Sika Sarnafil G410 Feltback Adhered System

Introduction

INTRODUCTION TO SIKA SARNAFIL G410 FELTBACK ADHERED SYSTEM

Sika Sarnafil has two liquid applied Adhered Systems using Sarnafil membrane, “Adhered” and “Feltback Adhered”. Both systems use our fiberglass reinforced Sarnafil G410 roof membrane; the Feltback Adhered System uses a Feltbacked version of G410. The Feltback Adhered System is described as follows:

System Description

In our Feltback Adhered System, our G410 roof membrane is adhered with Sarnacol Adhesive to the pre-secured insulation board or acceptable substrate. Cellular concrete is an ideal substrate for the Feltback Adhered System.

One advantage of the Feltback Adhered System is appearance. Another advantage is exceptional high wind - uplift resistance. A third advantage is a significant increase in puncture resistance compared to non-feltback membranes.

Sarnafil G410 feltback membrane is ideal for the Adhered application due to the non-woven fiberglass mat reinforcement and the coating manufacturing process. The fiberglass reinforcement causes G410 feltback to have exceptional dimensional stability, closely matching that of the substrate. The felt backing is applied on-line and is pressed into the back of the hot membrane. There is no separate lamination process utilized. The finished membrane is stress-free and unable to delaminate under any rooftop conditions.

Each Sarnacol adhesive was developed by Sika Sarnafil specifically for Sarnafil membranes. These adhesives have superior bonding and long term performance properties.

The attached Guide Specification is generic in nature and should be amended as required to meet the project’s needs. Prior to bid, submit amended Specifications with Detail Drawings to Sika Sarnafil’s Technical Department for review and comment.

We welcome you to review the following Guide Specifications and Detail Drawings and we ask that you contact us if you have any questions or need any additional information.

Thank you for choosing Sika Sarnafil for your roofing and waterproofing needs.

Notes to Specifier:
Notes to Specifier are designated by [ ]. Specifier is to select one of the options provided for project specific specifications.

REGIONAL OFFICES

NEW ENGLAND REGION
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SECTION 075419.02
G410 FELTBACK ADHERED
THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL CONDITIONS

1.01 DESCRIPTION

A. Scope

To install a complete adhered Sika Sarnafil roofing system including membrane, flashings and other components.

B. Related Work

The work includes but is not limited to the installation of:

1. Removal of Existing Roofing and Insulation
2. Substrate Preparation
3. Roof Drains
4. Vapor Retarder
5. Wood Blocking
6. Insulation
7. Separation Layers
8. Roof Membrane
9. Fasteners
10. Adhesive for Flashings
11. Roof Membrane Flashings
12. Walkways
13. Metal Flashings
14. Sealants

C. Upon successful completion of work the following warranties may be obtained:

1. Sika Sarnafil Warranty
2. Roofing Contractor Warranty

1.02 QUALITY ASSURANCE

A. This roofing system shall be applied only by a Roofing Contractor authorized by Sika Sarnafil prior to bid (Sika Sarnafil "Applicator").

B. Upon completion of the installation and the delivery to Sika Sarnafil by the Applicator of a certification that all work has been done in strict accordance with the contract specifications and Sika Sarnafil's requirements, an inspection shall be made by a Technical Representative of Sika Sarnafil to review the installed roof system.

C. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's Representative and Sika Sarnafil.

D. All work pertaining to the installation of Sarnafil membrane and flashings shall only be completed by Applicator personnel trained and authorized by Sika Sarnafil in those procedures.

1.03 SUBMITTALS

At the time of bidding, the Applicator shall submit to the Owner (or Representative) the following:

A. Copies of Specification.

B. Samples of each primary component to be used in the roof system and the manufacturer's current literature for each component.

C. Written approval by the insulation manufacturer (as applicable) for use and performance of the product in the proposed system.

D. Sample copy of Sika Sarnafil's warranty.

E. Sample copy of Applicator's warranty.

F. Dimensioned shop drawings which shall include:

1. Outline of roof with roof size and elevations shown.
2. Details of flashing methods for penetrations.
3. Technical acceptance from Sika Sarnafil.

G. Certifications by manufacturers of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

H. Certification from the Applicator that the system specified meets all identified code and insurance requirements as required by the Specification.

I. Material Safety Data Sheets (MSDS)

1.04 CODE REQUIREMENTS

The applicator shall submit evidence that the proposed roof system meets the requirements of the local building code and has been tested and approved or listed by the following test organizations. These requirements are minimum standards and no roofing work shall commence without written documentation of the system's compliance, as required in the "Submittals" section of this specification.

[Note to Specifier: If required, select one rating from each A, 1-3 and B, 1-3 below.]

A. Factory Mutual Research Corporation (FM) - Norwood, MA

1. Class 1-60 (required for most situations)
2. Class 1-75 (for increased wind exposure)
3. Class 1-90 (for high wind exposure)

B. Underwriters Laboratories, Inc. - Northbrook, IL

1. Class A assembly
2. Class B assembly
3. Class C assembly

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.

B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.

C. Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

D. As a general rule all adhesives shall be stored at temperatures between 40º F (5º C) and 80º F (27º C). Read instructions contained on adhesive canister for specific storage instructions.

E. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.

F. All materials which are determined to be damaged by the Owner's Representative or Sika Sarnafil are to be removed from the job site and replaced at no cost to the Owner.

1.06 JOB CONDITIONS

A. Sika Sarnafil materials may be installed under certain adverse weather conditions but only after consultation with Sika Sarnafil, as installation time and system integrity may be affected.

B. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be heat welded before leaving the job site that day.

C. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.

D. All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.

E. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

G. The Applicator is cautioned that certain Sarnafil membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with Sarnafil membranes. The Applicator shall consult Sika Sarnafil regarding compatibility, precautions and recommendations.

H. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over Sarnafelt or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

I. Prior to and during application, all dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air and/or similar methods.

J. The Applicator shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.

K. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable City, State and Federal requirements.

L. All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.

M. The Applicator shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.

N. Installation of a Sarnafil membrane over coal tar pitch or a resaturated roof requires special consideration to protect the Sarnafil membrane from volatile fumes and materials. Consult Sika Sarnafil for precautions prior to bid.

O. Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

P. All rooftop contamination that is anticipated or that is occurring shall be reported to Sika Sarnafil to determine the corrective steps to be taken.

Q. The Applicator shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Applicator shall report any such blockages in writing (letter copy to Sika Sarnafil) to the Owner's Representative for corrective action prior to the installation of the Sika Sarnafil roof system.

R. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense (letter copy to Sika Sarnafil).

S. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.

T. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.

U. The Applicator shall conduct fastener pullout tests in accordance with the latest version of the SPRI/ANSI Fastener Pullout Standard to help verify condition of the deck/substrate and to confirm expected pullout values.

V. The Sarnafil membrane shall not be installed under the following conditions without consulting Sika Sarnafil's Technical Dept. for precautionary steps:

1. The roof assembly permits interior air to pressurize the membrane underside.
2. Any exterior wall has 10% or more of the surface area comprised of opening doors or windows.
3. The wall/deck intersection permits air entry into the wall flashing area.

W. Precautions shall be taken when using Sarnacol adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.

X. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

Y. Sarnafil membranes are slippery when wet or covered with snow, frost, or ice. Working on surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow OSHA and other relevant fall protection standards when working on roofs.

1.07 BIDDING REQUIREMENTS

A. Pre-Bid Meeting:

A pre-bid meeting shall be held with the Owner's Representative and involved trades to discuss all aspects of the project. The Applicator's field representative or roofing foreman for the work shall be in attendance. Procedures to avoid rooftop damage by other trades shall be determined.

B. Site Visit:

Bidders shall visit the site and carefully examine the areas in question as to conditions that may affect proper execution of the work. All dimensions and quantities shall be determined or verified by the contractor. No claims for extra costs will be allowed because of lack of full knowledge of the existing conditions unless agreed to in advance with the Owner or Owner's Representative.

1.08 WARRANTIES

[Note to Specifier: Select A, B, or C. D and E should always be specified.]

A. Sika Sarnafil Membrane Warranty

Upon successful completion of the work to Sika Sarnafil's satisfaction and receipt of final payment, the Sika Sarnafil Membrane Warranty shall be issued.

B. Sika Sarnafil Standard Warranty

Upon successful completion of the work to Sika Sarnafil's satisfaction and receipt of final payment, the Sika Sarnafil Standard Warranty shall be issued.

C. Sika Sarnafil System Warranty (only products purchased from Sika Sarnafil are covered under System Warranty)

Upon successful completion of the work to Sika Sarnafil's satisfaction and receipt of final payment, the Sika Sarnafil System Warranty shall be issued.

D. Applicator/Roofing Contractor Warranty

The Applicator shall supply the Owner with a separate workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner, and a copy shall be sent to Sika Sarnafil.

E. Owner Responsibility

Owner shall notify both Sika Sarnafil and the Applicator of any leaks as they occur during the time period when both warranties are in effect.

PART 2 - PRODUCTS

2.01 GENERAL

A. The components of the Sarnafil Adhered roof system are to be products of Sika Sarnafil as indicated on the Detail Drawings and specified in the Contract Documents.

B. Components to be used that are other than those supplied or manufactured by Sika Sarnafil may be submitted for review and acceptance by Sika Sarnafil. Sika Sarnafil's acceptance of any other product is only for a determination of compatibility with Sika Sarnafil products and not for inclusion in the Sika Sarnafil warranty. The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the Owner's Representative for acceptability for the intended use with Sika Sarnafil products.

2.02 MEMBRANE

A. Sarnafil G410 Feltback fiberglass reinforced membrane with a lacquer coating.

B. Membrane shall conform to ASTM D4434 (latest version), "Standard for Polyvinyl Chloride Sheet Roofing". Classification: Type II, Grade I.

[Note to Specifier: Various Sarnafil G410 feltback membranes are listed. Generally physical properties such as puncture resistance increase as membrane thickness increases. Select appropriate product.]

1. Sarnafil G410-12 feltback, 48 mil (1.2 mm), thermoplastic membrane with fiberglass reinforcement and a factory applied 9 oz. felt backing.

2. Sarnafil G410-15 feltback, 60 mil (1.5 mm), thermoplastic membrane with fiberglass reinforcement and a factory applied 9 oz. felt backing.
3. Sarnafil G410-18 feltback, 72 mil (1.8 mm), thermoplastic membrane with fiberglass reinforcement and a factory applied 9 oz. felt backing.
4. Sarnafil G410-20 feltback, 80 mil (2.0 mm), thermoplastic membrane with fiberglass reinforcement and a factory applied 9 oz. felt backing.

C. Certified Polymer Thickness

[(Optional) Note to Specifier: - To certify polymer thickness include 2.02, C, 1.]

1. Membrane manufacturer is to certify that the polymer thickness is of the polymer thickness specified (see 2.02, B, 1-3). Certification is to be signed by the membrane manufacturer's quality control manager. ASTM +/- tolerance for membrane thickness is not accepted.

D. Color of Membrane

[Note to Specifier: Sarnafil's EnergySmart® feltback membrane is an ENERGY STAR® rated product. Specify EnergySmart feltback unless special color is required.]

1. EnergySmart feltback (white), initial reflectivity of 0.83, initial emissivity 0.90, solar reflective index (SRI) of >104.
2. Other

E. Typical Physical Properties (1)

[Note to Specifier: List mil thickness of membrane desired – top item shown under physical properties.]

