accomplished by faxing the request to customer service at 330-334-6257 or phoning your Technical Service Representative directly.
- D. After the final inspection is completed and all of the punchlist items have been repaired, fax the project **Checklist** and project **Punchlist** to the Soprema Warranty Department at 330-334-7903.

3.02 - On Site Conditions

- A. Work on the project should not begin until the roofing contractor determines that all specifications and details are workable as specified and all project requirements can be achieved.
- B. The roofing contractor should not begin work until the roof deck has been prepared as specified and is in acceptable condition to receive the roofing system.
- C. By beginning installation of the new roofing system, the roofing contractor has accepted the existing condition as being in conformance with project requirements and applicable building codes.

3.02.1 - Weather

- A. Work should not begin when precipitation is forecasted to occur prior to the end of the work day unless the onset of precipitation can be addressed with the appropriate safeguards to prevent damage to the in-process system installation.
- B. Roof insulation and roof membrane shall not be installed during inclement weather without additional safeguards. Installation of temporary tie-ins to protect installed permanent materials is acceptable as long as the temporary tie-ins are removed prior to resuming installation of the permanent materials.
- C. Do not install roofing materials when moisture is present on the roof deck in any form. Do not install roofing materials if hot asphalt begins to foam, if applicable.



Section 3 - Application

3.02.2 - Protection

- A. Minimize disruption to normal building operations by coordinating roofing operations that involve excessive noise or exposure of the interior of the building with the Building Owner Representative.
- B. Temporary tie-ins to protect the finished portions of the roof shall be provided by the roofing contractor at the end of each working shift. When work resumes, all temporary tie-ins shall be entirely removed.
- C. Every effort shall be made by the roofing contractor to protect the building occupants, the exterior finish of the building, the building contents, landscaping, and contractor personnel during the duration of the project.
- D. When excessive equipment or personnel traffic over a partially completed section of the roof is necessary to complete the project, the contractor shall provide adequate protection for the partially completed section. Plywood set over rigid insulation would constitute adequate protection. Consult the Soprema Technical Department if optional protection methods are being considered.

3.03 - Delivery, Storage, & Handling

- A. All roofing materials shall be delivered and stored in their original, unopened containers or packaging bearing the manufacturer's name, approval organizations, and industry related test standards.
- B. When roof insulation is stored outdoors on the job site, it shall be stacked on pallets a minimum of four (4") inches (102 mm) above ground level and covered with a waterproof tarp. The roof insulation manufacturer's packaging is not considered waterproof and shall be slit on the narrow ends to avoid condensation inside the packaging.
- C. The roofing contractor should consider the effect of loads on the structure and decking due to placement of materials when stocking the roof. All materials should be stored in a neat, safe manner.
- D. All roofing materials should be stored in a dry, well-ventilated area. Materials should only be removed as needed for daily production.
- E. During winter months, store roll goods in above-freezing temperatures. Pails of adhesive and mastics shall be stored between forty (40° F) and eighty (80° F) degrees Fahrenheit (5° to 27° C). Materials that are not used within a four (4) hour period after being brought to the roof should be returned to storage and replaced with warm materials.
- F. All materials damaged during transport or storage shall be removed from the job site and replaced. The term damaged can be defined as the material will not perform as specified.

3.04 - Safety

- A. Roofing material manufacturers are not qualified to offer advice or direction regarding fire protection protocol during and after roof installation. Information offered in this section would be considered some elementary basics. Soprema suggest that the roofing contractor develop a comprehensive safety training program to address safety issues. Fire prevention is the roofing contractor's responsibility.
- B. Many roofing materials are combustible and should be kept away from ignition sources.
- C. Consult Material Safety Data Sheets (MSDS) and container labels for specific cautions and safety instructions.
- D. Follow all local, regional, national, and industry guidelines for fire prevention, detection, and control.

3.04.1 - Training



Section 3 - Application

- A. The roofing contractor is responsible for training their workforce in the recommended safety procedures in general safe roofing practice.

3.05 - Roof Decks - New Construction & Complete Tear-Off

- A. The roof deck shall be free of debris, moisture, and projections or depressions and comply with the minimum requirements as outlined in Section 2 - General Requirements.

3.05.1 - Correcting Substrate Defects

- A. The roof deck must be thoroughly inspected for defects prior to beginning work. If defects are detected then a list of these defects should be presented to the general contractor for repair. Commence work only after the defects have been corrected. If a general contractor is not involved with the project, then the roofing contractor is responsible for correcting defects in the roof deck before work commences.

3.05.2 - Steel Decks

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for:
- 1) removal of surface corrosion on the roof deck and subsequent painting;
 - 2) repair or reinforcement of holes, or severely corroded areas larger than eighteen (18") square inches (0.1 m²);
 - 3) mechanically fastening or welding loose decking; and
 - 4) replacement of decking that has corroded beyond repair or reinforcement. All steel deck repairs should be same gauge and tensile strength as the existing steel decking and be fastened to resist the same withdrawal force as the existing steel decking.

3.05.3 - Concrete Decks

- A. An application of Elastocol 400 or 500 Primer, or other ASTM D 41 asphalt primer, is required when hot asphalt is used for the attachment of the insulation or asphalt based membrane(s) on a concrete deck. The primer shall be applied at the rate of one hundred to one hundred and fifty (100 to 150 ft²/gal) square feet per gallon (0.41 to 0.61 L/m²) depending on the surface and the porosity of the surface and the solvents permitted to flash-off before work continues.
- B. The following NRCA deck dryness test is recommended to verify dryness of the concrete:
1. Pour one (1) pint (0.5 L) of Type IV bitumen that has been heated to a minimum of four hundred (400° F) degrees Fahrenheit (204° C) on to the concrete deck.
 2. If the bitumen bubbles or foams, then the deck is not dry.
 3. After cooling, attempt to peel the bitumen off the deck. If the bitumen can be removed cleanly, then the deck is not dry.
- C. As an alternate to B above, ASTM D 4263 may be performed to determine deck dryness.
- D. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for:
- 1) repairs of cracks and deteriorated deck;
 - 2) attachment of loose decking; and
 - 3) replacement of deck that is deteriorated beyond repair or otherwise unsuitable as a roof substrate.

