



ROOFING APPLICATOR HANDBOOK

BUILDING TRUST
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Introduction

Welcome to the Sika® Sarnafil® Roofing Applicator Handbook. This pocket guide is designed to serve as a quick reference for qualified Fitters when installing Sika® Sarnafil® membranes.*

As a Fitter, you are expected to maintain the high standards of application for which the Sika® Sarnafil® brand is well known for and our Technical Services team is here to support you in your efforts.

If you require further technical assistance or advice, you can contact your local Sika Technical Services Representative and they will be happy to assist you. You can find their phone number on your Fitters card or by contacting directly Sika Canada.

In addition, our web site <https://can.sika.com/en/construction/67113.html> also contains Product Data Sheets, Safety Data Sheets, typical drawings and key contact numbers that may be of assistance to you.

* Although accurate at the time of printing, we continuously endeavour to improve. Please check Sika Canada's website www.sika.ca regularly to ensure you have the latest information.



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Hand welding accessories: Silicone rubber hand roller



Sarnamatic 681

Hand Welder

Leister Triac hand welder with adjustable heat settings, 20 mm ($\frac{3}{4}$ in), 40 mm ($1\frac{1}{2}$ in) and 5 mm ($\frac{1}{4}$ in) nozzles and PVC cord attachment

Automatic Welder

The Sarnamatic hot-air welder was developed and is supplied by Sika. It is specifically designed for use with Sarnafil® and Sikaplan® membranes. The speed, air flow and welding temperature of the Sarnamatic can be adjusted to accommodate changes in ambient temperature. Each Sarnamatic unit comes packed in a sturdy box, complete with detailed operating and maintenance instructions.

Technical Description (as manufactured)

Power requirements: 230-volt, 30-ampere, single-phase current

Extension cord: Use a 14 AWG (2.5 mm²) 3-conductor type cord, 15 m (50 ft) length. For longer distances, consult an electrical contractor.

Adjustment tools (supplied): Phillips screwdriver, open-end and Allen wrenches.

NOTE:

For hand welding, only Leister hand welders are accepted.

For automatic welders, only the Sarnamatic and approved Leister welders are accepted for use by Sika Canada.

The maximum length of recommended power cord is 30 m (100 ft) for both hand welders and automatic welding.



D cor Profile Kit

Precautions For Automatic Welders

Run machine on the cooling setting for at least five (5) minutes before turning it off to prevent damage to the ceramic heating element. Avoid power interruptions or power surges. Always check the condition of the power cord and all connectors prior to connecting the power. Never use electrical equipment under wet conditions. Sika Canada recommends the use of a properly sized portable generator of 7,500 watts.

D cor Profile Kits

The patented D cor Kits were developed and are supplied by Sika. Using specially designed compression wheels allowing for continuous, consistent heat and pressure to be applied to D cor Profiles and the membrane.

Packaging and Storage

Each machine is shipped in its own packing case. The machine should be stored in the case and kept dry.

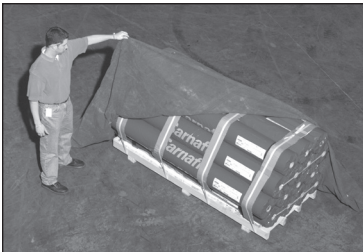
Generator

When a generator is required for running the Sarnamatic welder it should be a minimum of 7,500 watts, 30 amps, 230 volts single phase.

NOTE:

When operating automatic welders, the generator or power source should be dedicated to the automatic welder. No other items should be plugged in. Running additional equipment from the generator during welding operations may result in inconsistent welds.

Storage and handling



Keep all materials stored properly

1. All products delivered to the job site shall be in the original un-opened containers or wrappings.
2. Handle all materials to prevent damage. Place all materials on pallets, and fully protect from moisture with clean breathable tarpaulins.
3. Membrane rolls shall be stored lying down on pallets, and fully protected from moisture with breathable tarpaulins.
4. Insulation and cover-boards shall be stored and fully protected from moisture with breathable tarpaulins. Prior to covering the insulation bundles with tarpaulins, neatly make several horizontal slices in the protective plastic wrapping in between the insulation boards to prevent possible condensation issues. Refer to PIMA Technical Bulletin 109: Storage and Handling Recommendations for Polyiso Roof Insulation.
5. Store adhesives, primers and sealants in accordance with the requirements of Sika product data sheets.
6. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers and supplied by material manufacturer.
7. Any materials that are determined by the owner's representative and Sika Canada to be damaged are to be removed from the job site and replaced at no cost to the owner.