Parameters	ASTM Test Method	Minimum ASTM Requirement	Sarnafil Typical Physical Properties
Reinforcing Material	-		Fiberglass
Overall Thickness, min., inches (mm)	D638	0.045 (1.14)	[0.0__inches)]
Tensile Strength, min., psi (MPa)	D638	1500 (10.4)	1600 (11.1)
Elongation at Break, min. (machine x tranverse)	D638	250% / 230%	270% / 250%
Seam strength(2), min. (% of tensile strength)	D638	75	80
Retention of Properties After Heat Aging	D3045	-	-
Tensile Strength, min., (% of original)	D638	90	95
Elongation, min., (% of original)	D638	90	90
Tearing Resistance, min., lbf (N)	D1004	10 (45.0)	14 (63.0)
Low Temperature Bend, -40º F (-40º C)	D2136	Pass	Pass
Accelerated Weathering Test (Xenon Arc)	D2565	5,000 Hours	Pass
Cracking (7x magnification)	-	None	None
Discoloration (by observation)	-	Negligible	Negligible
Crazing (7 x magnification)	-	None	None
Linear Dimensional Change	D1204	0.10 %	0.02%
Weight Change After Immersion in Water	D570	± 3.0%	2.5%
Static Puncture Resistance, 33 lbf (15 kg)	D5602	Pass	Pass
Dynamic Puncture Resistance, 7.3 ft-lbf (10 J)	D5635	Pass	Pass

*Notes
(1) Physical properties without felt backing.
(2) Failure occurs through membrane rupture not seam failure.

2.03 FLASHING MATERIALS

A. Wall/Curb Flashing

1. Sarnafil G410 Membrane

   A fiberglass reinforced membrane adhered to approved substrate using Sarnacol adhesive. Consult Product Data Sheets for adhesive options and additional information.

2. Sarnafil G459 Membrane

   An asphalt-resistant, fiberglass reinforced membrane adhered to approved substrate using Sarnacol adhesive. Consult Product Data Sheet for adhesive rates and additional information.

3. Sarnaclad

   A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Sarnaclad is a 25 gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported Sarnafil membrane laminated on one side. The dimensions of Sarnaclad are 4 ft x 8 ft (1.2 m x 2.4 m) or 4 ft x 10 ft (1.2 m x 3.0m). Consult Product Data Sheet for additional information.

B. Perimeter Edge Flashing

[Note to Specifier: Select 1, 2, 3, 4, or 5 and specify color.]

1. Edge-Tite Flashing

   A prefabricated perimeter edge attachment and fascia assembly provided by Sika Sarnafil. Edge-Tite is made from three distinct parts. The (base) rail is made of formed 0.050 inch (1.3 mm) thick, 5052-H32 mill-finish alloy aluminum in 12 foot (3.6 m) lengths, provided with predrilled fastening holes. The spring clips are 6 inches (152 mm) wide and made from 0.020 inch (0.5 mm) stainless steel. The snap-on fascia is made from 24 gauge (0.6 mm) G90 steel or from 0.040 inch (1.0 mm) aluminum in 12 foot (3.6 m) lengths. Edge-Tite is available in a variety of fascia widths. Color and fascia metal shall be_____. Consult Product Data Sheet for additional information.

2. Edge-Tite Slope

   A prefabricated perimeter edge attachment and fascia assembly provided by Sika Sarnafil. Edge-Tite Slope is made from two distinct parts. The (base) rail is made of formed 0.050 inch (1.3 mm) thick, 5052-H32 mill-finish alloy aluminum in 12 foot (3.6 m) lengths, provided with predrilled fastening holes. The snap-on fascia is made from 24 gauge (0.6 mm) G90 steel or from 0.040 inch (1.0 mm) aluminum in 12 foot (3.6 m) lengths. Edge-Tite Slope is available in a variety of fascia widths. Color and fascia metal shall be_____. Consult Product Data Sheet for additional information.

3. Anchor-Tite® Flashing

   A heavy-duty prefabricated perimeter edge attachment and fascia assembly provided by Sika Sarnafil. Anchor-Tite is made of two distinct parts. The anchor bar is extruded 0.125 inch (3.0 m) thick from 6063-T6 alloy aluminum in 12 foot (3.5 mm) lengths, provided with predrilled fastening holes. Snap-on fascia covers are formed from either 24 gauge galvanized steel with Kynar® or 0.40 inch (10 mm) aluminum with Kynar®, anodized or mill finish. Anchor-Tite is available in a variety of fascia widths. Color and fascia metal type shall be_____.

4. Sarnaclad

   A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Sarnaclad is a 25 gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported Sarnafil membrane laminated on one side. The dimensions of Sarnaclad are 4 ft x 8 ft (1.2 m x 2.4 m) or 4 ft x 10 ft (1.2 m x 3.0m). Consult Product Data Sheet for additional information.

5. Non-Typical Edge

   Project-specific perimeter edge detail reviewed and accepted for one-time use by Sika Sarnafil's Technical Department. Consult Regional Technical Manager prior to job start for review and consideration for acceptance.

C. Miscellaneous Flashing

1. Sarnaflash

   A prefabricated expansion joint cover made from Sarnafil membrane. Sarnaflash is designed for securement to vertical or horizontal surfaces to span and accommodate the movement of new and existing expansion gaps from 1 inch to 41/2 inches (25 mm to 114 mm) across. Available in 40 foot (12 m) rolls. Consult Product Data Sheet for additional information.

2. Sarnareglet

   A heavy-duty, extruded aluminum flashing termination reglet used at walls and large curbs. Sarnareglet is produced from 6063-T5, 0.10 inch - 0.12 inch (2.5 mm - 3.0 mm) thick extruded aluminum. Sarnareglet has a 2¼ inch (57 mm) deep profile, and is provided in 10 foot (3 m) lengths. Use prefabricated Sarnareglet mitered inside and outside corners where walls intersect. Consult Product Data Sheet for additional information.

3. Sarnastack

   A prefabricated vent pipe flashing made from 0.048 inch (48 mil/1.2 mm) thick Sarnafil G410 membrane. Available in five different sizes. Consult Product Data Sheet for sizes and additional information.

4. Sarnadrain-RAC

   PVC-coated, heavy-duty aluminum roof drain insert that mechanically seals to the drainpipe interior. Sarnadrain-RAC is made of 0.080 inch (2 mm) thick 6063 aluminum with a urethane seal installed at the end of the drainpipe. The large 14 inch x 14 inch (0.36 m x 0.36 m) drain strainer is also made of 0.080 inch (2 mm) thick aluminum stock. The flange dimensions of Sarnadrain-RAC are 18 inches x 18 inches (0.46 m x 0.46 m). Consult Product Data Sheet for sizes and additional information.

5. Sarnacircle-"G"

   Circular 0.048 inch (48 mil/1.2 mm) thick G410 membrane patch welded over T-joints formed by overlapping thick membranes.

6. Sarnacorners - Universal

   Prefabricated outside and inside flashing corners made of 0.060 inch (60 mil/1.5 mm) thick membrane that are heat-welded to membrane or Sarnaclad base flashings. Available in one size which accommodate both inside and outside corners. Can be cut into one inside or one outside corner. Consult Product Data Sheet for additional information.

7. Multi-Purpose Sealant

   A proprietary sealant used at flashing terminations. Consult Product Data Sheet for additional information.

8. Sarnacol 2165 Adhesive

   A two-component urethane adhesive used for pitch pocket filler. Cures with excellent elasticity and adhesion to various surfaces. Consult Product Data Sheet for additional information.

9. Sarnacol 2170 Adhesive

   A solvent-based reactivating-type adhesive used to attach membrane to flashing substrate. Consult Product Data Sheets for additional information.

10. Sarnacol LR-2001 Adhesive

    A two component polyurethane, low rise expanding foam adhesive used to attach membrane to flashing substrate. Consult Product Data Sheets for additional information.

11. Sarnafelt

    A non-woven polyester or polypropylene mat cushion layer that is necessary behind G410 or G459 Flashing Membrane when the flashing substrates are rough or incompatible with the flashing membrane. Consult Product Data Sheets for additional information.

2.04 INSULATION/OVERLAYMENT/RECOVER BOARD

A. Sarnatherm

A rigid isocyanurate foam insulation with black mat facers. Sarnatherm is available in 4 x 4 ft (1.2 x 1.2 m) or 4 x 8 ft (1.2 x 2.4 m) sizes and various thicknesses. Consult Product Data Sheet for additional information.

B. Sarnatherm EPS

Expanded polystyrene closed-cell foam insulations. Sarnatherm EPS is available in 4 ft x 4 ft (1.2 m x 1.2 m) or 4 ft x 8 ft (1.2 m x 2.4 m) sizes and various thicknesses. Sarnatherm EPS requires a separation layer between it and the membrane. Sarnatherm EPS insulation is for use beneath the waterproofing layer. Consult Product Data Sheets for additional information.

C. Sarnatherm EXPS

Extruded polystyrene closed-cell foam insulations. Sarnatherm EXPS is available in 4 ft x 4 ft (1.2 m x 1.2 m) or 4 ft x 8 ft (1.2 m x 2.4 m) sizes and various thicknesses. Sarnatherm EXPS requires a separation layer between it and the membrane. Consult Product Data Sheets for additional information.

[Instruction to specifiers: Select only one type of insulation to specify.]

D. DensDeck®

A siliconized gypsum, fire-tested hardboard with glass-mat facers. DensDeck is provided in a 4 x 8 ft (1.2 x 2.4 m) board size and in thicknesses of 1/4, 1/2 and 5/8 inch (6, 13 and 16 mm). Consult Product Data Sheet for size, thickness and additional information.

E. DensDeck® Prime

A fire-tested, gypsum hardboard with glass-mat facers and a pre-primed surface on one side. DensDeck Prime is provided in a 4 x 8 ft (1.2 x 2.4 m) board size and in thicknesses of 1/4, 1/2 and 5/8 inch (6, 13 and 16 mm). Consult Product Data Sheet for size, thickness and additional information.

F. DensDeck® DuraGuard™

A fire-tested, gypsum hardboard with a durable glass-mat facer coating. DuraGuard is provided in a 4 x 8 ft (1.2 x 2.4 m) board size and in thicknesses of 1/4, 1/2, and 5/8 inch (6, 13 and 16 mm). Consult Product Data Sheet for size, thickness and additional information.

G. Cellular Conrete

An aerated insulating concrete slurry mixed on-site and poured in-place onto the roof deck. A surface sealant is used to improve the curing process and to reduce dusting at the surface.