3.05.4 - Wood Decks

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for:
- 1) repair of holes;
 - 2) attachment of loose decking; and
 - 3) replacement of deck that is warped, rotted, or deteriorated beyond repair or otherwise not suitable as a substrate. All wood deck repairs should be same thickness as the existing wood decking and be fastened to resist the same withdrawal force as the existing wood decking.

Section 3 - Application

3.05.5 - Gypsum Decks

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for: 1) repair of holes or gaps between precast panels; 2) attachment of loose decking; and 3) replacement of deck that is deteriorated beyond repair or otherwise not suitable as a substrate.

3.05.6 - Lightweight Insulating Concrete Decks (LWIC)

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for replacement of deck that is deteriorated beyond repair or otherwise not suitable as a substrate.

3.05.7 - Lightweight Insulating Cellular Concrete Decks (LWICC)

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for replacement of deck that is deteriorated beyond repair or otherwise not suitable as a substrate.

3.05.8 - Structural Wood Fiber Decks

- A. When a Designer of Record is not involved with a re-roofing project, the roofing contractor is responsible for replacement of deck that is deteriorated beyond repair or otherwise not suitable as a substrate. All structural wood fiber deck repairs should be same thickness as the existing structural wood fiber decking and be fastened to resist the same withdrawal force as the existing structural wood fiber decking.

3.06 - Re-cover Assemblies

- A. Re-cover assemblies are defined as installing a new roofing system directly over an existing system. The existing roof must provide a suitable surface to receive the new roofing assembly.
- B. Any wet insulation shall be removed and replaced with new insulation, and bitumen membrane, of equal thickness. Blisters shall be cut open, filled with patch material and resealed.
- C. The surface of the existing roof must be clean, dry, and free of projections or depressions. The roof deck shall comply with the minimum general requirements as outlined in Section 2.
- D. All existing flashings must be removed prior to the installation of the new roofing and flashing system.
- E. Existing metal, as well as lead flashings, shall be removed and replaced with the appropriate new material.

3.06.1 - Smooth Surface Built-Up Roofs

- A. Refer to Section 2.11 for additional information concerning existing smooth surface built-up roofs that have, or have not, been resaturated or coated.
- B. The first layer of the re-cover assembly shall be mechanically fastened, presecured, with acceptable fasteners, or hot mopped. The first layer shall be an acceptable coverboard. Contact the Soprema Technical Department for acceptability if other options are being considered.
- C. The existing smooth surface built-up roof must first be primed with Elastocol 400 or 500 Primer, or other ASTM D 41 asphalt primer, if hot asphalt is used for the attachment of the re-cover board. The primer shall be applied at the rate recommended by the manufacturer.

3.06.2 - Mineral Surface Built-Up Or Modified Bitumen Roofs

- A. Refer to Section 2.11 for additional information concerning direct application to mineral surfaced built-up or modified bitumen roofs.



Section 3 - Application

- B. The first layer of the re-cover assembly shall be mechanically fastened, presecured, with acceptable fasteners, or hot mopped. The first layer shall be an acceptable coverboard. Contact the Soprema Technical Department for acceptability if other options are being considered.
- C. The existing smooth surface built-up roof must first be primed with Elastocol 400 or 500 Primer, or other ASTM D 41 asphalt primer, if hot asphalt is used for the attachment of the base sheet or re-cover board. The primer shall be applied at the rate recommended by the manufacturer.

3.06.3 - Coal Tar Pitch &/Or Gravel Surface Built-Up Or Modified Bitumen Roofs

- A. Refer to Section 2.11 for additional requirements.
- B. A mechanically fastened re-cover board is required over an existing gravel surfaced roof, where the gravel will remain, or the existing roof is coal tar pitch. Except for gravel used to level depressions, all loose gravel must be removed.
- C. Caution: Fastener penetration of an existing coal tar pitch roof and deck may cause a flow of coal tar pitch into the building.
- D. Additional considerations must be take if Soprema single ply membranes are to be installed over concrete decks where a coal tar pitch has been removed and residual amounts of coal tar pitch remain. Contact the Soprema Technical Department for more information.

3.06.4 - Sprayed-In-Place Urethane Roofs

- A. Sprayed-in-place urethane roofs are not acceptable substrates for Soprema roofing systems and must be removed down to the deck prior to the installation of the new Soprema roofing system.

3.07 - Vapor Retarder Installation

- A. The vapor retarder must be properly sealed at all laps, joints, and penetrations. Penetrations must be flashed or enveloped.
- B. All punctures in the vapor retarder must be repaired prior to installing the roof insulation.
- C. The surfaces to be combined must be smooth, dry, and free from dirt, dust, grease, oil, or other contaminants.
- D. Insulation boards should be installed immediately over the vapor retarder to avoid damage to the vapor retarder during construction of the roof.
- E. Vapor retarders are only effective in reducing transmission of moisture vapor when properly installed and are not damaged or punctured during installation.