Project conditions

1. A minimum of two (2) certified fitters/applicators with valid cards per eight (8) personnel must be present at all times when installing Sarnafil® membranes and the original cards must be presented when requested by a Sika Technician.
 2. Only as much of the new roofing as can be made weather tight each day, including all flashing and detail work, shall be installed. All seams shall be properly heat-welded before leaving the job site that day.
 3. The surface of the insulation shall be inspected prior to installation of any 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.
 4. All surfaces to receive new insulation, membrane, or flashings shall be clean, smooth, dry, and free from flaws, sharp edges, loose foreign material, oil, and grease. Should surface moisture occur, the contractor shall provide the necessary equipment to dry the surface prior to application. Roofing shall not start until all defects have been corrected.
 5. 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 remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the owner.
 6. The contractor is cautioned that Sika® Sarnafil® roof membranes may be incompatible with polystyrene, asphalt, coal tar, heavy oils, roofing cements, creosote, and some preservative materials. Such materials shall not remain in contact with the membranes. The Contractor shall consult Sika Canada regarding compatibility, precautions, and recommendations.
 7. 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 contractor 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 insulation board shall be provided for new and existing roof areas which receive rooftop traffic during construction.
- The Contractor shall take precautions such that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.
 - Flammable adhesives shall not be stored and shall not be used in the vicinity of open flames, sparks, and excessive heat.
 - Precautions shall be taken when using Sarnacol® adhesives at or near rooftop vents or air intakes. Adhesive odours could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odour while ventilating the building. Keep lids on unused cans at all times. Wherever possible, air intakes should be sealed off during adhesive application.
 - Appropriate protective wear shall be worn when using solvents or adhesives and as required by job conditions.
 - Workers shall follow Federal and Provincial safety procedures.



Sarnavap®-10 installation

Vapour Barriers

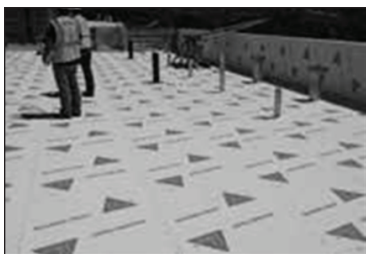
When installing vapour barriers, it is recommended, where possible that the required height of the vapour barrier be marked on the substrate to reduce excessive material use.

Sarnavap®-10 & Sarnavap®-6

1. Sarnavap®-6 and Sarnavap®-10 is loose laid over suitable substrates.
2. Overlap all edges 100 mm (4 in) and seal with Sikalastomer®-65 tape.
3. Extend Sarnavap®-10 to the perimeter and deck penetrations level to the height of the insulation and seal with Sikalastomer-65 tape to provide continuity of the vapour retarder.
4. Sarnavap® 6 and Sarnavap® 10 must also be sealed on the vertical surface at roof penetrations.
5. Seams and penetrations must be sealed with Sikalastomer®-65 tape.



Vapour Retarder SA 31 laid in place



Vapour Retarder SA 31 cut tight around

Vapor Retarder SA 31

1. All surfaces must be clean, sound, dry, and free of loose materials or contaminants such as water, frost, ice, oil, and grease that would interfere with proper adhesion and compromise the performance of the product.
2. Prepare concrete surfaces to achieve a Concrete Surface Profile CSP 3 to CSP 5 in accordance with the International Concrete Repair Institute (ICRI) Technical Guideline No.310.2R-2013. (light to medium Scarification)
3. Vapour Retarder Primer SB, Vapour Retarder Primer VC or Vapour Retarder Primer WB is required on all substrates except for steel. Shake or stir primer before applying. Let the primer dry completely.
4. Begin the installation at the low point of the roof. Unroll Vapour Retarder SA 31 onto the substrate for alignment. Overlap each sheet by 75 mm (3 in) on the side lap and 150 mm (6 in) on the end laps.
5. Once the roll is aligned, peel back a portion of the silicone release film and press Vapor Retarder SA 31 onto the substrate. When securely adhered, remove the remaining release film from the roll.
6. On steel decks install a 150 mm x 1.1 m (6 in x 42 in) metal plate under the end lap to support the membrane between the steel flutes. Stagger the end laps by at least 300 mm (12 in).
7. Use a minimum 45 kg (100 lb) steel roller to press the Vapor Retarder SA 31 onto the substrate including the laps. Use the roller to push out any air bubbles out to the edge of the membrane. Do not cut the membrane to remove a bubble.