2.05 ATTACHMENT COMPONENTS

A. Membrane Adhesive

1. Sarnacol 2170 Adhesive:

A solvent-based reactivating-type adhesive used to attach the membrane to the substrate, either horizontally or vertically. Consult Product Data Sheets for additional information. Application rates are as follows:

SARNACOL 2170 APPLICATION RATES FOR FELTBACK MEMBRANE									
	Adhesive Rates - Gallons/100 Ft² *(Liters/Meter²)*								**Approximate Sq. Ft./Pail** *(meter²)*
	Substrate (1st coat)		**Substrate** (2nd coat)		**Total**				
Isocyanurate Paper Facer	1.25 *(0.51)*	+	1.00 *(0.41)*	=	2.25 *(0.92)*				222 *(20.62)*
Smooth Plywood	1.00 *(0.41)*	+	1.00 *(0.41)*	=	2.00 *(0.81)*				250 *(23.23)*
Metal	0.75 *(0.31)*	+	1.00 *(0.41)*	=	1.75 *(0.71)*				285 *(26.48)*
Concrete Deck	1.00 *(0.41)*	+	1.00 *(0.41)*	=	2.00 *(0.81)*				250 *(23.23)*
Concrete Wall	1.00 *(0.41)*	+	1.00 *(0.41)*	=	2.00 *(0.81)*				250 *(23.23)*
Masonry Wall	1.00 *(0.41)*	+	1.00 *(0.41)*	=	2.00 *(0.81)*				250 *(23.23)*
Cellular Concrete	1.25 *(0.51)*	+	1.00 *(0.41)*	=	2.25 *(0.92)*				222 *(20.62)*
GP DensDeck®	1.00 *(0.41)*	+	1.00 *(0.41)*	=	2.00 *(0.81)*				250 *(23.23)*
GP DensDeck Prime® GP DensDeck® DuraGuard™	0.75 *(0.31)*	+	1.00 *(0.41)*	=	1.75 *(0.71)*				285 *(26.48)*

SARNACOL 2170 APPLICATION RATES FOR MEMBRANE FLASHINGS USING SARNAFELT											
	Adhesive Rates - Gallons/100 Ft² *(Liters/Meter²)*										**Approximate Sq. Ft./Pail** *(meter²)*
	Substrate (1st coat)		**Substrate** (2nd coat)		**Membrane**		**Total**				
Smooth Plywood	1.00 *(0.41)*	+	1.00 *(0.41)*	+	0.50 *(0.20)*	=	2.50 *(1.02)*				167 *(15.51)*
Concrete Wall	1.00 *(0.41)*	+	1.00 *(0.41)*	+	0.50 *(0.20)*	=	2.50 *(1.02)*				167 *(15.51)*
Masonry Wall	1.00 *(0.41)*	+	1.00 *(0.41)*	+	0.50 *(0.20)*	=	2.50 *(1.02)*				167 *(15.51)*
Granular Bitumen	1.00 *(0.41)*	+	1.00 *(0.41)*	+	0.50 *(0.20)*	=	2.50 *(1.02)*				167 *(15.51)*
Smooth Aged Bitumen	1.00 *(0.41)*	+	1.00 *(0.41)*	+	0.50 *(0.20)*	=	2.50 *(1.02)*				167 *(15.51)*

Notes:

a) Due to an increase in viscosity when outdoor temperatures during installation are below 40º F (5º C), add 1/2 gal/100 ft² (0.2 l/m²) to rate for estimating purposes. Do not install when air temperature is within 5º F of dew point. Solvent evaporation time increases significantly when temperatures drop. Ensure first layer of Sarnacol 2170 is fully dry before second layer is applied to the back of the membrane for proper reactivation.
b) Use a water-filled, foam-covered lawn roller to consistently and evenly press the membrane into the adhesive layer.

2. Sarnacol 2121 Adhesive:

   A water-based adhesive used to attach the membrane to horizontal or near-horizontal substrates. Consult Product Data Sheets for additional information. Application rates are as follows:

SARNACOL 2121 APPLICATION RATES FOR FELTBACK MEMBRANE						
	Adhesive Rates - Gallons/100 Ft² *(Liters/Meter²)*					**Approximate Sq. Ft./Pail** *(meter²)*
	Substrate		**Membrane**		**Total**	
Isocyanurate Paper Facer	1.75 *(0.71)*	+	0	=	1.75 *(0.71)*	285 *(26.48)*
Smooth Plywood	1.75 *(0.71)*	+	0	=	1.75 *(0.71)*	285 *(26.48)*
Concrete Deck	2.00 *(0.81)*	+	0	=	2.00 *(0.81)*	250 *(23.23)*
Cellular Concrete	2.00 *(0.81)*	+	0	=	2.00 *(0.81)*	250 *(23.23)*
GP DensDeck®	1.75 *(0.71)*	+	0	=	1.75 *(0.71)*	285 *(26.48)*
GP DensDeck® Prime	1.50 *(0.61)*	+	0	=	1.50 *(0.61)*	333 *(30.94)*

Notes:

a) There is a significant increase in drying time due to an increase in humidity and/or a decrease in temperature. Do not install when outdoor or substrate temperatures during drying period are expected to fall below 40º F (5º C).
b) Do not allow Sarnacol 2121 adhesive to skin-over or surface-dry prior to installation of membrane.
c) Use a water-filled, foam-covered lawn roller to consistently and evenly press the membrane into the adhesive layer.

3. Sarnacol 2142S Adhesive:

   A urethane-based adhesive used to attach the feltback membrane to the horizontal or near-horizontal substrate. Consult Product Data Sheets for additional information. Application rates are as follows:

SARNACOL 2142S APPLICATION RATES FOR FELTBACK MEMBRANE						
	Adhesive Rates - Gallons/100 Ft² *(Liters/Meter²)*					**Approximate Sq. Ft./Pail** *(meter²)*
	Substrate (1st coat)		**Substrate** (2nd coat)		**Total**	
Isocyanurate Paper Facer	1.25 *(0.51)*	+	0	=	1.25 *(0.51)*	333 *(30.94)*
Smooth Plywood	1.00 *(0.41)*	+	0	=	1.00 *(0.41)*	400 *(37.16)*
Concrete Deck	1.25 *(0.51)*	+	0	=	1.25 *(0.51)*	333 *(30.94)*
Granular Bitumen	1.25 *(0.51)*	+	0	=	1.25 *(0.51)*	333 *(30.94)*
Smooth Aged Bitumen	1.00 *(0.41)*	+	0	=	1.00 *(0.41)*	400 *(37.16)*

Notes:

a) Due to an increase in viscosity when outdoor temperatures during installation approach 40° F (5° C), add 1/2 gal/100 ft² (0.2 l/m²) to rate for estimating purposes. Sarnacol 2142S contains some solvent.
b) Do not allow Sarnacol 2142S adhesive to skin-over or surface-dry prior to installation of membrane.
c) Use a water-filled, foam-covered lawn roller to consistently and evenly press the membrane into the adhesive layer.

4. Sarnacol LR-2001 Adhesive:

A two component (Part A and B) polyurethane low-rise adhesive for bonding feltback membrane to approved compatible substrates. Consult Product Data Sheets for additional information. Application rates are as follows:

SARNACOL LR-2001 APPLICATION RATES FOR FELTBACK MEMBRANE		
	Approximate Sq. Ft. *(Meter²)* per Drum Set	
	50 Gal. (189.27 liter) Set	**15 Gal.** (56.78 liter) Set
Concrete	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Smooth Gypsum Plank	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Cellular Concrete (Consult Technical Dept.)	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Cementitious Wood Fiber	7,500 - 8,000 *(696.77 - 743.22)*	2,250 - 2,400 *(209.03 - 222.97)*
Isocyanurate Paper Facer	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Existing Mineral Cap Sheet	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Existing Modified Bitumen	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Existing Smooth B.U.R. (type III or IV asphalt)	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Existing S.P.F. (remove coating)	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*

Notes:

a) Adhesive must be applied as a continuous layer.
b) Use a water-filled, foam-covered lawn roller to consistently and evenly press the membrane into adhesive layer.
c) Storage temperatures in excess of 90° F (32° C) may affect shelf life.
d) If exposed to temperatures below 40° F (5° C), restored to a minimum temperature of 60°F (15° C) before use.
e) Job site conditions may affect performance. Adhesive shall not be used if surface and/or ambient temperatures below 40° F (5° C) are expected during application or subsequent curing time.
f) The addition of Sarnacol LR-2001 Catalyst to Part B may be required when temperatures are between 40° F (5° C) and 80° F (27° C).
g) Adhesive shall not be applied to wet or damp surfaces.

B. Insulation Board Adhesive

1. Sarnacol 2163 Adhesive:

   A low odor, VOC compliant, one step, low-rise urethane foam used to attach insulation to approved compatible substrates. Adhesive is applied with a gravity fed applicator or by hand with a dual component caulk gun. Additional adhesive may be required for rougher surfaces. Consult Product Data Sheets for additional information. Application rate is as follows:

   Coverage - Approximately 600 sq. ft. (55.7 sq. m) per case. Rates are based on an application pattern of 4 ribbons, 1/4-1/2 in. (6-13 mm) beads, 12 in. (30 cm) o.c. per 4 x 4 ft. (121.9 x 121.9 cm) insulation board. Coverage rates may vary over irregular surfaces.

   Notes:
   a) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
   b) Place insulation board into the adhesive shortly after it has reached its maximum rise [typically within 30-45 seconds at 60-80°F (16°C -27°C)] and walk into place.
   c) Minimum product temperature before entering the dispenser should be 70°F (21°C).
   d) Store between 60°F (16°C) and 80°F (27°C).
   e) Adhesive shall not be used during inclement weather.
   f) Adhesive shall not be applied to wet or damp surfaces.
   g) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

2. Sarnacol 2164 Adhesive:

   A low odor, VOC compliant, single component, low-rise urethane foam used to attach insulation to approved compatible substrates. Consult Product Data Sheets for additional information. Application rate is as follows:

   Coverage - Approximately 500-600 sq. ft. (46.4-55.7 sq. m) per 3 gallon (11.3 L) unit. Rates are based on an application using a ribbon pattern, 1/2-3/4 in. (13-19 mm) wide beads, 12 in. (30 cm) o.c. per 4 x 4 ft. (121.9 x 121.9 cm) insulation board. Coverage rates may vary over irregular surfaces.

   Notes:
   a) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
   b) Place insulation board into wet adhesive immediately.
   c) Adhesive shall not be used during inclement weather.
   d) Adhesive shall not be applied to wet or damp surfaces.
   e) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

3. Sarnacol LR-2001 Adhesive:

   A two component (Part A and B) polyurethane low-rise adhesive for bonding insulation to approved compatible substrates. Consult Product Data Sheets for additional information. Application rates are as follows:

SARNACOL LR-2001 APPLICATION RATES FOR INSULATION		
	Approximate Sq. Ft. *(Meter²)* per Drum Set	
	50 Gal. (189.27 liter) Set	**15 Gal.** (56.78 liter) Set
Wood	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Concrete	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Smooth Gypsum Plank	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Cellular Concrete (consult Technical Dept.)	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Cementitious Wood Fiber	7,500 - 8,000 *(696.77 - 743.22)*	2,250 - 2,400 *(209.03 - 222.97)*
Isocyanurate Paper Facer	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Mineral Cap Sheet	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*
Gravel B.U.R.	5,000 - 7,000 *(464.52 - 650.32)*	1,500 - 2,100 *(139.35 - 195.10)*
Smooth B.U.R./Mod. Bit.	8,500 - 9,000 *(789.68 - 836.13)*	2,500 - 2,700 *(232.26 - 250.84)*

Notes:

a) Adhesive must be applied as a continuous layer.
b) Use a water-filled, foam-covered lawn roller to consistently and evenly press insulation into adhesive layer.
c) Storage temperatures in excess of 90° F (32° C) may affect shelf life.
d) If exposed to temperatures below 40° F (5° C), restored to a minimum temperature of 60°F (15° C) before use.
e) Job site conditions may affect performance. Sarnacol LR-2001 adhesive shall not be used if surface and/or ambient temperatures below 40° F (5° C) are expected during application or subsequent curing time.
f) The addition of Sarnacol LR-2001 Catalyst to Part B may be required when temperatures are between 40° F (5° C) and 80° F (27° C).
g) Adhesive shall not be applied to wet or damp surfaces.
h) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

4. Olympic Olybond500 Adhesive:

A two component (Part A and B) low-rise polyurethane foam used to attach insulation to approved compatible substrates. Adhesive is applied with a pace cart in bands 12 in. on center. Application rates are typically one gallon per square. Additional adhesive may be required for rougher surfaces. Consult Product Data Sheets for additional information.