3.07.1 - Vapor Retarder Installation Over Steel Deck

- A. The vapor retarder may be installed directly over the steel deck or between two layers of insulation.
 - 1. Vapor retarder installation directly to a steel deck:
 - a. Beginning at the low point of the roof, chalk a line on the steel deck for alignment of sheets of vapor retarder.
 - b. Attach the vapor retarder in accordance with the manufacturer's instructions.
 - c. Apply successive plies in shingle fashion and overlap previous layer side laps two (2") inches to four

Section 3 - Application

(4") inches (51 to 102 mm) depending on the configuration of the steel deck. Stagger adjacent end laps a minimum of eighteen (18") inches (457 mm).

d. Attach the insulation in accordance with the project specification.

2. Vapor retarder installation between two layers of insulation:

a. The base layer shall be a nominal thickness of thermal barrier material and shall be mechanically fastened.

b. Beginning at the low point of the roof, chalk a line on the thermal barrier for alignment of sheets of vapor retarder.

c. Attach the vapor retarder in accordance with the manufacturer's instructions.

d. Apply successive plies in shingle fashion and overlap previous layer side laps two (2") inches to four (4") inches (51 to 102 mm) depending on the configuration of the steel deck. Stagger adjacent end laps a minimum of eighteen (18") inches (457 mm).

e. Attach the insulation in accordance with the project specification.

3.07.2 - Vapor Retarder Installation Over Concrete Decks

- A. Prime the concrete deck with Elastocol 400 or 500 Primer, or other ASTM D 41 asphalt primer, at the rate of one hundred of one hundred and fifty (100 to 150 ft²/gal) per gallon (0.41 to 0.61 L/m²) and permit the solvents to flash-off prior to the application of the roofing system.
- B. Do not apply asphalt primer within four (4") inches (102 mm) of precast concrete panel joints, cracks, or roof openings.
- C. Over concrete panel joints, install a minimum six (6") inch (152 mm) wide strip of a sanded bottom modified bitumen base membrane centered over the joint and spot attach to the concrete deck on one side with hot asphalt.
- D. Starting at the low point of the roof, chalk a line on the primed concrete deck for alignment of the first sheet of vapor retarder.
- E. Attach the vapor retarder in accordance with the manufacturer's instructions. The typical hot asphalt attachment for vapor retarders is thirteen (13 lbs.) pounds per one hundred (100) square feet (.68 kg/m²) in continuous ribbons two to three (2" to 3") inches (51 to 76 mm) wide at not more than six (6") inches (152 mm) on center parallel to the concrete joints.
- F. Apply successive plies in shingle fashion and overlap previous layer side laps two (2") inches to four (4") inches (51 to 102 mm) depending on the configuration of the steel deck. Stagger adjacent end laps a minimum of eighteen (18") inches (457 mm).
- G. Hot asphalt attach the insulation at the rate of twenty-five (25 lbs.) pounds per one hundred (100) square feet (1.2 kg/m²) or in accordance with the project specification. Note: Some cold adhesives may be used in lieu of hot asphalt. Contact the Soprema Technical Department for additional information.

3.07.3 - Vapor Retarder Installation Over Wood & Structural Wood Fiber Decks

- A. Mechanically fasten one ply of Soprema Sopra G base sheet, or other acceptable base sheet, using the appropriate number and type of fasteners. The number and type of fasteners, as well as the fastening pattern, will be based on published values for new construction and the fastener withdrawal values conducted



Section 3 - Application

on the roof deck for re-roof.

- B. Starting at the low point of the roof, chalk a line on the deck for alignment of the first sheet of vapor retarder.
- C. Attach the vapor retarder in accordance with the manufacturer's instructions. The typical hot asphalt attachment for vapor retarders is thirteen (13 lbs.) pounds per one hundred (100) square feet (.68 kg/m²) in continuous ribbons two to three (2" to 3") inches (51 to 76 mm) wide at not more than six (6") inches (152 mm) on center parallel to the concrete joints. If the vapor retarder will become an integral part of the finished roof system and additional components of the assembly will be hot asphalt attached to the vapor retarder without additional fastening into the deck, then the interply rate of twenty-five (25 lbs.) pounds per one hundred (100) square feet (1.2 kg/m²) shall be used.
- D. Apply successive plies in shingle fashion and overlap previous layer side laps two (2") inches to four (4") inches (51 to 102 mm) depending on the configuration of the steel deck. Stagger adjacent end laps a minimum of eighteen (18") inches (457 mm).
- E. Hot asphalt attach the insulation at the rate of twenty-five (25 lbs.) pounds per one hundred (100) square feet (1.2 kg/m²) or in accordance with the project specification.

3.08 - Asphalt Installation

- A. Soprema roofing systems require the use of ASTM D 312, Type IV asphalt for the application of roof insulation, vapor retarders, or anywhere hot asphalt is required.
- B. During installation with hot asphalt, proper bitumen weight must be maintained. Use equipment and installation techniques recognized by the roofing as being sound installation procedures.

3.08.1 - Asphalt Grades

- A. ASTM D 312, Type III or IV asphalt, or ASTM D 6152 asphalt, can be used for roof insulation, vapor retarders, or anywhere hot asphalt is required on slopes up to and including three (3") inches per foot (25%).
- B. ASTM D 312, Type III asphalt has a softening point between one hundred and ninety-four and two hundred and twenty-five (194° to 205° F) degrees Fahrenheit (90° to 96° C) and is applied between four hundred and twenty-five (425° F) degrees and four hundred and seventy-five (475° F) degrees Fahrenheit (219° to 246° C). The maximum heating temperature is five hundred (500° F) degrees Fahrenheit (260° C).
- C. ASTM D 312, Type IV asphalt has a softening point between two hundred and ten and two hundred and twenty-five (210° to 225° F) degrees Fahrenheit (99° to 107° C) and is applied between four hundred and twenty-five (425° F) degrees and four hundred and seventy-five (475° F) degrees Fahrenheit (219° to 246° C). The maximum heating temperature is five hundred (500° F) degrees Fahrenheit (260° C).
- D. ASTM D 6152 asphalt has a softening point between one hundred and eighty-five and two hundred and forty (185° to 240° F) degrees Fahrenheit (85° to 116° C) and is applied between four hundred and forty (440° F) degrees and four hundred and ninety (490° F) degrees Fahrenheit (225° to 255° C). The maximum heating temperature is five hundred (500° F) degrees Fahrenheit (260° C).