Vapor Retarder SA 106

1. All surfaces must be clean, smooth, sound, dry, and free of loose materials, debris or contaminants such as water, moisture, frost, ice, oil and grease that would interfere with proper adhesion and compromise the performance of the product.
2. Prepare concrete surfaces to achieve a Concrete Surface Profile CSP 3 to CSP 5 in accordance with the International Concrete Repair Institute (ICRI) Technical Guideline No.310.2R-2013 (light to medium Scarification)
3. Vapour Retarder Primer SB, Vapour Retarder Primer VC or Vapour Retarder Primer WB is required on all substrates except for steel. Concrete surfaces must be dry before installation. Shake or stir primer before applying. Let the primer dry completely.
4. Begin the installation at the low point of the roof. Chalk a line on the deck to align the sheet. Unroll, position, and align Vapour Retarder SA 106 with the release poly covered selvage edge sheet toward the center of the roll.
5. Carefully score the release liner across the width of the roll with a straight blade utility knife. Roll Vapour Retarder SA 106 into its final position as the release liner is being removed. Re-roll the remaining Vapour Retarder SA 106 and repeat the process. Roll Vapour Retarder SA 106 with a 45 kg (100lb) steel roller to ensure full contact with the substrate.
6. Align successive sheets with 75 mm (3 in) side laps and 150 mm (6 in) end laps. The seam area has a pre-applied primer/adhesive on one side for mating with the bottom of the next sheet. Remove the release poly from the seam area and mate the top sheet to the bottom. Roll the seam area to ensure constant contact.
7. Hot air weld the end laps. Hot air welded laps must show a minimum 15 mm (½ in) bleed out. Stagger adjacent end laps a minimum of 300 mm (12 in).
8. Apply Mastic to seal around penetrations. Use a trowel to mound the Mastic around the penetrations to seal the opening. Do not apply Mastic where it may come into direct contact with the membrane.



Hot-air weld Vapor Retarder SA 106 end laps

Vapor Retarder TA 138 (Concrete Only) (Torch-Applied)

1. All Concrete surfaces must be clean, smooth, sound, dry, and free of loose materials, debris or contaminants such as water, moisture, frost, ice, oil and grease that would interfere with proper adhesion and compromise the performance of the product.
2. Prepare concrete surfaces to achieve a Concrete Surface Profile CSP 3 to CSP 5 in accordance with the International Concrete Repair Institute (ICRI) Technical Guideline No. 310.2R-2013 or CSA standard as applicable. (light to medium scarification)
3. Torch-applied products should only be installed by trained personnel. It is imperative that Federal and Provincial regulations be followed, and good industry practices used.
4. Prime concrete surface with Vapor Retarder Primer TA. Concrete surfaces must be dry before installation. Shake or stir primer before applying. Let the primer dry completely.
5. After the primer has dried completely, install Vapour Retarder TA 138 in a shingle fashion starting at the low point of the deck so the laps shed water.
6. Chalk a line on the deck to align the first sheet. Unroll Vapour Retarder TA 138 and align the side lap with the chalk line. Back roll the sheet halfway. Begin torching the bottom side of Vapour Retarder TA 138. As the bitumen begins to soften pull the roll forward with a metal pole. When heated properly there should be a bleed out of approximately 15 mm (½ in). Back roll the other half of the roll and repeat the process.
7. Lay out the next roll and align the side lap. Side laps must be a minimum of 75 mm (3 in). End laps should be a minimum of 150 mm (6 in). Stagger adjacent end laps a minimum of 300 mm (12 in). Cut the lower outside corner of the end lap at a 45 degree angle to minimize material build-up where it will be covered by the next roll.
8. When heating the membrane move the torch in an ' L ' pattern to ensure heating of the lap area on the bottom sheet. Proper heating will create a minimum 15 mm (½ in) bleed out. Walk in the seam area or use a weighted roller to ensure proper adhesion and bleed out. Ensure that all laps are firmly and smoothly adhered without wrinkles, voids or fishmouths.
9. Check the seams with the edge of a trowel. Any loose areas should be lifted with the trowel, re-heated and pushed back down to achieve the necessary bleed out.
10. Apply Mastic to seal around penetrations and at roof edges. Use a trowel to mound the Mastic around the penetrations to seal the opening. Do not apply Mastic where it may come into direct contact with the membrane.
11. **DO NOT** torch apply Vapour Retarder TA 138 to combustible substrates or substrates with a combustible backing. In such locations Vapour Retarder SA 106 must be used.