Notes:

a) Not recommended for use with insulation boards larger than 4’ x 4’.
b) Place insulation board into the adhesive shortly after it has reached its maximum rise (typically within 2 minutes) and walk into place.
c) Job site conditions may affect performance. Adhesive shall not be used if surface and/or ambient temperatures are below 45°F (7°C) during application or subsequent curing time.
d) Minimum product temperature before entering the dispenser should be 72°F (22°C).
e) Store between 45°F (7°C) and 95°F (35°C).
f) Protect from freezing, any product that does freeze must be removed from the job site and disposed of per State and Federal regulations.
g) Adhesive shall not be used during inclement weather.

h) Adhesive shall not be applied to wet or damp surfaces.

5. Millennium Weather-Tite Adhesive:

A one step low-rise polyurethane foam used to attach insulation to approved compatible substrates. Adhesive is applied with a gravity fed applicator or by hand with a dual component caulk gun in bands 12 in. on center. Additional adhesive may be required for rougher surfaces. Consult Product Data Sheets for additional information. Application rates are as follows:

	Approximate Square Feet *(Meter²)*
600 ml cartridge	50-65 *(15.24-19.81)* of insulation
1,500 ml cartridge	150-200 *(15.24-60.96)* of insulation

Notes:

h) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
i) Place insulation board into the adhesive shortly after it has reached its maximum rise [typically within 30-45 seconds at 60-80°F (16°C -27°C)] and walk into place.
j) Minimum product temperature before entering the dispenser should be 60°F (16°C).
k) Store between 60°F (16°C) and 80°F (27°C). Protect from freezing.
l) Adhesive shall not be used during inclement weather.
m) Adhesive shall not be applied to wet or damp surfaces.

C. Sarnaplate

Used with various Sarnafasteners to attach insulation boards to roof deck. Sarnaplate is a 3 inch (75 mm) square or round, 26 gauge stamping of SAE 1010 steel with an AZ 55 Galvalume coating. Consult Product Data Sheet for additional information.

D. Sarnaplate-HD/CD

Used with Sarnafastener-HD or Sarnafastener-CD10 to attach insulation boards to wood or concrete roof decks. Sarnaplate-HD/CD is a 3 inch (75 mm) round stamping of SAE 1010 steel with an AZ 55 Galvalume coating. Consult Product Data Sheet for additional information.

E. Sarnaplate-Preassembled

Combination of a 3 inch round plate and a #12 fastener used to attach insulation boards to steel or wood roof decks. Sarnaplate-Preassembled consists of a 3 inch (75 mm) round, 26 gauge stamping of SAE 1010 steel with an AZ 55 Galvalume coating and Sarnafastener #12 with modified buttress thread. The fastener shank diameter is approximately 0.168 inch (4 mm) and the thread diameter is approximately 0.214 inch (5 mm). Consult Product Data Sheet for additional information.

F. Sarnafastener #12

A #12 corrosion-resistant fastener used with Sarnaplates to attach insulation boards to steel or wood roof decks. Sarnafastener #12 has a modified buttress thread, a shank diameter of approximately 0.168 inch (4 mm) and a thread diameter of approximately 0.214 inch (5 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement. Consult Product Data Sheet for additional information.

G. Sarnafastener-HD

A #14 corrosion-resistant fastener used with Sarnaplate-HD/CD to attach insulation boards or with Sarnadisc and Sarnabar to attach membrane to structural concrete or wood roof decks. Sarnafastener-HD has a shank diameter of 0.190 inch (4.8 mm), a thread diameter of 0.245 inch (6.2 mm) and a #3 Phillips drive head with a diameter of 0.435 inch (11 mm). Consult Product Data Sheet for additional information.

H. Sarnafastener-XP

A #15, heavy-duty, corrosion-resistant fastener used with Sarnaplate to attach insulation or Sarnastop and Sarnabar to attach Sarnafil G410 roof membrane to steel or wood roof decks. Sarnafastener-XP has a shank diameter of approximately 0.21 inch (5.3 mm) and the thread diameter is approximately 0.26 inch (6.6 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement. Consult Product Data Sheet for additional information.

I. Sarnafastener-XPS

A specially designed, heavy-duty, corrosion-resistant fastener used with Sarnastop or Sarnabar to attach Sarnafil G410 roof membrane to steel roof decks. Sarnafastener-XPS has a shank diameter of approximately 0.21 inch (5.3mm) and a thread diameter of approximately 0.26 inch (6.6). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement and simplicity of application. Consult Product Data Sheet for additional information.

J. Sarnafastener-CD10

A nail-in, corrosion-resistant fastener used with Sarnaplate-HD/CD, Sarnastop or Sarnabar to attach insulation or membrane to normal weight concrete roof deck. Sarnafastener-CD10 has a shank diameter of 0.215 inch (5.5 mm), a split diameter of 0.265/0.275 inch (6.7/7.0 mm) and a flat head with a 0.435 inch (11 mm) diameter. Consult Product Data Sheet for additional information.

K. Sarnafastener-King Con

A nail-in, corrosion-resistant fastener used with Sarnaplate to attach insulation or with Sarnabar to attach membrane to poured structural concrete roof decks. Consult Product Data Sheet for additional information.

L. Sarnastop

An extruded aluminum, low profile bar used with certain Sarnafasteners to attach to the roof deck or to walls/curbs at terminations, penetrations and at incline changes of the substrate. Sarnastop is a 1 inch (25 mm) wide, flat aluminum bar 1/8 inch (3 mm) thick that has predrilled holes every 6 inches (152 mm) on center. Consult Product Data Sheet for additional information.

M. Sarnabar

An FM-approved, heavy-duty, 14 gauge, galvanized or stainless, roll-formed steel bar used to attach membrane to roof decks. The formed steel is pre-punched with holes every 1 inch (25 mm) on center to allow various Sarnafastener spacing options. Consult Product Data Sheet for additional information.

N. Sarnacord

A 5/32 inch (4 mm) diameter, red-colored, flexible thermoplastic extrusion that is welded to the top surface of the Sarnafil membrane and against the side of the Sarnabar, used to hold the membrane in position. Consult Product Data Sheet for additional information.

2.06 SARNACOL LR-2001 DECK PRIMERS

Designed for use with Sarnacol LR-2001 adhesive to condition surfaces and promote adhesion between certain vapor retarders, acceptable deck substrates such as perlite, vermiculite and Zonolite with insulation board products. Consult Technical Department for application and use.

2.07 WALKWAY PROTECTION

[Note to Specifier: Select one type of walkway.]

A. Sarnatred

A polyester reinforced, 0.096 inch (96 mil/2.4 mm), weldable membrane with surface embossment. Used as a protection layer from rooftop traffic. Sarnatred is supplied in rolls of 39.3 inches (1.0 m) wide and 32.8 feet (10 m) long. Consult Product Data Sheet for additional information.

B. Crossgrip Walkway

A rolled-out walkway protection mat used to protect Sarnafil roofing membrane from mechanical abuse. Crossgrip Walkway is 9/16 inch (14 mm) thick flexible pvc with a heavily textured surface. Crossgrip Walkway is loose laid on top of completed Sarnafil roof assemblies. Where design windspeeds exceed 94 mph (150 km/h) the walkway must be secured with loops of Sarnafil membrane welded to the field sheet. Consult Product Data Sheet for additional information.

C. Sand-Coated Walkway

A fiberglass reinforced, 60 mil, weldable membrane with a thick sand-based coating on top. Net dimensions are approximately 150 mil (4 mm) thick by 26 inches (0.6 m), 39 inches (1.0 m), 78 inches (2.0 m) wide with varying lengths. The standard length is 32 feet (10 m). Consult Product Data Sheet for additional information.

D. Concrete Pavers

Normal weight concrete pavers specifically designed and produced for rooftop application. For large areas the use of paver pedestals or a drainage panel protection layer between the Sarnafil roof membrane and the pavers is required. For narrow walkways, a welded-in-place protection layer of Sarnafil membrane is required under the concrete pavers.

2.08 VAPOR BARRIER

A. Sarnavap-10

A 10 mil (0.25 mm) thick polyethylene vapor retarder/air retarder. Sarnavap-10 is supplied in a folded panel that is rolled onto a core. The core width is 5 feet (1.5 m). When unrolled off the core and unfolded, the sheet dimensions are 20 feet (6.9 m) wide by 100 feet (33 m) long. Consult Product Data Sheet for additional information.

B. Sarnavap Self-Adhered

A 32 mil (0.8 mm) self-adhesive vapor barrier that can also serve as temporary roof protection. Sarnavap Self-Adhered is available in rolls 44.9 in. x 133.8 ft. (1.14 x 40.8 m). Consult Product Data Sheet for additional information.

C. Bituminous

A bituminous vapor retarder may be used beneath the insulation.

2.09 MISCELLANEOUS ACCESSORIES

A. Aluminum Tape

A 2 inch (50 mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the coverstrip at Sarnaclad joints.

B. Sealing Tape Strip

Compressible foam with pressure-sensitive adhesive on one side. Used with metal flashings as a preventive measure against air and wind blown moisture entry.

C. Multi-Purpose Tape

A high performance sealant tape used with metal flashings as a preventive measure against air and wind blown moisture entry.

D. Sarnamatic 641mc or 661

220 volt, self-propelled, hot-air welding machine used to seal Sarnafil membrane seams.

E. Sarnasolv

A high quality solvent cleaner used for the general cleaning of residual asphalt, scuff marks, etc., from the membrane surface. Sarnasolv is also used daily to clean seam areas prior to hot-air welding in tear off or dirty conditions or if the membrane is not welded the same day it is unrolled. Consult Product Data Sheet for additional information.

2.10 SEALANTS AND PITCH POCKET FILLERS

A. Sarnafil Multi-Purpose Sealant (for termination details).

B. Sarnacol 2165 Adhesive (two-component urethane adhesive for pitch pocket toppings).

C. Depending on substrates, the following sealants are options for temporary overnight tie-ins:

1. Type III hot asphalt conforming to ASTM D312 (latest version).
2. Sarnacol 2165 Adhesive.
3. Multiple layers of roofing cement and felt.
4. Spray-applied, water-resistant urethane foam.
5. Mechanical attachment with rigid bars and compressed sealant.

2.11 MISCELLANEOUS FASTENERS AND ANCHORS

A. All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1¼ inch (32 mm) and shall be approved for such use by the fastener manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch (25 mm) and shall be approved for such use by the fastener manufacturer.

2.12 RELATED MATERIALS

A. Wood Nailer

Treated wood nailers shall be installed at the perimeter of the entire roof and around such other roof projections and penetrations as specified on Project Drawings. Thickness of nailers must match the insulation thickness to achieve a smooth transition. Wood nailers shall be treated for fire and rot resistance (wolmanized or osmose treated) and be #2 quality or better lumber. Creosote or asphalt-treated wood is not acceptable. Wood nailers shall conform to Factory Mutual Loss Prevention Data Sheet 1-49. All wood shall have a maximum moisture content of 19% by weight on a dry-weight basis.

Note: Wood nailers or wood blocking for snow protection system shall be installed prior to the installation of the roof membrane whenever possible.

B. Plywood

When bonding directly to plywood, a minimum 1/2 inch (12 mm) CDX (C side out), smooth-surfaced exterior grade plywood with exterior grade glue shall be used. Rough-surfaced plywood or high fastener heads will require the use of Sarnafelt behind the flashing membrane. Plywood shall have a maximum moisture content of 19% by weight on a dry weight basis.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION CONFERENCE

A. The Applicator, Owner's Representative/Designer and Manufacturer(s) shall attend a pre-construction conference.

B. The meeting shall discuss all aspects of the project including but not limited to:

1. Safety
2. Set up
3. Construction schedule
4. Contract conditions
5. Coordination of the work

3.02 SUBSTRATE CONDITION

A. Applicator shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.

B. Applicator shall verify that the work done under related sections meets the following conditions:

1. Roof drains and/or scuppers have been reconditioned and/or replaced and installed properly.
2. Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured and prepared to receive new roofing materials.
3. All surfaces are smooth and free of dirt, debris and incompatible materials.
4. All roof surfaces shall be free of water, ice and snow.