3.08.2 - Asphalt Application

- A. The asphalt application rate for all base, interply, and cap sheets and membranes is twenty-five pounds per one hundred (25 lbs/100 ft²) square feet (1.2 kg/m²) plus or minus twenty (20%) percent.

Section 3 - Application

- B. The asphalt temperature at the point of application shall be the EVT plus or minus twenty-five (25° F) degrees (13° C). A viscosity of one hundred and twenty-five (125) centipoise is required for hand mopping and seventy-five (75) centipoise for mechanical spreaders.
- C. For ASTM D 312 Type III or IV asphalt, the asphalt temperature at the point of application shall not be less than four hundred and twenty-five (425° F) degrees Fahrenheit (219° C) at the point of application.
- D. For ASTM D 6152 asphalt, the asphalt temperature at the point of application shall not be less than four hundred and fifty-five (455° F) degrees Fahrenheit (235° C) at the point of application.
- E. Kettle and tanker thermometers should be checked periodically to ensure accuracy and proper asphalt heating temperatures.
- F. Do not heat asphalt beyond the flash point or the finished blowing temperature for more than four (4) hours.
- G. Over nights, holidays, and weekends, do not maintain asphalt temperature heated above three hundred and twenty-five (325° F) degrees Fahrenheit (163° C) in heated tankers.
- H. The kettle operator shall be fully trained regarding safe operation of the kettle and have the required clothing, personal protective equipment, and fire protection equipment.
- I. Do not mix different types of asphalt in the same kettle. Do not mix coal tar pitch with asphalt in the same kettle.

3.09 - Wood Nailer Installation

- A. Wood nailers shall be installed as specified by the Designer of Record or as required in these specifications and details.
- B. Wood Nailers shall be attached to the deck, or other building member, to resist a force of two hundred (200 lbs.) pounds (91 kg) per lineal foot (305 mm) in all directions.
- C. The height of the wood nailers shall match the total thickness of the specified insulation and shall be installed with a one-eighth ($\frac{1}{8}$) inch (3.2 mm) gap between each length and each change of direction.

3.10 - Insulation Installation

- A. Only install as much insulation as can be covered with finished roof the same day.
- B. It is unacceptable to install wet, damaged, warped, or defective insulation.
- C. Install insulation boards with joints staggered. With multiple layers of insulation, stagger joints between layers.
- D. Install insulation boards so that the dimension that is parallel to flute direction on a metal is supported by the top of the flute. Do not kick insulation boards into place.
- E. Fit insulation tightly around all penetrations and nailers. Gaps between insulation boards, or penetrations, that exceed one-quarter ($\frac{1}{4}$) inch (6.4 mm) must be filled with similar insulation material.
- F. To create a sump for drainage, tapered insulation is recommended around all drains. Mitering the insulation is required at drain sump joints.
- G. Insulation boards used to create saddles or crickets shall be mitered and filled at ridges so that there are no open joints.
- H. For mechanically anchored systems, insulation boards must be presecured to the roof deck with acceptable



Section 3 - Application

fasteners and plates and in accordance with the project specifications.

- I. For adhered systems, insulation boards must be firmly attached to the roof deck or base sheet with fasteners and plates, hot asphalt, or accepted adhesive. Three (3") inch diameter plates must be used in conjunction with acceptable fasteners when mechanically fastening insulation.
- J. Install saddle or cricket systems in accordance with the insulation manufacturer's instructions and the project specifications.
- K. When hot asphalt is applied directly over a coverboard that is directly over polystyrene, then all joints of the coverboard shall be taped or sealed.
- L. When a membrane is cold adhesive applied directly over a coverboard that is directly over polystyrene, the system must be accepted, in writing, by the Soprema Technical Department. Additional design considerations are required in order for the system to be accepted by Soprema.

3.11 - Insulation Fastening

- A. Refer to Section 2.14 for information concerning fastener withdrawal resistance requirements and section 2.20.3 for fastener penetration requirements.
- B. Fasteners shall be installed vertically to ensure proper engagement into the deck.
- C. Fasteners that are over-driven to the point where the fastening plate cups or buckles, the insulation plate must be removed and replaced.
- D. Fasteners must be driven so that the fastener head is snug to the fastening plate.
- E. Three (3") inch (76 mm) diameter metal or plastic fastening plates are required when mechanically fastening insulation, or both insulation and a base sheet with a common fastener.

3.12 - Single Ply Membrane Installation - General

- A. Starting at the low point of the roof, unroll and position the membrane over an acceptable substrate and allow to relax for a minimum of thirty (30) minutes before mechanical attachment or splicing. Use a chalk line where necessary to insure proper alignment
- B. Soprema single ply roof systems shall be installed so that the seams either shed water or run parallel to the flow of drainage.
- C. Placement of additional rolls of membrane shall provide for sufficient overlaps for seaming of membranes.
- D. Sheets cut along one side shall have the cut edge installed as the bottom of the lap at all seams.