Insulation general

1. Insulation shall be installed over an acceptable substrate or vapour retarder. All boards shall be installed with tight joints with gaps no more than 6 mm ($\frac{1}{4}$ in).
2. When insulation is to be secured to the deck with fasteners and plates, the fastener must have 25 mm (1 in) penetration into the steel or plywood decks, and embedment into concrete or wood plank decks.
3. Insulation shall be neatly cut to fit around all penetrations and projections. Install tapered insulation around drains to create sumps.
4. Use 2 layers of insulation when total thickness exceeds 70 mm (2.7 in). Stagger joints in both directions at least 300 mm (12 in) between layers.
5. Do not install more insulation board that can be covered with membrane by the end of the day, or the onset of inclement weather.

Sarnacol®-2163 Board Adhesive

All work surfaces should be clean, dry, free of dirt, dust, debris, oils and other contaminants that may result in a surface that is not sound or is uneven.

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. With new cartridges, some of the material should be pumped into a bucket to ensure of a proper mix ratio.
2. Apply by hand with a dual component caulk gun over properly installed and prepared substrates in bands of 6 to 15 mm (1/4 to 1/2 in) wide before foaming.
3. As adhesive is applied, immediately place board into wet adhesive.
4. Walk insulation boards into place to ensure full embedment.
 - a. 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 15 mm (1/2 in) in 300 mm (12 in), begin adhering insulation at low point and work upward to avoid slippage. One person should be designated to walk in, trim and apply weight to all insulation boards to ensure adequate securement.
5. Ballast to achieve proper contact with substrate.
6. Only apply in areas that can be made completely watertight in the same day's operations. Unused adhesive can be applied at a later date by simply replacing the mixing tip.

Sarnacol® AD Board Adhesive

All work surfaces should be clean, dry, free of dirt, dust, debris, oils and other contaminants that may result in a surface that is not sound or is uneven.

1. Install Part A and Part B components into dispensing machine and follow instructions on the packaging. Always ensure that the Part A and Part B containers are always hooked to the same dispensing holders or hoses (i.e. do not reverse the dispenser holders and hoses between Part A and Part B). All valves on the dispensing unit must be completely opened so a 1:1 ratio is achieved when moving the adhesive through the disposable mix tip and onto the substrate in a semi-liquid state.
2. Apply the Sarnacol® AD Board Adhesive directly to the substrate, using a ribbon pattern. Space the 15 mm (1/2 in) wide wet beads at a maximum of 300 mm (12 in) o.c. to achieve proper coverage rate. Actual ribbon spacing will depend on the wind uplift rating required.
3. Allow the adhesive to begin to rise before placing the insulation or roof board into the adhesive. Open times will vary depending on weather conditions. Do not allow adhesive to skin over.
4. Walk insulation boards into place to ensure full embedment. CAUTION: Walking insulation boards in after placement into adhesive may cause slippage/movement until adhesive starts to set up. On roof slopes greater than 15 mm (1/2 in) in 300 mm (12 in), begin adhering insulation at low point and work upward to avoid slippage. One person should be designated to walk in, trim/slit

Sarnacol® LRA

The surface to which Sarnacol® LRA is to be installed must be sound, clean, dry and free from all surface contaminants.

1. All loose particles, dirt, dust, release agents, laitance, oils or greases, paint, rust, and other poorly adhering materials must be removed by suitable manual or mechanical preparation.
2. All phenolic materials, including existing insulation, must be removed along with any existing polyurethane foam. All non-ferrous metals, including stainless steel, aluminum and copper should be suitably primed, ie; epoxy or wash primer (contact Sika Canada for guidance). Otherwise, Sarnacol® LRA adheres to clean and dry metal without pretreatment or primer.
3. Any existing roofing material must be evaluated for its soundness and stability. Where defects exist or the adhesion of the underlying roofing material is called into question the adhesive must not be applied until suitable repairs or remedial measure have been undertaken. The substrates to which Sarnacol® LRA is proven compatible include but are not limited to: structural and lightweight concrete, gypsum, cementitious planks, steel (22 gauge or thicker), plywood (15 mm [5/8 in] thick minimum), smooth built up roofing (B.U.R), smooth and granular surface modified bitumen, sprayed in-situ polyurethane foam, base sheeting, and most vapour barriers (asphaltic & fleece-lined).

Board Adhesives

4. The roof insulation and cover boards which Sarnacol® LRA is proven to bond to, but are not limited to: expanded polystyrene, polyisocyanurate, select extruded polystyrene and certain branded products such as DensDeck®, Perlite and Securock®.
5. The maximum size of insulation or cover boards per sheet, other than polyisocyanurate, must be 1.2 m x 2.4 m (4 ft x 8 ft). The maximum size per sheet of polyisocyanurate boards must be 1.2 m x 1.2 m (4 ft x 4 ft). The need to bond to unfamiliar substrates using unknown insulation /cover boards will require testing and assessment.