3.03 SUBSTRATE PREPARATION

The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the rooftop in such a manner as to eliminate risk of deck overload due to concentrated weight. The Owner's Representative shall ensure that the roof deck is secured to the structural framing according to local building code and in such a manner as to resist all anticipated wind loads in that location.

A. New Construction

1. Steel Deck:

a) FM approved steel deck - The roof deck shall be 22 gauge (minimum) grade E and shall conform and be installed to meet the latest revision of FM's Loss Prevention Data Sheet 1-28 and the local code's current requirements.

b) Non-FM approved steel deck - The roof deck shall be 24 gauge (minimum) grade D and shall conform and be installed to the local code's current requirements.

2. Wood Deck:

a) FM approved wood deck - The roof deck shall be minimum 2 inch (50 mm) thick lumber or 3/4 inch (19 mm) thick treated plywood. The deck shall conform to FM requirements for Class 1 fire-retardant and rot-resistant wood decks. Deck shall be installed according to FM and local code requirements.

b) Non-FM approved wood deck - The roof deck shall be minimum 11/2 inch (25 mm) thick lumber or 15/32 inch (12 mm) thick plywood. Deck shall be installed according to local code requirements. Contact Sika Sarnafil Technical for fastening patterns and methods.

3. Poured Lightweight (Cellular) Concrete Substrate:

The lightweight concrete shall be installed by a trained lightweight concrete Applicator in accordance with the lightweight concrete manufacturer's requirements and industry practice. The surface shall be sealed with a water-based sealer accepted by the lightweight concrete manufacturer to create a surface free from dust and loose material. The wet and dry densities shall be in accordance with the manufacturer's and FM's (if applicable) requirements. Sharp ridges or other projections above the surface shall be removed before roofing.

4. Poured Structural Concrete Deck:

The roof deck shall be installed and cured in accordance with industry standards. The surface shall have a smooth and level finish and shall be free of dust, excess moisture, oil-based curing agents and loose debris. Sharp ridges or other projections above the surface shall be removed before roofing.

5. Precast/Prestressed Concrete Panel Deck:

The roof deck shall be installed in accordance with the concrete panel manufacturer's requirements and industry practice. The surface shall have a smooth and level finish and shall be free of dust, moisture, oil or loose debris. All joints between precast units shall be grouted. Any differentials in height between precast units shall be feathered for a smooth transition. Sharp ridges or other projections above the surface shall be removed before roofing. Panels shall be secured to structural supports as recommended by deck manufacturer.

6. Insulating Fill Substrate:

The lightweight fill shall be installed by a trained lightweight fill Applicator in accordance with the lightweight fill manufacturer's requirements and industry practice. The surface shall be free from dust and loose fragments, be smooth, level, and free from moisture. Sharp ridges or other projections above the surface shall be removed before roofing. Proper venting as recommended by the roof deck manufacturer shall be provided. An insulation recover board may be required as a substrate to adhere to. Fastening for recover board shall be into structural deck below insulating fill (see steel/concrete deck requirements).

B. Reroofing with Removal of Existing Bitumen Roofing

General Criteria

All existing roofing, base flashing, deteriorated wood blocking or deteriorated metal flashings shall be removed. Remove only that amount of roofing and flashing which can be made weathertight with new materials during a one-day period or before the onset of inclement weather.

1. Steel Deck:

a) FM Approved Steel Deck - All rusted or deteriorated decking shall be brought to the attention of the Owner's Representative and FM to determine method of treatment or replacement. Surface-only rusted metal shall be sanded and treated with rust-inhibiting paint. Sections that have rusted deeper than the surface or are not structurally sound shall be removed and replaced. The use and type of steel roof deck construction shall conform to FM's recommendations as outlined in FM Loss Prevention data Sheet I-28 and local requirements.
b) Non-FM Approved Steel Deck - All rusted or deteriorated decking shall be brought to the attention of the Owner's Representative to determine method of treatment or replacement. Surface-only rusted metal shall be sanded and treated with rust-inhibiting paint. Sections that have rusted

deeper than the surface or are not structurally sound shall be removed and replaced. Deck type shall match existing and the attachment shall conform to local code requirements.

2. Wood Deck:

   a) FM Approved Wood Deck - All rotted or deteriorated wood shall be removed and replaced. The deck thickness shall be 2 inch (50 mm) minimum lumber or 3/4 inch (19 mm) plywood. The deck shall conform to FM's requirements for Class 1 wood decks. Deck attachment shall conform to FM and local code requirements. Fastener heads shall be recessed into the wood surface.
   b) Non-FM Approved Wood Deck - All rotted or deteriorated wood shall be removed and replaced. The deck thickness shall be 11/2 inch (38 mm) lumber or 15/32 (12 mm) plywood or match existing deck if greater. Deck type and attachment shall conform to local code requirements. Fastener heads shall be recessed into the wood surface.

3. Poured Structural Concrete Deck:

   The roof deck shall be smooth, even, free of dust, dirt, excess moisture or oil and be structurally sound. Sharp ridges, other projections and accumulations of bitumen above the surface shall be removed to ensure a smooth surface before roofing. Any deteriorated decking shall be repaired.

4. Poured Lightweight Concrete Substrate:

   The roof deck shall be smooth, even, free of dust, dirt, excess moisture or oil and be structurally sound. Sharp ridges, other projections and accumulations of bitumen above the surface shall be removed to ensure a smooth surface before roofing. Any deteriorated decking shall be repaired.

5. Precast/Prestressed Concrete Deck:

   The roof deck shall be smooth, even, free of dust, dirt, excess moisture or oil and be structurally sound. All joints between precast units shall be grouted. Any differentials in height between precast units shall be feathered for a smooth transition. Any deteriorated decking shall be repaired.

6. Insulating Fill Substrate:

   All wet or deteriorated insulating fill shall be removed and replaced. All accumulations of bitumen shall be removed and the surface of the deck shall be smooth, and free of ridges and depressions. See steel/concrete requirements.

C. Reroofing with Removal of Existing Single-Ply Roofing

[Note to Specifier: Select C or D.]

General Criteria:

The Owner's Representative and Applicator shall determine the condition of the roof deck and existing insulation. Deteriorated decking or wet or deteriorated materials are to be removed and replaced. After removal of single-ply roof, inspect insulation boards and reuse only if dry and in stable condition. Add a Sika Sarnafil approved recover board or new insulation board. Fasten recover board or top layer of insulation in accordance with Sika Sarnafil's requirements.

D. Reroofing Over Existing Single Ply Roofing

General Criteria:

The Owner's Representative and Applicator shall determine the condition of the roof deck and existing insulation. Deteriorated decking or wet or deteriorated materials are to be removed and replaced. Remove all debris from the existing single-ply roof and cut into 10 ft x 10 ft panels (3 m x 3 m). Install a layer of a Sika Sarnafil approved recover board or a new insulation board over the fastened 10 ft x 10 ft (3 m x 3 m) panels and then fasten the board according to Sika Sarnafil's requirements.

E. Reroofing Over Existing Bitumen Roofing

General Criteria:

The Owner's Representative and Applicator shall determine the condition of the existing roof deck and old roof system. Areas with deteriorated decking or wet materials are to be removed and replaced.

1. On graveled surfaces, all loose gravel and debris shall be removed by power brooming or vacuuming. All blisters shall be removed and sealed or cut, fastened down and sealed. Any accumulation of bitumen or other irregularities shall be scratched and removed so as to produce a smooth surface.

2. On smooth surfaced roofs, the surface must be clean and dry. All blisters shall be removed and sealed or cut, fastened down and sealed. For Type III hot asphalt attachment of new insulation board, priming of the old roof surface after preparation is necessary.

3. Coal-tar pitch or heavily resaturated roofs may require removal. Contact Sika Sarnafil Technical for coal-tar pitch or heavily resaturated reroof preparation requirements.

3.04 SUBSTRATE INSPECTION

A. A dry, clean and smooth substrate shall be prepared to receive the Sarnafil Adhered roof system.

B. The Applicator shall inspect the substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect the quality of work.

C. The substrate shall be clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until all defects have been corrected.

D. All roof surfaces shall be free of water, ice and snow.

E. Sarnafil shall be applied over compatible and accepted substrates only.

3.05 VAPOR BARRIER/AIR BARRIER INSTALLATION (AS REQUIRED BY DESIGNER)

General Criteria:

Interior (inside temperature/relative humidity) and/or exterior conditions may create a need for a vapor barrier. The design professional shall decide whether a vapor barrier is necessary. It is the design professional's responsibility to determine the type and location of a vapor barrier. If sealed properly, a vapor barrier can also act as an air barrier (positive pressure) for roofs intended over air-permeable decks (steel, wood, precast, etc.). When reroofing over the existing asphalt roof, the old roof may be considered to be an adequate vapor barrier/air barrier if the details are properly sealed.

A. Sarnavap-10

1. Steel Deck or Wood Deck (New Construction or Reroofing with Removal of Existing Roofing):

   Sarnavap-10 is loose-laid over suitable substrate. Overlap all edges 4 inches (100 mm) and seal with butyl tape. Extend Sarnavap-10 to perimeter and deck penetrations and seal to provide continuity of the building's air/vapor envelope. Sarnavap-10 must be sealed on the vertical surface at roof penetrations also.

B. Sarnavap Self-Adhered

1. Steel, Wood or Concrete Deck (New Construction or Reroofing with Removal of Existing Roofing):

   Install Sarnavap Self-Adhered over a clean and dry substrate. In concrete applications allow concrete to cure for at least 7 days. Do not install when it is raining, snowing, or on wet/humid surfaces. Install in temperatures 32°F (0°C) and above. The use of a primer is required on the following substrates: wood, concrete, lightweight concrete, gypsum boards and decks, and

DensDeck® boards. On metal decks use a metal plate (6 x 42 in. - 15 x 106 cm) to support the membrane end lap between metal flutes ensuring a complete end lap seal.

a) Begin application at the bottom of the slope. Unroll Sarnavap Self-Adhered onto the substrate without adhering for alignment. Overlap each preceding sheet by 3 in. (75 mm) lengthwise following the reference line and by 6 in. (150 mm) at each end. Stagger end laps by at least 12 in. (300 mm). Do not immediately remove the silicone release sheet.

b) Once aligned, peel back a portion of the silicone release sheet and press the membrane onto the substrate for initial adherence. Hold Sarnavap Self-Adhered tight and peel back the release sheet by pulling diagonally.

c) Use a 75 lb. (34 kg) roller to press Sarnavap Self-Adhered down into the substrate including the laps. Finish by aligning the edge of the roller with the lower end of the side laps and rolling up the membrane. Do not cut the membrane to remove air bubbles trapped under the laps. Squeeze out air bubbles by pushing the roller to the edge of the laps.

C. Asphalt

1. Poured Structural or Precast/Prestressed Concrete Decks (New Construction or Reroofing with Removal of Existing Roofing):

   Conduct moisture and adhesion tests in accordance with industry guidelines. If test requirements are met, prime the deck with asphalt primer, let dry and then adhere a base sheet with full mopping of Type III hot asphalt at a minimum rate of 25 lbs. per 100 square feet (1.2 kg/m²). Install a second ply in the same manner and then seal with an asphalt glaze coat. The base sheet and asphalt shall be installed in accordance with the manufacturer's instructions. The new insulation board shall be attached with additional Type III hot asphalt or by mechanical fasteners to the roof deck.