3.12.1 - Installation Of Mechanically Fastened Single Ply Systems

- A. Install the single ply membrane as specified by the Designer Of Record or as required by these specifications and details.
- B. Mechanically fastened single ply side laps shall be six (6") inches (152 mm) wide.
- C. All single ply end laps shall be two (2") inches (51 mm) wide.
- D. Install Soprema fasteners and two (2") inch (51 mm) diameter Flagon plates in the seam of adjoining sheets. The spacing of the fasteners and plates shall be determined by the Designer of Record or as required by these specifications and details.



Section 3 - Application

- E. Fasteners shall be installed vertically to ensure proper engagement into the deck and must engage the high flute on a metal deck.
- F. Fasteners that are over-driven to the point where the fastening plate creates wrinkles or waves in the seam area must have the Flagon plate reset. Fasteners must be driven so that the fastener head is snug to the fastening plate.
- G. Unless otherwise noted in the Flagon Approved Details, the installer must place the Flagon Stress Plate, Flagon Metal Batten Bar, or Flagon Polymer Batten Bar on the preprinted fastener lines. The Flagon Stress Plate or Flagon Batten Bar are fastened with #14 or #15 Soprema fasteners in accordance with the Flagon Approved Details or as required to meet specific wind uplift requirements.
- H. The standard spacing of side lap fasteners in the field of the roof is eighteen (18") inches (457 mm) on center. Fastener spacing may be adjusted in order to comply with wind uplift requirements of the project. Additional fastening is required on the perimeters and in the corners of the roof. Refer to the Approved Details section of this specification for fastening rates and patterns.
- I. One or more additional rows of fasteners and Stress Plates or Batten Bar may be required in the field, perimeter, and corners of the roof in order to comply with wind uplift requirements of the project. The additional rows of attachment are positioned in equidistant rows between the rows of side lap fastening. The additional rows of attachment are flashed-in with an eight (8") inch (203 mm) wide strip of the same Flagon membrane.
- K. Heat weld the side and end laps in accordance with the Approved Details.

3.12.2 - Installation Of Adhered Single Ply Systems - Non-Fleeceback

- A. Install the single ply membrane as specified by the Designer Of Record or as required by these specifications and details.
- B. Single ply side laps shall be two (2") inches (51 mm) wide.
- C. Place the sheet in its final position allowing for the proper lap width. Fold the sheet back evenly onto itself lengthwise to expose the underside of the mating surface. Care should be taken to ensure wrinkles are not created while back-folding.
- D. Sweep the mating surfaces with a stiff broom to remove any debris or dirt that may be present.
- E. Apply Pliobond 9752 or TACC LA-432-M with either a nine (9") inch (228 mm) wide solvent-resistant paint roller or a commercial grade adhesive sprayer. The adhesive shall be applied in a uniform thickness to both mating surfaces at approximately the same time. Adhesive that is applied with an adhesive sprayer must be back-rolled with a solvent resistant paint roller to ensure proper contact and coverage. Refer to the adhesive container label and Product Data Sheet for specific application requirements and coverage rates.
- F. Allow the adhesive to flash-off. Flash-off time will change based on ambient temperature, wind, available sunlight, and relative humidity. To be certain that the adhesive surfaces are ready to mate, touch the adhesive surface with a clean, dry finger or knuckle. To ensure that the adhesive is ready throughout its thickness, push forward on the adhesive at an angle as it is being touched. The adhesive is not ready for mating if either of these motions expose wet or stringy adhesive.
- G. Once the adhesive is ready, bond the mating surfaces by beginning at the fold. Roll the previously coated portions of the membrane into the coated substrate slowly and evenly to avoid wrinkles.
- H. To ensure that the adhesive surfaces mate properly, smooth the bonded half of the membrane to the



Section 3 - Application

substrate with a push broom. Wrinkles can be avoided if the first pass on the brooming is "soft" to initiate contact while the second pass is a little "harder" ensure a solid stick.

- I. Repeat the procedure on the non-adhered half of the membrane back to complete the sheet.
- J. If the membrane lap area has been open for more the twelve (12) hours, or becomes contaminated, clean the mating surfaces with Naphtha and permit to dry.
- K. Heat weld the side and end laps in accordance with the Approved Details.

3.12.3 - Installation Of Adhered Single Ply Systems - Fleeceback

- A. Install the single ply membrane as specified by the Designer Of Record or as required by these specifications and details.
- B. Single ply side laps shall be two (2") inches (51 mm) wide.
- C. Place the sheet in its final position allowing for the proper lap width. Fold the sheet back onto itself widthwise (slightly more than half way) to expose the fleeceback underside of the membrane.
- D. Sweep the mating surfaces with a stiff broom to remove any debris or dirt that may be present.
- E. Apply TACC FA-636 with either a nine (9") inch (228 mm) wide paint roller or a commercial grade adhesive sprayer. TACC FA-636 shall be applied in a uniform thickness to the substrate only. Adhesive that is applied with an adhesive sprayer must be back-rolled with a paint roller to ensure proper contact and coverage. Refer to the TACC FA-636 container label and Product Data Sheet for specific application requirements and coverage rates.
- F. Beginning at the fold, apply TACC FA-636 directly to the substrate. Immediately roll the membrane into the TACC FA-636 while the adhesive is still wet.
- G. To ensure that the adhesive surfaces mate properly, smooth the bonded half of the membrane to the substrate with a push broom. Wrinkles can be avoided if the first pass on the brooming is "soft" to initiate contact while the second pass is a little "harder" ensure a solid stick.
- H. Repeat the procedure on the non-adhered half of the membrane back to complete the sheet. Be certain to unroll successive sheets so that the overlap area (the side of the fleeceback without fleece along the edge) is positioned over the previously installed sheet.
- I. If the membrane lap area has been open for more the twelve (12) hours, or becomes contaminated, clean the mating surfaces with Naphtha and permit to dry.
- J. Heat weld the side and end laps in accordance with the Approved Details.