Contact Sika Canada for guidance

Application

1. Sarnacol® LRA is installed by dispensing the material from either twin-piston cartridge/ caulking guns or through suitable mechanical equipment. Both methods require the material to be blended in the static spiral mixers supplied.
2. As per standard practice, dispense material from the static mixer until an even consistency and colour is achieved. The purged material is not suitable for use and must be discarded.
3. Only completely blended material is suitable for use. Dispense the fluid material in continuous beads of between 18 - 25 mm (3/4 - 1 in) width at a maximum spacing of 300 mm (12 in) on centre.
4. The material will then expand to approx. 50 mm (2 in) in width and to a height of 18 - 25 mm (3/4 - 1 in) within 3 - 4 minutes of application. Following the conversion of the liquid into an expanding foam and whilst the adhesive is still wet and tacky, lay the insulation/cover board into position and firmly press onto the adhesive ribbons, walking into place where possible or employing suitable force to ensure complete contact.
5. Sarnacol® LRA possesses a typical open time for bonding of insulation and cover boards of 4 -14 minutes, depending upon temperature and conditions.
6. Ensure that the boards are installed onto the foam within that time. Should the adhesive pass its tack-free state before boards have been placed, dried beads must be removed, and the material re-applied with the securing of boards following accordingly.

Clean Up

Uncured adhesive can be removed from equipment and tools using Sika® Equipment Cleaner. Cured adhesive material can only be removed manually or mechanically.

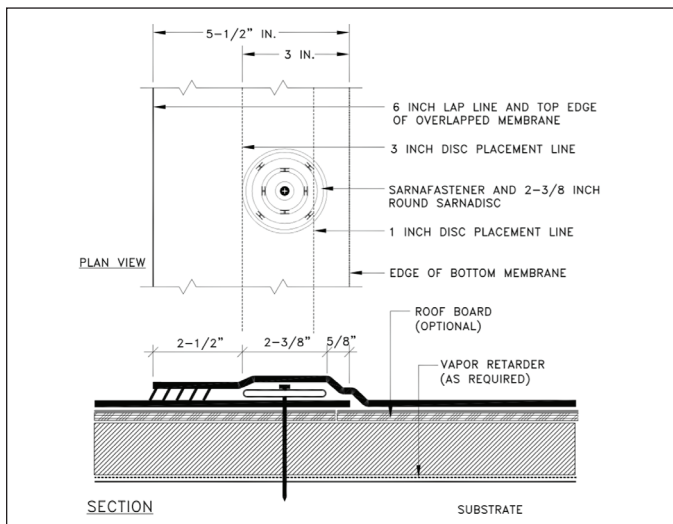
Mechanically-Attached Systems

Inseam-Attached Sarnafast® / Inseam System

The Sarnafil® or Sikaplan® membrane is fastened in the seam overlap along one long side of the membrane directly into the roof deck. The adjacent membrane panels are then heat-welded together with an approved automatic hot air welder.

The roof membrane is marked at the factory with seam overlap lines and fastener location markings for ease of installation. Half width rolls of membrane are available for use in the critical perimeter and corner areas of the building.

1. Unroll the membrane and position it with a 150 mm (5½ in) overlap for Eyehook 2-3/8" Sikaplan® Disc over the properly prepared substrate.

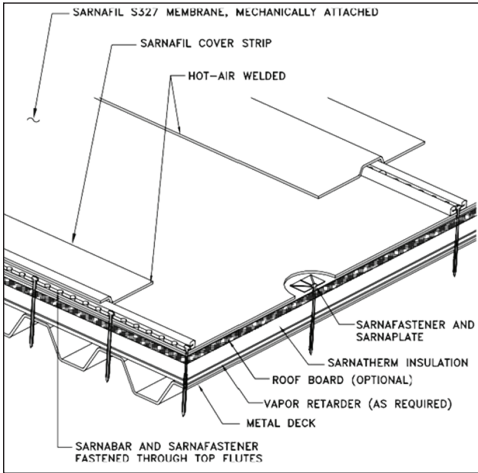


2. Install Sarnafasteners using proper equipment at the specified spacing requirement so that they clamp the roof membrane to the substrate without deforming the plate.
3. The **fastener is to penetrate the upper flute or deck by 25 mm (1 in)** A depth gauge is recommended for correct fastener penetration.
4. **Plates and fasteners must not be overdriven.**
5. Weld membrane overlaps using approved hot-air welding equipment. Refer to HOT-AIR WELDING OF LAP AREAS section and MACHINE WELDING APPENDIX section for seam welding procedures.
6. All seams on a mechanically-fastened system must be machine-welded wherever possible.