2. Cementitious Wood Fiber Panel, Insulating Fills, Poured Gypsum Decks (New Construction or Reroofing with Removal of Existing Roofing):

   Fasten a base sheet in accordance with manufacturer’s instructions and according to deck type. Apply a full mopping of Type III hot asphalt in accordance with manufacturer’s instructions at a minimum rate of 25 lbs per 100 square feet (1.2 kgs/m²). Install a second ply with a second full mopping of hot Type III asphalt and then seal with an asphalt glaze coat.

3.06 WOOD NAILER INSTALLATION

A. Install continuous wood nailers at the perimeter of the entire roof and around roof projections and penetrations as shown on the Detail Drawings.

B. Nailers shall be anchored to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons/lineal meter) in any direction. Individual nailer lengths shall not be less than 3 feet (0.9 meter) long. Nailer fastener spacing shall be at 12 inches (0.3 m) on center or 16 inches (0.4 m) on center if necessary to match the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches (0.15 m) of each end. Two fasteners shall be installed at ends of nailer lengths. Nailer attachment shall also meet the requirement of the current Factory Mutual Loss Prevention Data Sheet 1-49.

C. Thickness shall be as required to match substrate and/or insulation height to allow a smooth transition.

D. Any existing nailer woodwork which is to remain shall be firmly anchored in place to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons/lineal meter) in any direction and shall be free of rot, excess moisture or deterioration. Only woodwork shown to be reused in Detail Drawings shall be left in place. All other nailer woodwork shall be removed.

E. Stainless steel, corrosion resistant, fasteners are required when mechanically attaching any Sika Sarnafil product to wood nailers and wood products treated with ACQ (Alkaline copper Quaternary). When ACQ treated wood is used on steel roof decks or with metal edge detailing, a separation layer must be placed between the metal and ACQ treated wood.

3.07 INSULATION INSTALLATION

General Criteria:

A. Insulation shall be installed according to insulation manufacturer's instructions.

B. Insulation shall be neatly cut to fit around penetrations and projections.

C. Install tapered insulation in accordance with insulation manufacturer's shop drawings.

D. Install tapered insulation around drains creating a drain sump.

E. Do not install more insulation board than can be covered with Sarnafil membrane by the end of the day or the onset of inclement weather.

F. Use at least 2 layers of insulation when the total insulation thickness exceeds 2-1/2 inches (64 mm). Stagger joints at least 12 inches (0.3 m) between layers.

G. Mechanical Attachment

1. Insulation shall be mechanically fastened to the deck with approved fasteners and plates at a rate according to the insulation manufacturer's, FM's and Sika Sarnafil's recommendations for fastening rates and patterns. The quantity and locations of the fasteners and plates shall also cause the insulation boards to rest evenly on the roof deck/substrate so that there are no significant and avoidable air spaces between the boards and the substrate. Each insulation board shall be installed tightly against the adjacent boards on all sides.

2. Fasteners are to be installed consistently in accordance with fastener manufacturer's recommendations. Fasteners are to have minimum penetration into structural deck recommended by the fastener manufacturer and Sika Sarnafil.

3. Use fastener tools with a depth locator and torque-limiting attachment as recommended or supplied by fastener manufacturer to ensure proper installation.

H. Sarnacol 2163 Adhesive

1. With a utility knife, cut away the plastic plugs from the Sarnacol 2163 mixing head. Attach a mixing tip to the threaded mixing head. Place the cartridge into the applicator. At the beginning of the tube, some of the material should be pumped out initially to make sure of a proper mix. Apply using a gravity fed applicator or by hand with a dual component caulk gun over properly installed and prepared substrates in bands 12 in. (305 mm) o.c. Bands are 1/4-1/2 in. (6-13 mm) wide before foaming. Adhesive will quickly, within 30-45 seconds at 60-80°F (15-27°C), transform from a liquid into a low rise foam. Immediately set insulation boards into wet adhesive. Do not allow the adhesive to skin over. Walk insulation boards into place to ensure full embedment. Within 5-15 minutes the boards are securely attached to the substrate. In warmer weather this process is a little quicker. In colder weather the process is a little slower. CAUTION: Walking insulation boards in immediately after placement into adhesive may cause slippage/movement until adhesive starts to set up. On roof slopes greater than 1/2 inch (13 mm) in 12 inches (305 mm), begin adhering insulation at low point and work upward to avoid slippage. One person should be designated to walk in, trim/slit and apply weight to all insulation boards to ensure adequate securement. Only areas that can be made completely watertight in the same day’s operations shall be coated. Un-used adhesive can be applied at a later date by simply replacing the mixing tip.

   For multiple layers of insulation spray adhesive over the base layer once fully secured and follow procedures above for attachment of each insulation layer.

2. Approved Insulation Boards:

a) Sarnatherm Polyisocyanurate, 1 inch (25 mm) minimum thickness (required for Systems Warranty).
b) Accepted, one inch minimum, Polyisocyanurate.
c) DensDeck®
d) Approved polystyrene insulation (EPS/EXPS) overlaid with a recovery board.
e) If plywood or OSB is proposed as a membrane underlayment, a polyisocyanurate composite board shall be used. Individual plywood or OSB panels are not recommended due to board stiffness and potential for bowing.

3. Approved Substrate/Deck:

a) Structural Roof Decking: Concrete, Gypsum, Cemetitious Wood Fiber (Tectum), Wood or Steel.
b) Base sheets: Standard or Granular surfaced.
c) Smooth Built-Up Roof Surfaces: Re-Roof Applications.

4. Re-cover Applications:

a) A moisture survey must be performed. Any wet materials must be removed and replaced with compatible materials. For existing B.U.R., modified bitumen or mineral surface cap sheets inspections shall be performed for adhesion between the plies, insulation and deck. Deficiencies such as blisters, buckles, wrinkles and fishmouths shall be cut out or mechanically fastened. Apply Sarnacol 2163/2164 Universal Primer to all substrates prior to the application of Sarnacol 2163 adhesive.

5. Installation Guidelines:

a) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
b) For ease of application, maintain a minimum material temperature of 70°F (21°C) prior to use.
c) Store between 60°F (16°C) and 80°F (27°C).
d) Adhesive shall not be used during inclement weather.
e) Adhesive shall not be applied to wet or damp surfaces.
f) Do not use warped or curled insulation boards.
g) For uneven surfaces, trimming or slitting of boards may be necessary.
h) Approximate Set-Time:
Air Temperature between 60-90°F (15-32°C) = 5-8 minutes.
Air Temperature between 32-60°F (0-15°C) = 8-15 minutes.
i) Coverage:
Approximately 600 sq. ft. per case. Rates are based on an application pattern of 4 ribbons, 1/4-1/2 in. (6-13 mm) beads, 12 in. (30 cm) o.c. per 4 x 4 ft. (121.9 x 121.9 cm) insulation board. Coverage rates may vary over irregular surfaces.
j) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

I. Sarnacol LR-2001 Adhesive

1. Apply using pneumatic spray equipment over properly installed and prepared substrates at a rate according to Sika Sarnafil requirements. Sarnacol LR-2001 Primer may be required prior to application of adhesive if excessive dirt or dust remains on substrate. Contact Sika Sarnafil Technical Department for specific primer requirements. Apply adhesive in a smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Only areas that can be made completely watertight in the same day's operations shall be coated.

Allow adhesive to rise up approximately 1/8 inch and set insulation boards into adhesive. Continue to install boards into adhesive. After set up time has been reached (approx. 5 to 10 minutes, will vary based on temperature and amount of catalyst added) walk insulation boards into adhesive to ensure full embedment. CAUTION: Walking insulation boards in immediately after placement into adhesive may cause slippage/movement until adhesive starts to set up. On roof slopes greater than 1/2 inch in 12 inches, begin adhering insulation at low point and work upward to avoid slippage. One person

should be designated to walk in, trim/slit and apply weight to all insulation boards to ensure adequate securement.

For multiple layers of insulation spray adhesive over the base layer once fully secured and follow procedures above for attachment of each insulation layer.

2. Approved Insulation Boards Adhered to Approved Roof Substrate/Deck:

   a) Sarnatherm Polyisocyanurate, 1 inch minimum thickness (required for Systems Warranty).
   b) Accepted, one inch minimum, Polyisocyanurate.
   c) DensDeck®
   d) Approved polystyrene insulation (EPS/EXPS) overlaid with a recovery board.
   e) If a wood plywood or OSB is proposed as a membrane underlayment, a polyisocyanurate composite board shall be used. Individual plywood or OSB panels are not recommended due to board stiffness and potential for bowing.
   f) For uneven surfaces, trimming or slitting of boards may be necessary.
   g) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

3. Re-cover Applications:

   A moisture survey must be performed. Any wet materials must be removed and replaced with compatible materials. For existing B.U.R., modified bitumen or mineral surface cap sheets inspections shall be performed for adhesion between the plies, insulation and deck. Deficiencies such as blisters, buckles, wrinkles and fishmouths shall be cut out or mechanically fastened.

4. Installation Guidelines:

   a) Adhesive must be applied as a continuous layer.
   b) Storage temperatures in excess of 90° F (32° C) may affect shelf life of adhesive.
   c) If exposed to temperatures below 40° F (5° C), restored adhesive to a minimum temperature of 60°F (15° C) before use.
   d) Job site conditions may affect performance. Sarnacol LR-2001 adhesive shall not be used if surface and/or ambient temperatures below 40° F (5° C) are expected during application or subsequent curing time.
   e) The addition of Sarnacol LR-2001 Catalyst to Part B may be required when temperatures are between 40° F (5° C) and 80° F (27° C). Refer to table below for approximate amount of catalyst to be added.
   f) Adhesive shall not be applied to wet or damp surfaces.

5. Sarnacol LR-2001 Catalyst:

   Recommended for use in cold climates to accelerate set up time and allow insulation to be walked into place in a minimal amount of time (approximately 5 to 10 minutes). If adhesive is not catalyzed, preliminary fastening of the insulation corners or weighing of individual boards will typically be required in temperatures below 80° F (27° C) since adhesive set up time will be slower. The amount of catalyst to be added to Part B will vary based on temperature of surface to be sprayed.

Surface Temperature	Catalyst added to 50 Gal. *(189.3 liter)* Part B Drum
40° F *(5° C)*	7-8 pints *(3.3-3.8 liter)*
50°F *(10° C)*	5-7 pints *(2.4-3.3 liter)*
60°F *(15° C)*	4-5 pints *(1.9-2.4 liter)*
70°F *(22° C)*	3-4 pints *(1.4-1.9 liter)*
80°F *(27° C)*	2-3 pints *(0.9-1.4 liter)*

Sarnacol LR-2001 Catalyst is available in 1 gallon (3.8 liter) containers. Add in small quantities until experience is gained for proper judgment. Use a minimum 1/2 horsepower collapsible drum mixer such as Binks Model #31296 or equivalent for mixing. In order to achieve a consistent blend of materials for proper reaction of adhesive, a thorough mixing is required, at least 15 minutes. The Part

B side must be at least 70° F (22° C) prior to adding catalyst. The catalyst must be stirred prior to adding to the Part B side to promote proper mixing. Consult Product Data Sheets for additional information.