3.13 - Flashing Installation - General Guidelines

- A. All flashings shall be installed as specified by the Designer Of Record or as required by these specifications and details. In all cases, the most stringent requirement will prevail.
- B. Refer to the Approved Details section of this specification for illustrations of typical penetration and perimeter flashings.
- C. Textured or spalled masonry, stucco, exterior insulated finishing systems* (EIFS), cobblestone, corrugated metal panels, and uneven substrates of any kind require the installation of an acceptable overlayment prior to flashing. Acceptable overlayments would include minimum one-half ($\frac{1}{2}$ ") inch (12.7 mm) thick exterior grade plywood or minimum one-quarter ($\frac{1}{4}$ ") inch (6 mm) thick gypsum board. The overlayment is fastened as

Section 3 - Application

specified by the Designer Of Record or as specified in the Approved Details section of this specification or as determined by the Soprema Technical Department.

* Required if the minimum flashing height of eight (8") inches (203 mm) cannot be achieved below the EIFS.

- D. All Soprema Flagon TPO and PVC coated metals must be supported by wood nailers.
- E. All non-coated metal shall be flashed with Soprema Flagon TPO or PVC Flashing in accordance with published details.
- F. The minimum flashing height of a membrane flashing ply is eight (8") inches (203 mm) above the surface of the roof on new construction. On reroof, existing building features may not permit the minimum flashing height to be achieved. In these cases, contact the Soprema Technical Department for alternative flashing details. The minimum flashing height for pitch pans is four (4") inches (102 mm) above the surface of the roof.
- G. The maximum flashing height of a membrane flashing ply, without using a high wall flashing detail, is thirty-six (36") inches (914 mm) above the surface of the roof. High wall flashings receive intermediate as follows: a) From three (3') feet (.914 m) to six (6') feet (1.8 m), one attachment at one-half the wall height; b) Above six (6') feet (1.8 m), one attachment every three (3') feet.
- H. The width of a section of flashing is limited to the width of a roll of membrane. Field and flashing side laps must be offset from one another a minimum of six (6") inches (152 mm).
- I. The top of all flashing must be fastened at the rate specified by the Designer Of Record or as specified in the Approved Details section of this specification.
- J. On reroof projects, all existing flashings must be removed including lead, felts, and bitumen from walls and penetrations.
- K. All flashings shall be mounted to the surface specified by the Designer or Record or as specified in the Approved Details section of this specification.
- L. New copper surfaces that will come into contact with flashing materials must be cleaned with acetone or lacquer thinner before applying primer to the surface.

3.13.1 Flashing Installation Techniques

- A. The descriptions of flashing in this section suggest certain techniques. The suggested techniques represent only one way that the detail may be correctly completed. Alternate techniques are also acceptable as long as overlap and fastening requirements are satisfied. The written descriptions in this section are designed to be supplemental to the details in the Approved Details section of this specification.

3.13.2 - Walls, Curbs, & Expansion Joints

- A. Install the single ply membrane so that it extends to the base of the wall, curb, or expansion joint at the ninety (90°) degree change in angle.
- B. For mechanically fastened single ply systems, anchor the membrane at the base of the penetration with fasteners and plates in accordance with the Approved Details section of this specification.
- C. Install the membrane flashing ply that extends a minimum of four (4") inches (102 mm) past the fastening plate at the base of the wall, curb, or expansion joint on the horizontal surface, and a minimum of eight (8") inches (203 mm) above the surface of the roof.
- D. When specified by the Designer Of Record, or as specified the Approved Details in this specification,



Section 3 - Application

mechanical termination eight (8") inches (203 mm) on center is required at the top of the flashing.

- E. Install the specified counter-flashing over the top termination to complete the detail.

3.13.3 - Cast Iron Roof Drains

- A. Build a sump to the drain and create a smooth transition by installing tapered insulation around the drain. The slope of the drain sump shall not exceed one (1") inch per horizontal foot (8%). The drain sump should be four foot by (4'x4') four foot (1.2 m x 1.2 m) minimum.
- B. Apply a bead of Soprema Approved Mastic to the top of the drain bowl where the clamping will seat.
- C. Install the single ply membrane so that the side lap for the initial base sheet joint occur on either side of of the drain bowl. Cut out the hole for the drain ensuring that the membrane extends beyond the clamping ring a minimum of one (1") inch (25 mm).
- D. Install the clamping ring and drain bolts shall be installed to provide continuous compression between the top of the drain bowl and the clamping ring.

3.13.4 - Roof Edge Metal - TPO Or PVC Coated Metal

- A. Install the wood blocking, insulation, coverboard (if required) and single ply membrane as specified by the Designer Of Record or as required by these specifications and details.
- B. The Flagon Coated Metal is shop fabricated to insure the following a minimum three (3") inch (76 mm) wide horizontal flange that is hemmed on the inside edge and is totally supported by the wood blocking and an outside edge that is able to be crimped to a mechanically fastened clip cleat.
- C. Fasten the clip cleat in accordance with project specifications but no greater than six (6") inches (152 mm) on center.
- D. Fasten the horizontal flange four (4") inch (102 mm) on center, staggered.
- E. Gap the sections of Flagon Coated Metal a minimum of one-quarter ($\frac{1}{4}$ ") inch (6 mm). Flash in the gap with a six (6") inch (152 mm) wide heat welded cover strip of the appropriate membrane.
- F. Heat weld the membrane overlaps on to the coated metal in accordance with the Approved Details.