Mechanically-Attached Systems

Engineered System

The Engineered System uses Sarnabar[®], a U-shaped steel bar that is fastened only over Sarnafil[®] S327 membrane and into the roof deck, effectively clamping the membrane in place. The Sarnabar is then covered with a strip of pre-cut flashing membrane. Sarnabar[®] are not to be installed in the seam overlap.



Sarnabar protection pad at joint

NOTE: Sarnabar[®] and fastener spacing layout are noted in the project specifications.

Mechanically-Attached Systems

1. Unroll Sarnafil® S327 and position with a 75 mm (3 in) overlap over the properly prepared substrate.

2. Weld membrane overlaps using approved hot-air welding equipment. Note: metal tracks may be required for the automatic welder to run on to minimize wrinkles when welding.

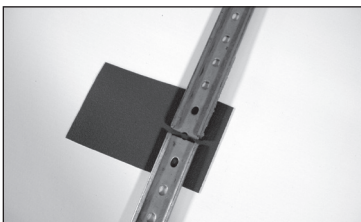


Installing Sarnafasteners

3. Position Sarnabar® on top of the roof membrane according to the specified spacing requirement.

4. Install Sarnafasteners into structural deck using proper equipment. Sarnafasteners are to be tight to the Sarnabar.

5. Leave a 6.4 mm (¼ in) gap at the ends of the Sarnabar®. Install an extra piece of roof membrane as a protection pad over the joint.



Weld the protection pad in place.



Welding protection pad

Rhinobond System

The RhinoBond system uses the Sarnadisc RhinoBond which is a polymer-coated plate used with Sarnafasteners to attach the insulation or cover boards directly to the roof deck or structural purlins.

The roof membrane is then welded to the Sarnadisc RhinoBond by induction welding.

Two RhinoBond systems are offered:

- Grid System
- Metal Retrofit (for purlin attachment)

Grid System:

Fasten the insulation to the substrate using the Sarnadisc RhinoBond and the appropriate Sarnafastener at the rates for the corresponding uplift approval. Plates and fasteners must be installed in a “grid like” pattern.

Metal Retrofit System:

Fasten the insulation to the purlins using the Sarnadisc RhinoBond and Sarnafasteners at the rates for the corresponding uplift approval. The insulation boards will need additional fastening to ensure a minimum of 6 fasteners per 1.2 x 2.4 m (4 ft x 8 ft) board. Standard insulation fastening components may be used for this fastening, rather than Sarnadisc RhinoBond.

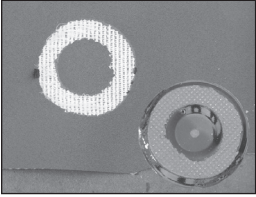
Rhinobond Calibration Tool Test

Test welds and field calibration of the induction welder tool shall be done whenever the induction welder is turned on or when the ambient temperature changes by more than 9 °C (15 °F) prior to any roof cover welding. The following steps shall be followed for the calibration:

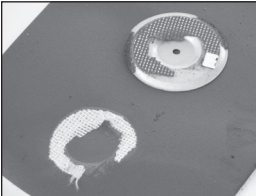
1. Place five (5) plates on insulation or roof board identical to the material that will be used on the project. It is not necessary to use a fastener with the plate during the calibration process.
2. Cover the plates with membrane
3. Use the Induction welder at the default setting of zero to weld the first plate
4. Place Cool & Clamp device on the assembly
5. Change the induction energy two (2) levels by depressing the “up” or “down” button twice. Typically, on warmer days you go down and on cooler days go up.
6. Weld the second plate, place Cool & Clamp device on the assembly
7. Repeat for plates three, four and five, increasing or decreasing the induction energy two (2) levels for each trial.
8. Allow assemblies to cool to ambient temperature.
9. Using pliers, peel RhinoBond plate from the underside of membrane to evaluate the bond strength. Validate correct induction energy setting based on completeness of bond and peel strength. Desired failure mode is separation of the bottom film of membrane from the reinforcement (scrim). Repeat trial process adjusting energy level up or down until desired results are achieved.

NOTE: Recalibrate the induction tool settings when ambient temperature changes more than 9°C (15°F) within a given day.