J. Olympic Olybond500 Adhesive

1. Apply using PaceCart equipment over properly installed and prepared substrates in bands 12 in. (13 mm) o.c. Allow to rise approximately 1/2-3/4 in. (13-19 mm). Lay insulation boards in adhesive and walk into place to ensure full embedment. CAUTION: Walking insulation boards in immediately after placement into adhesive may cause slippage/movement until adhesive starts to set up. On roof slopes greater than 1/2 inch (13 mm) in 12 inches (305 mm), begin adhering insulation at low point and work upward to avoid slippage. One person should be designated to walk in, trim/slit and apply weight to all insulation boards to ensure adequate securement. Only areas that can be made completely watertight in the same day's operations shall be coated.

   For multiple layers of insulation spray adhesive over the base layer once fully secured and follow procedures above for attachment of each insulation layer.

2. Approved Insulation Boards Adhered to Approved Roof Substrate/Deck:

   a) Sarnatherm Polyisocyanurate, 1 inch (25 mm) minimum thickness (required for Systems Warranty).
   b) Accepted, one inch minimum, Polyisocyanurate.
   c) DensDeck®
   d) Approved polystyrene insulation (EPS/EXPS) overlaid with a recovery board.
   e) Owens Corning DuraPink Plus is the only approved extruded polystyrene (EXPS). Overlay with a recovery board.
   f) If plywood or OSB is proposed as a membrane underlayment, a polyisocyanurate composite board shall be used. Individual plywood or OSB panels are not recommended due to board stiffness and potential for bowing.
   g) For uneven surfaces, trimming or slitting of boards may be necessary.
   h) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

3. Re-cover Applications:

   A moisture survey must be performed. Any wet materials must be removed and replaced with compatible materials. For existing B.U.R., modified bitumen or mineral surface cap sheets inspections shall be performed for adhesion between the plies, insulation and deck. Deficiencies such as blisters, buckles, wrinkles and fishmouths shall be cut out or mechanically fastened.

4. Installation Guidelines:

   a) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
   b) Place insulation board into the adhesive shortly after it has reached its maximum rise (typically within 2 minutes) and walk into place.
   c) Job site conditions may affect performance. Adhesive shall not be used if surface and/or ambient temperatures are below 45°F (7°C) during application or subsequent curing time.
   d) Minimum product temperature before entering the dispenser should be 72°F (22°C).
   e) Store between 45°F (7°C) and 95°F (35°C).
   f) Protect from freezing, any product that does freeze must be removed from the job site and disposed of per State and Federal regulations.
   g) Adhesive shall not be used during inclement weather.
   h) Adhesive shall not be applied to wet or damp surfaces.

K. Millennium Weather-Tite Adhesive

1. Apply using a gravity fed applicator or by hand with a dual component caulk gun over properly installed and prepared substrates in bands 12 in. (305 mm) o.c. Bands are 1/4-1/2 in. (6-13 mm)

wide before foaming. Adhesive will quickly, within 30-45 seconds at 60-80°F (15-27°C), transform from a liquid into a low rise foam. Immediately set insulation boards into wet adhesive. Walk insulation boards into place to ensure full embedment. Within 5-8 minutes the boards are securely attached to the substrate. In warmer weather this process is a little quicker. In colder weather the process is a little slower. CAUTION: Walking insulation boards in immediately after placement into adhesive may cause slippage/movement until adhesive starts to set up. On roof slopes greater than 1/2 inch (13 mm) in 12 inches (305 mm), begin adhering insulation at low point and work upward to avoid slippage. One person should be designated to walk in, trim/slit and apply weight to all insulation boards to ensure adequate securement. Only areas that can be made completely watertight in the same day's operations shall be coated.

For multiple layers of insulation spray adhesive over the base layer once fully secured and follow procedures above for attachment of each insulation layer.

2. Approved Insulation Boards Adhered to Approved Roof Substrate/Deck:

   a) Sarnatherm Polyisocyanurate, 1 inch (25 mm) minimum thickness (required for Systems Warranty).
   b) Accepted, one inch minimum, Polyisocyanurate.
   c) DensDeck®
   d) Approved polystyrene insulation (EPS/EXPS) overlaid with a recovery board.
   e) If plywood or OSB is proposed as a membrane underlayment, a polyisocyanurate composite board shall be used. Individual plywood or OSB panels are not recommended due to board stiffness and potential for bowing.
   f) For uneven surfaces, trimming or slitting of boards may be necessary.
   g) A min. of 1 Sarnabar placed 4 ft. (1.2 m) from the roof edge and fastened 12 in. (305 mm) o.c. to the structural deck with acceptable fasteners is required after installation of the Sarnafil roof membrane. The Sarnabar is to have a cover strip hot air welded over it.

3. Re-cover Applications:

   A moisture survey must be performed. Any wet materials must be removed and replaced with compatible materials. For existing B.U.R., modified bitumen or mineral surface cap sheets inspections shall be performed for adhesion between the plies, insulation and deck. Deficiencies such as blisters, buckles, wrinkles and fishmouths shall be cut out or mechanically fastened.

4. Installation Guidelines:

   b) Not recommended for use with insulation boards larger than 4x4 ft. (1.2x1.2 m).
   c) Place insulation board into the adhesive shortly after it has reached its maximum rise [typically within 30-45 seconds at 60-80°F (16°C -27°C)] and walk into place.
   d) Minimum product temperature before entering the dispenser should be 60°F (16°C).
   e) Store between 60°F (16°C) and 80°F (27°C). Protect from freezing.
   f) Adhesive shall not be used during inclement weather.
   g) Adhesive shall not be applied to wet or damp surfaces.

L. Attachment with hot Type III asphalt:

1. Insulation shall be adhered to the concrete deck or another approved substrate with hot Type III asphalt according to the asphalt manufacturer's instructions. The temperature of the asphalt shall be at the asphalt manufacturers instructions for EVT. The asphalt temperature and application methodology shall be maintained throughout the installation as recommended by the asphalt manufacturer, the NRCA and ARMA. The installation shall be such to cause the insulation boards to rest evenly on the roof deck/substrate so that there are no significant and avoidable air spaces between the boards and the substrate. The maximum insulation board size with hot-asphalt attachment is 4 ft x 4 ft (1.2 m x 1.2 m). Each insulation board shall be installed tightly against the adjacent boards on all sides and walked-in-place to assure even and consistent contact with the substrate. Aluminum tape shall be installed over joints where asphalt has been pushed to the board's surface.

2. When hot asphalt is used to attach the insulation board to the deck, a Sarnabar shall be installed above the adhered roof membrane 4 ft (1.3 m) from the edge of the roof along the entire perimeter. The Sarnabar shall be fastened 12 inches (0.3 m) on center and a membrane cover strip is welded over it.

3.08 INSTALLATION OF SARNAFIL MEMBRANE

The surface of the insulation or substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

A. Sarnacol 2170 Adhesive:

1. Over the properly installed and prepared substrate surface, Sarnacol 2170 adhesive shall be applied using solvent-resistant 3/4 inch (19 mm) nap paint rollers. The adhesive shall be applied to the substrate at a rate according to Sika Sarnafil requirements. No adhesive is applied to the back of the G410 feltback membrane. The adhesive shall be applied in smooth, even coats with no gaps, globs, puddles or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be coated with adhesive. The first layer of adhesive shall be allowed to dry completely prior to installing a second layer of 2170 and the membrane.

2. The G410 feltback roof membrane is unrolled immediately into a second layer of wet adhesive. Adjacent to that first installed roll of membrane, another second layer of wet adhesive is applied and the second roll of membrane is immediately unrolled into it, overlapping the first roll by 3 inches (75 mm). This process is repeated throughout the roof area. Immediately after application into adhesive, each roll shall be pressed firmly in place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. **Do not allow the second application of adhesive to dry at all!**

3. Weld G410 coverstrips at all G410 feltback seams that do not have a factory selvage edge.

   Notes:

   a) The Applicator shall count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
   b) No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.

B. Sarnacol 2121 Adhesive:

1. Over the properly installed and prepared substrate, Sarnacol 2121 adhesive shall be poured out of the pail and spread using notched ¼ inch x ¼ inch x ¼ inch (6 mm x 6 mm x 6 mm) rubber squeegees. The 2121 adhesive shall be applied at a rate according to Sika Sarnafil requirements. No adhesive is applied to the back of the G410 feltback membrane. **Do not allow adhesive to skin-over or surface-dry prior to installation of G410 feltback membrane.**

2. The G410 feltback roof membrane is unrolled immediately into the wet 2121 adhesive. Adjacent rolls overlap previous rolls by 3 inches (75 mm). This process is repeated throughout the roof area. Immediately after application into adhesive, each roll shall be pressed firmly into place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. **Do not allow adhesive to skin-over or surface-dry prior to installation of G410 feltback membrane.**

3. Weld G410 coverstrips at all G410 feltback seams that do not have a factory selvage edge.

   Notes:

   a) Sarnacol 2121 shall not be used if temperatures below 40º F (5º C) are expected during application or subsequent drying time.
   b) No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.
   c) Sarnacol 2121 shall not be used on vertical surfaces or sloped surfaces greater than a 2 inch (50 mm) rise per 1 horizontal foot (0.3 m).

C. Sarnacol 2142S Adhesive:

1. Over the properly installed and prepared substrate, Sarnacol 2142S adhesive shall be poured out of the pail and spread using solvent resistant 3/4 inch (19 mm) nap paint rollers with a sturdy frame. The 2142S adhesive shall be applied at a rate according to Sika Sarnafil requirements. No adhesive is applied to the back of the G410 feltback membrane. **Do not allow adhesive to skin-over or surface-dry prior to installation of G410 feltback membrane.**

2. The G410 feltback roof membrane is unrolled immediately into the wet 2142S adhesive. Adjacent rolls overlap previous rolls by 3 inches (75 mm). This process is repeated throughout the roof area. Immediately after application into adhesive, each roll shall be pressed firmly into place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. **Do not allow adhesive to skin-over or surface-dry prior to installation of G410 feltback membrane.**

3. Weld G410 coverstrips at all G410 feltback seams that do not have a factory salvage edge.

   Notes:

   a) Sarnacol 2142S shall not be used if temperatures below 40° F (5° C) are expected during application or subsequent curing time.
   b) No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.
   c) Sarnacol 2142S shall not be used on vertical surfaces or sloped surfaces greater than a 2 inch (50 mm) rise per 1 horizontal foot (0.3 m).

D. Sarnacol LR-2001 Adhesive:

1. Apply using pneumatic spray equipment over properly installed and prepared substrates at a rate according to Sika Sarnafil requirements. Sarnacol LR-2001 Primer may be required prior to application of adhesive if excessive dirt or dust remains on substrate. Contact Sika Sarnafil Technical Department for specific primer requirements. Apply adhesive in a smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Sarnacol LR-2001 adhesive set up time varies based on temperature and amount of catalyst added to adhesive (approx. 5 to 10 minutes). It may be necessary to use different Part B drums for insulation and membrane attachment. Part B used for insulation attachment will typically need more catalyst than for membrane attachment. Membrane shall be pressed firmly into place with a water-filled, foam-covered lawn roller by frequent rolling in two directions to ensure full embedment. CAUTION: Rolling membrane in immediately after placement into adhesive may cause slippage/movement until adhesive starts to set up. Complete all flashings, terminations and daily night seals at end of day to ensure water does not penetrate or flow beneath finished areas.