3.13.5 - Roof Edge Metal - Uncoated Metal

- A. Install the wood blocking, insulation, coverboard (if required) and single ply membrane as specified by the Designer Of Record or as required by these specifications and details.
- B. Depending on the configuraton of the metal edge system, the membrane may be turned over the edge of the wood nailer and fastened in conjunction with the metal system or require fastening on the horizontal surface of the roof prior installation of the metal.
- C. Install the factory fabricated metal in accordance with the manufacturer's recommendations and the project specifications.

3.13.6 - Inside Corners

- A. Install the single ply membrane so that it butts to the base of the wall at both sides of the corner and fasten the membrane with two (2") inch (51 mm) diameter plates and screws.
- B. Install the single ply membrane flashing ply so that there is a four (4") inch (102 mm) lap on the horizontal surface and a three (3") inch (76 mm) lap on the vertical surface that rounds the corner. This will require

Section 3 - Application

a three inch by (3" x 4") four inch (76 mm x 102 mm) section of the flashing to be removed from the first membrane flashing ply. Heat weld the horizontal flange of the flashing to the field membrane.

- C. Install the first membrane flashing ply on the other side of the corner so that it butts to the vertical inside corner and flashes in the three (3") inch (76 mm) section that laps around the corner on the vertical surface from the first membrane flashing ply. At the base of the second membrane flashing ply, a small section of the base lap is removed by making cut at a forty-five (45°) degree angle beginning at the inside corner. Heat weld both the horizontal flange and the lap on the vertical at the inside corner.
- D. Cut a three-sided inside corner flashing section out of a Soprema prefabricated inside/outside corner flashing and heat weld into place at the apex of the inside corner.

3.13.7 - Outside Corners & Curbs

- A. Install the single ply membrane so that it butts to the base of the curb at both sides of the corner and fasten the membrane with two (2") inch (51 mm) diameter plates and screws.
- B. Cut the membrane flashing ply so that there is a four (4") inch (102 mm) lap on the horizontal surface and a three (3") inch (76 mm) lap on the vertical surface. For a single section curb flashing, the length of the flashing sheet shall be the sum of the dimensions of the curb plus three (3") inches (76 mm) for the vertical overlap. Remove a three (3") inch (76 mm) by four (4") inch (102 mm) tab at the bottom on one end of the flashing.
- C. Beginning at one of the outside corners, install the membrane flashing ply so that it butts to the vertical outside corner. Adhere the flashing on the vertical surface on all four sides of the curb.
- D. Heat weld all of the horizontal and vertical laps in the flashing.
- E. Cut a four-sided outside corner flashing section out of a Soprema prefabricated inside/outside corner flashing and heat weld the section into place at all four corners.

3.13.8 - Pipes With Prefabricated Boots

- A. Install the single ply field membrane. In most cases, it will be necessary to make an end lap in the membrane at or near the pipe in order to maneuver around the pipe. For non-fleeceback membranes, create the end lap a minimum of two (2") inches (51 mm) past the pipe and heat weld the end lap together. For fleeceback membranes, create the end lap so that the minimum six (6") inch (152 mm) end lap cover strip butts to the base of the pipe.
- B. Fasten a minimum of four (4) two (2") inch (51 mm) diameter plates around the pipe. Flash in the fasteners with a minimum two (2') foot (610 mm) square section of non-fleeceback membrane. Cut a hole in the center of the flashing section that is approximately one-half (½") inch (13 mm) smaller than the outside diameter of the pipe. Fit the flashing section over the pipe to the base of the pipe. Heat weld the perimeter of the flashing section to the field sheet.
- C. Cut a hole in the top of the prefabricated pipe boot approximately one-half (½") inch (13 mm) smaller than the diameter of the penetration. Fit the pipe boot over the penetration and lower it until the flange contacts the flashing section at the base of the pipe. Heat weld the flange of the pipe boot to the flashing section.
- D. Apply a bead of Soprema Approved Mastic between the top of the pipe flashing and the pipe. Install a stainless steel clamping ring over the top of the pipe boot flashing to complete the detail.

3.13.9 - Welded Watertight Scuppers



Section 3 - Application

- A. Construct the scupper sleeve from Flagon (TPO or PVC) Coated Metal in the appropriate size for the opening. All metal flanges shall have rounded corners and be completely supported by masonry or wood blocking.
- B. Install the field single ply membrane so that it extends into the scupper opening a minimum of two (2") inches (51 mm) on the horizontal surface.
- C. Install the coated metal scupper sleeve in the opening. Apply a continuous bead of Soprema Approved Mastic on the back side of the metal scupper sleeve where the flange will be fastened. Fasten the coated metal flange four (4") inches (102 mm) on center with the appropriate fasteners. The fabrication seam of the scupper shall be located at the top of the scupper and sealed with caulking.
- D. At the four corners of the unit, heat weld pre-molded outside corners.
- E. Over all metal flanges and pre-molded outside corner flanges, heat weld a minimum six (6") inch (152 mm) wide strip of non-fleeceback membrane.

3.13.10 - Penetration Pocket

- A. Construct the penetration pocket from Flagon (TPO or PVC) Coated Metal in the appropriate size for the penetration to be flashed. All metal flanges shall have rounded corners and be completely supported by wood blocking.
- B. Install the field single ply membrane so that it extends over the wood blocking.
- C. Install the coated metal penetration pocket sleeve around the penetration. Apply a continuous bead of Soprema Approved Mastic on the back side of the penetration pocket sleeve where the flange will be fastened. Fasten the coated metal flange four (4") inches (102 mm) on center with the appropriate fasteners.
- D. At the four corners of the unit, heat weld pre-molded outside corners.
- E. Over all metal flanges and pre-molded outside corner flanges, heat weld a minimum six (6") inch (152 mm) wide strip of non-fleeceback membrane.
- F. Fill the penetration pocket with the appropriate material including a three-quarter (3/4") inch (76 mm) crown finish for drainage.