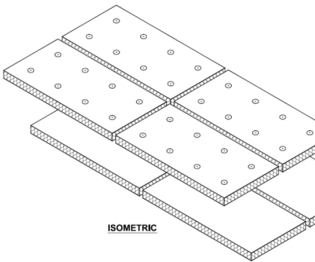
Rhinobond System



Acceptable Weld



Insufficient weld



Notes on Rhinobond

1. Membrane sheets must be adjusted to avoid Rhinobond plates being placed in the seam as this may result in voids on either side of the plate when welding seams.
2. The contractor is to keep calibrated tests clearly marked with the date, time and temperature settings clearly marked on the calibration test membrane for review by the Sika Technician.
3. Calibration must be completed on the same substrate type as the intended Rhinobond installation each time the machine is turned on or the ambient temperature changes by 10 °C (15 °F)
4. All installed plates must be welded each day.

10. Weld membrane overlaps using hot-air welding equipment. Refer to WELDING section for seam welding procedures.

11. Welding of the membrane to the Sarnadisc RhinoBond shall be done with the RhinoBond induction welding tool. Center the induction welder over the center of the Sarnadisc RhinoBond +/- 25 mm (1 in) and weld the plate to the membrane underside.

12. When the induction welding cycle is complete, immediately place a Cool & Clamp magnetic on the welded assembly. This device must remain in place for at least 60 seconds. Keep Cool & Clamp wiped clean, magnets attract metal pieces which may create holes in the membrane over plate.

13. A standard plunger can be used to verify plate welds. Center the plunger over the welded plate, create suction and pull up to check the weld.

The top layer of the insulation is offset from the bottom layer (if any) with the top layer soldered rather than staggered as with other systems.

Adhered Systems

The range of Sika® Sarnafil® roofing systems has three types of Adhered Systems using either solvent based, water-based, or urethane low rise foam Sarnacol® adhesives. Membrane-adhered with Sarnacol® adhesives direct to approved substrates or pre-secured insulation / roof boards shall be free and clear of dirt, dust and debris. The insulation / roof boards shall be secured to the roof deck by either fasteners and plates or Sarnacol® insulation adhesive or a Sika accepted alternative.

Sarnacol®-2170 / Sarnacol®-2170 VC Application

NOTES:

- I. Do not install when air temperature is within 3 °C of dew point.
 - II. No adhesive shall be applied in seam areas.
 - III. Coverage rate averages 5,6 - 6,5 m²/L (60 - 70 ft²/US gal.). The coverage rate may vary depending on substrate porosity, ambient temperature, and experience.
 - IV. The Contractor shall count the number of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
 - V. Adhesive must be mixed for five (5) minutes with an electric mixer and paddle at slow speed prior to application use.
1. Over the properly installed and prepared substrate surface, adhesive shall be applied using solvent-resistant 19 mm (3/4 in) nap rollers. The adhesive shall be applied to the substrate at a rate according to Sika requirements.
 2. The adhesive shall be applied in smooth, even coats with no gaps, globs, puddles or other inconsistencies. Only an area which can be completely covered by membrane in the same day's operations shall be coated with adhesive. Substrate adhesive shall be allowed to dry completely.
 3. Unroll membrane over dried adhesive, adjacent sheets shall be overlapped 75 mm (3 in). Fold back half of the membrane to receive adhesive. Apply to the back of membrane.



"Tacky" Adhesive



Rolling membrane with a 45 kg (100 lb) roller

4. Wait for adhesive on the underside of the membrane to become "tacky" to the touch. (produces strings when touched with dry finger). Roll onto previously coated substrate. Do not allow adhesive on underside of membrane to dry.
5. Roll membrane using a 45 kg (100 lb) minimum steel roller immediately after laying the membrane into place to ensure full contact with the adhesive. The remaining unbonded half of the sheet shall be folded back and the procedure repeated.
6. Weld membrane overlaps using hot-air welding equipment. Refer to HOT-AIR WELDING OF LAP AREAS section and MACHINE WELDING section for seam welding procedures.

Feltback Membrane

General

Feltback membrane may be difficult to reposition over irregular surfaces. To minimize repositioning, unroll the membrane 1.8 m (6 ft) and line up with the lap line. Then completely unroll the membrane. Alternately, a layer of polyethylene can be unrolled prior to unrolling the Feltback membrane. The polyethylene will act as a slip sheet for positioning the Feltback membrane. Remove the polyethylene sheet after the Feltback membrane is in position.