2. Membrane Installation – Option 1

   a) Position and unroll successive sheets of feltback membrane and align to provide a minimum 3 inch (76 mm) wide overlap.
   b) Fold adjacent sheet in half lengthwise to expose substrate area. Fold selvage Sheet edges (along the length of the sheets) under the membrane to prevent overspray onto weld area. Adhere membrane that will be bottom side of the weld first. This will protect the selvage edge from being contaminated by setting into Sarnacol LR-2001 adhesive.
   c) Spray Sarnacol LR-2001 adhesive onto the substrate and allow to rise approximately 1/8 inch (45.7 cm).
   d) Place membrane into Sarnacol LR-2001 adhesive and roll with water filled, foam covered lawn roller to set into adhesive.
   e) Fold remaining sheets lengthwise to expose additional substrate area adjacent to area previously adhered.
   f) Apply Sarnacol LR-2001 adhesive to substrate and continue process described above until all sheets are adhered.
   g) Hot-air weld all seams.

3. Membrane Installation – Option 2

a) Position first roll of feltback membrane at designated starting point.
b) Chalk a line to ensure proper positioning of feltback membrane.
c) Unroll 10 to 15 feet (3 to 4.5 m) of membrane to ensure proper aligned and fold unrolled section back over roll.
d) Spray Sarnacol LR-2001 adhesive over substrate area to be covered by the membrane that was folded back. Do not apply adhesive within approximately 18 inches (45.7 cm) of membrane edge adjacent to where the next roll will be installed. This unadhered edge will be folded back to prevent overspraying when installing the next sheet.
e) Spray Sarnacol LR-2001 adhesive onto substrate and allow to rise 1/8 inch (3 mm). Fold membrane back into the wet adhesive.
f) Roll membrane with a water filled, foam covered lawn roller to set membrane into adhesive.
g) Proceed to front of membrane roll and continue to apply Sarnacol LR-2001 adhesive and roll membrane into adhesive. At end of membrane roll, leave approximately 18 inches unadhered, to be folded back to prevent overspraying when installing the adjoining sheet.
h) After first sheet is positioned, measure and allow for a minimum 3 inch (76 mm) overlap along the length of sheet's selvage edge.
i) Position next roll and repeat process described above. Overspray can be controlled by lifting the 18 inch (45.7 cm) wide unadhered area of previous sheet as Sarnacol LR-2001 adhesive is applied. Adhesive is sprayed under this area as the next roll is adhered and folded down after the membrane is unrolled.
j) Hot-air weld all seams.

4. Installation Guidelines

a) Adhesive must be applied as a continuous layer.
b) Storage temperatures in excess of 90° F (32° C) may affect shelf life of adhesive.
c) If exposed to temperatures below 40° F (5° C), restored adhesive to a minimum temperature of 60° F (15° C) before use.
d) Job site conditions may affect performance. Sarnacol LR-2001 adhesive shall not be used if surface and/or ambient temperatures below 40° F (5° C) are expected during application or subsequent curing time.
e) The addition of Sarnacol LR-2001 Catalyst to Part B may be required when temperatures are between 40° F (5° C) and 80° F (27° C). Refer to table in section 3.07, H-5 for approximate amount of catalyst to be added.
f) Adhesive shall not be applied to wet or damp surfaces.
g) No adhesive shall be applied to the back of G410 feltback membrane or to seam areas. If adhesive does contaminate the seam area, immediately clean the area with seam cleaner while adhesive is still in liquid form.
h) Weld G410 coverstrips at all G410 feltback seams that do not have a factory salvage edge.

3.09 HOT-AIR WELDING OF SEAM OVERLAPS

A. General

1. All seams shall be hot-air welded. Seam overlaps should be 3 inches (75 mm) wide when automatic machine-welding and 4 inches (100 mm) wide when hand-welding, except for certain details.

2. Welding equipment shall be provided by or approved by Sika Sarnafil. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Sika Sarnafil Technical Representative prior to welding.

3. All membrane to be welded shall be clean and dry.

B. Hand-Welding

Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

1. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.

2. The nozzle shall be inserted into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and rolled lightly. For straight seams, the 1-1/2 inch (40 mm) wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle shall be used.

C. Machine Welding

1. Machine welded seams are achieved by the use of Sika Sarnafil's automatic welding equipment. When using this equipment, Sika Sarnafil's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated simultaneously off the generator.

2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

D. Quality Control of Welded Seams

1. The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark grey material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator at locations as directed by the Owner's Representative or Sika Sarnafil's representative. One inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.10 MEMBRANE FLASHINGS

All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sika Sarnafil. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.

A. Sarnacol Adhesive for Membrane Flashings

1. Over the properly installed and prepared flashing substrate, Sarnacol adhesive shall be applied according to instructions found on the Product Data Sheet. The Sarnacol adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.

2. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.

B. Install Sarnastop/Sarnabar/Sarnacord according to the Detail Drawings with approved fasteners into the structural deck at the base of parapets, walls and curbs. Sarnastop is required by Sika Sarnafil at the base of all tapered edge strips and at transitions, peaks, and valleys according to Sika Sarnafil's details.

C. Sika Sarnafil's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by Sika Sarnafil prior to installation.

D. All flashings shall extend a minimum of 8 inches (0.2 m) above roofing level unless otherwise accepted in writing by the Owner's Representative and Sika Sarnafil Technical Department.

E. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the Sarnafil membrane.

F. All flashing membranes shall be mechanically fastened along the counter-flashed top edge with Sarnastop at 6-8 inches (0.15-0.20 m) on center.

G. Sarnafil flashings shall be terminated according to Sika Sarnafil recommended details.

H. All flashings that exceed 30 inches (0.75 m) in height shall receive additional securement. Consult Sika Sarnafil Technical Department for securement methods.

3.11 METAL FLASHINGS

A. Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:

1. Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).
2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.

B. Metal, other than that provided by Sika Sarnafil, is not covered under the Sika Sarnafil warranty.

C. Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

D. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

E. Metal joints shall be watertight.

F. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1 inch (25 mm).

G. Airtight and continuous metal hook strips are required behind metal fascias. Hook strips are to be fastened 12 inches (0.3 m) on center into the wood nailer or masonry wall.

H. Counter flashings shall overlap base flashings at least 4 inches (100 mm).

I. Hook strips shall extend past wood nailers over wall surfaces by 1-1/2 inch (38 mm) minimum and shall be securely sealed from air entry.

3.12 SARNACLAD METAL BASE FLASHINGS/EDGE METAL

All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sika Sarnafil. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Applicator's expense.

A. Sarnaclad metal flashings shall be formed and installed per the Detail Drawings.

1. All metal flashings shall be fastened into solid wood nailers with two rows of post galvanized flat head annular ring nails, 4 inches (100 mm) on center staggered. Fasteners shall penetrate the nailer a minimum of 1 inch (25 mm).

2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.

B. Adjacent sheets of Sarnaclad shall be spaced ¼ inch (6 mm) apart. The joint shall be covered with 2 inch (50 mm) wide aluminum tape. A 4 inch minimum (100 mm) wide strip of Sarnafil flashing membrane shall

be hot-air welded over the joint. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

3.13 EDGE-TITE METAL

A. Cut the G410 feltback at the edge of the roof. Weld one side of a strip of G410 (not feltback) membrane along that perimeter edge to the top of the cut feltback membrane. Position the membrane over the roof edge and down outside face of wall covering wood nailer(s) completely, allowing 1/2 inch (13 mm) excess membrane. Hot-air weld all seams making sure there are no voids in welds.

B. Apply a 3/8 inch (10 mm) bead of Sarnafil sealant to the intersection of the right angle of the clean base rail. Install base rail from right to left as seen from rooftop, lapping joints 1 inch (25 mm).

C. Fasten base rail into the side of the nailer 12 inches (0.3 m) on center using #12 x 1-5/8 inch corrosion-resistant fasteners provided with Edge-Tite. Field cut sections as necessary. A second row of fastening may be required based upon site conditions. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

D. Position spring clips at 6 foot (1.8 m) centers on base rail. Locate spring clips at fascia cover laps and at mid-span of fascia cover.

E. Fascia covers are installed from right to left as seen from rooftop. Position fascia cover on top of base rail and overlap preceding panel by 1 inch (25 mm) at notches provided. Snap covers into place. Field cut where necessary. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

3.14 ANCHOR-TITE METAL

A. Cut the G410 feltback at the edge of the roof. Weld one side of a strip of G410 (not feltback) membrane along that perimeter edge to the top of the cut feltback membrane. Position the membrane coverstrip over the roof edge and down outside face of wall covering wood nailer(s) completely, allowing 1/2 inch (13 mm) excess membrane. Hot-air weld all seams making sure there are no voids in welds.

B. Apply a 3/8 inch (10 mm) bead of Sarnafil sealant to the intersection of the right angle of the clean base rail. Install base rail from right to left as seen from rooftop, lapping joints 1 inch (25 mm).

C. Fasten base rail into the side of the nailer at 12 inches (0.3 m) on center using #12 x 1-5/8 inch corrosion-resistant fasteners provided with Anchor-Tite. Field cut sections as necessary. A second row of fastening may be required based upon site conditions. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

D. Fascia covers are installed from right to left as seen from rooftop. Position fascia cover on top of base rail and overlap preceding panel by 1 inch (25 mm) at notches provided. Snap covers into place. Field cut where necessary. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

3.15 WALKWAY INSTALLATION

A. Sand Coated Walkway

Roofing membrane to receive Sand Coated Walkway shall be clean and dry. Place chalk lines on deck sheet to indicate location of Walkway. Clean the deck membrane in areas to be welded. Walkway shall be unrolled and positioned within the chalk lines. Hot-air weld the entire perimeter of the Walkway to the Sarnafil deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies. **Important:** Check all existing deck membrane seams that are to be covered by Walkway with rounded screwdriver and reweld any inconsistencies before Walkway installation. Do not run Walkway over Sarnabars.

B. Sarnatred Walkway

Roofing membrane to receive Sarnatred Walkway shall be clean and dry. Place chalk lines on deck sheet to indicate location of Walkway. Apply a continuous coat of Sarnacol 2170 adhesive to the deck

sheet and the back of Walkway in accordance with Sika Sarnafil's technical requirements and press Walkway into place with a water-filled, foam-covered lawn roller. Clean the deck membrane in areas to be welded. Hot-air weld the entire perimeter of the Walkway to the Sarnafil deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies. **Important:** Check all existing deck membrane seams that are to be covered by Walkway with rounded screwdriver and reweld any inconsistencies before Walkway installation. Do not run Walkway over Sarnabars.

C. Cross-Grip Walkway

Crossgrip Walkway is installed loose laid on top of completed Sarnafil roof assemblies. Where design windspeeds exceed 94 mph (150 km/h) the walkway must be secured with loops of Sarnafil membrane welded to the field sheet. Unroll and position Crossgrip Walkway within specified areas and cut to desired length. Do not install Crossgrip Walkway directly over Sarnabars. Connecting clips are available for butting two ends together. **Important:** Check all existing deck membrane seams that are to be covered and reweld any inconsistencies before installation.

D. Concrete Pavers

Weld the edges of a protection layer of G410 membrane in place. Place normal weight concrete pavers on the protection membrane. In areas of high wind exposure the pavers shall be strapped together with stainless steel metal straps that are flush with the paver surface. Do not run walkway over Sarnabars.

3.16 TEMPORARY CUT-OFF

All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100% watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as described in Section 2.10. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of off site. None of these materials shall be used in the new work.

If inclement weather occurs while a temporary waterstop is in place, the Applicator shall provide the labor necessary to monitor the situation to maintain a watertight condition.

If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Applicator's expense.

3.17 COMPLETION

Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of Sika Sarnafil shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and Sika Sarnafil prior to demobilization.

All Warranties referenced in this Specification shall have been submitted and have been accepted at time of contract award.