3.14 - Sheet Metal Installation

- A. Install the metal edge system as specified by the Designer Of Record or as required by these specifications and details.

3.14.1 - Coated Edge Metal

- A. All coated edge metal horizontal flanges shall be a minimum of three and one-half (3½") inches (90 mm) wide and be fastened four (4") inches (102 mm) on center staggered, to wood nailers.
- B. Apply a continuous bead of Soprema Approved Mastic on the back side of the metal flange where the flange will be fastened.
- C. All coated edge metal horizontal flanges shall have a hemmed inside edge and an outside edge that can be crimped to a clip cleat.
- D. Weld the single ply field membrane directly to the metal edge flange.

3.14.2 - Uncoated Edge Metal

- A. All uncoated edge metal systems shall be provided by Soprema or factory fabricated from an accepted



Section 3 - Application

supplier. Contact Soprema Technical Department for a list of accepted suppliers.

- B. On all uncoated edge metal systems, the field membrane must be turned over the edge of the wood nailer and be fastened simultaneously with the edge metal. Some uncoated edge metal systems require additional caulking. Refer to Soprema Approved Details for specifics.
- C. The minimum face fastening for factory fabricated uncoated edge metal is twelve (12") inches (305 mm) on center.

3.14.3 - Counterflashing

- A. All counterflashing shall be fabricated to comply with SMACNA guidelines.
- B. The membrane flashing shall be fastened twelve (12") inches (305 mm) on center. The membrane flashing and counterflashing may not be fastened simultaneously with the same fastener.
- C. Surface mounted counterflashing shall be fastened twelve (12") inches (305 mm) on center. A bead of Soprema Soprema Approved Mastic must be applied between the counterflashing and the substrate. The top of the counterflashing must be caulked with Soprema Approved Caulking.
- D. Refer to Soprema Approved details for specifics.

3.14.4 - Termination Bar

- A. All Termination Bar shall be supplied by Soprema.
- B. The membrane flashing shall be fastened twelve (12") inches (305 mm) on center. The membrane flashing and termination are fastened simultaneously with the same fastener.
- C. A bead of Soprema Soprema Approved Mastic must be applied between the membrane flashing and the substrate. The top of the termination bar must be caulked with Soprema Soprema Approved Caulking.
- D. Refer to Soprema Approved details for specifics.

3.15 - Temporary Closures

- A. Temporary closures must be used to protect the finished roof system from infiltration of water during inclement weather while the roof is under construction.
- B. The temporary tie-in materials shall extend from a minimum of twenty-four (24") inches (610 mm) past the last course of insulation. The tie-in area on the existing roof, or new roof deck, must be clean, smooth, dry, and free of debris or contaminants. Install a continuous application of asphalt or roofing cement on to the tie-in material and the tie-in area. Embed the tie-in material into the asphalt or roofing cement and provide continuous compression over the entire length of the tie-in. Temporary tie-ins left for more than overnight must be checked daily to confirm that the seal has remained intact.
- C. All temporary tie-in material must be completely removed prior to continuing installation of the new roofing system.

3.16 - Membrane Repair

- A. Any large, unsealed wrinkle or fishmouth must be cut so that the cap sheet lays flat and does not create a hump or void. The affected area shall be heated to ensure the exposed flaps lay flat.
- B. The repair section must extend a minimum of six (6") inches (152 mm) past the split in all directions.
- C. The repair section of membrane must be fused to the existing membrane by heat welding.



Section 3 - Application

- D. Any open side or end laps shall be repaired by reheating and resealing or using one of the repairs described above.

3.17 - Roof Walkways

- A. Walkways may consist of Soprema Sopratrak or an additional layer of membrane installed by heat welding.
- B. Sections of walkway should be no longer than ten (10') feet (3 m) in length and gapped four (4") inches (102 mm) from adjoining sections.
- C. Soprema recommends that the walkways be identified by painting lines with a compatible coating.

3.18 - Protected Membrane Roof Installation

- A. Install the Soprema single ply roofing system in accordance with the project specification or these specifications.
- B. Install only as much insulation as can be covered with filter fabric and ballast before the end of the work day or the onset of inclement weather.
- C. Install the polystyrene roof insulation directly on the roof system with the channel side down, if applicable. The insulation boards shall be tightly butted together. The maximum acceptable gap between insulation boards is one-quarter ($\frac{1}{4}$ ") inch (6.4 mm). All insulation boards shall be installed within one-quarter ($\frac{1}{4}$ ") inch (6.4 mm) of all projections and cant strips. The insulation shall not be bonded to the roof surface.
- D. For multiple layer assemblies, all joints in all layers shall be staggered. In multiple layer applications, the bottom layer of insulation must be a minimum of two (2") inches thick (51 mm) or as thick as, or thicker than, the successive layers.
- E. Install a layer of acceptable filter fabric over the polystyrene insulation. Lap all joints in the filter fabric a minimum of six (6") inches (152 mm). End laps of the filter fabric must not occur within six (6') feet of the building perimeter. Install an additional layer of filter fabric around all roof projections. The additional layer of filter fabric shall extend a minimum of four (4') feet (1.2 m) beyond the projection in all directions. The filter fabric shall extend a minimum of two (2") inches (51 mm) above the stone at the perimeter and all roof penetrations. Wetting the filter fabric is helpful in holding it in place on the polystyrene until the ballast is applied.
- F. Install the correct size ballast at the minimum rate of ten (10 lbs.) pounds per square foot (48.8 kg/m²) in the field of the roof and twenty (20 lbs.) pounds per square foot (97.6 kg/m²) over a four (4') foot (1.2 m) wide area at the roof perimeter and around all penetrations.

End of Section