- a. Over the properly installed and prepared substrate surface, Sarnacol®-2170 or Sarnacol®-2170 VC adhesive shall be applied using solvent-resistant 19 mm (¾ in) nap paint rollers. The adhesive shall be applied to the substrate at a rate according to Sika Product Data sheet requirements.
- b. No adhesive is applied to the back of the Feltback membrane. The adhesive shall be applied in smooth, even coats with no gaps, globs, puddles, or other inconsistencies. Only an area which can be completely covered with membrane in the same day's operations shall be coated with adhesive. The first coat of adhesive shall be allowed to dry completely prior to installing a second coat of Sarnacol®-2170 or Sarnacol®-2170 VC.
- c. Apply the second coat of Sarnacol®-2170 or Sarnacol®-2170 VC the width of the membrane roll. The Feltback roof membrane is unrolled immediately into the second coat of wet adhesive. Adjacent to the first installed roll of membrane, another second coat of wet adhesive is applied, and the second roll of membrane is immediately unrolled into it, overlapping the first roll by 75 mm (3 in). This process is repeated throughout the roof area. Immediately after application into adhesive, each roll shall be pressed firmly in place with a minimum 45 kg (100 lb) steel weighted roller by rolling in both directions. Do not allow the second application of adhesive to dry before installing the membrane.
- d. Weld coverstrips at all Feltback roll ends and other seams that do not have a factory selvage edge.

Sarnacol®-2121 / Sikaplan® Single-Step (SSS) Roller Application

Notes:

- I. Use Sarnacol®-2121 / SSS adhesives for bonding membranes to acceptable substrates up to 2:12 slope.
- II. Do not allow adhesive to skin-over or surface-dry prior to membrane installation.
- III. Coverage rate averages 2,47 m²/L (100 ft²/ US gal.). The coverage rate may vary depending on substrate porosity, ambient temperature, and experience.
- IV. The Contractor shall count the number of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
- V. Initial set time is 24 - 72 hours or more depending on substrate, ambient temperature, and humidity. Set up time increases 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 5° C (40 °F).

Adhered Systems

- VI. Newly installed areas of roofing must be protected from exposure to high winds and/or pressure from the underside. This may include edge securement and temporary ballast.
1. Mix adhesive with a mechanical mixer for five (5) minutes at slow speed until a smooth consistency is achieved.
 2. Apply using a 10 - 13 mm (3/8 in - 1/2 in) medium nap roller. The adhesive is applied to the substrate only.
 3. The adhesive is poured onto the substrate and is rolled and spread evenly. Using rollers up to 45 mm (18 in) wide will improve application time
 4. To ensure a wet lay in, it is recommended that only 0.9 - 1.2 m (3 - 4 ft) is coated ahead of the membrane.
 5. The membrane should be aligned by pulling the sheets back lengthwise rather than using the "b" method. The barn door method will result in long open times likely resulting in dry laid membrane.
 6. The membrane is then rolled into the adhesive while it is still wet and immediately broomed into place with a medium bristle push broom to work out any air bubbles. Push the broom down the center of the sheet followed by brooming out from the center on both sides.
 7. Immediately after brooming, roll the membrane in both directions with a minimum 45 kg (100 lb) steel roller.
 8. Clean any adhesive residue on the seams while still wet and before welding. If the adhesive dries in the seam it will require a solvent to clean it.
 9. Weld membrane overlaps. Refer to HOT-AIR WELDING OF LAP AREAS section and MACHINE WELDING section for seam welding procedures.

Sarnacol®-2121/ Sikaplan® Single-Step (SSS) Spray Application

Notes:

- I. Use Sarnacol®-2121 / SSS adhesive for bonding membranes to acceptable substrates up to 2:12 slope.
- II. Do not allow adhesive to skin-over or surface-dry prior to membrane installation.
- III. Coverage rate averages 2.47 m²/L (133 ft²/US gal.). The coverage rate may vary depending on substrate porosity, ambient temperature, and experience.
- IV. The Contractor shall count the number of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
- V. Initial set time is 24 - 72 hours or more depending on substrate, ambient temperature, and humidity. Set up time increases 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 5° C (40 ° F).
- VI. Newly installed areas of roofing must be protected from exposure to high winds and/or pressure from the underside. This may include edge securement and temporary ballast.

Adhered Systems

Prepare the membrane to be adhered by aligning as many rolls as are to be installed in a day. Unroll the membrane completely and position it to achieve the required overlap. The membrane can be either rolled back or pulled back as shown below. Do not use the “butterfly” method of opening the sheets when spraying adhesive as this will result in long open times and likely dry laid membrane.

Start the airless sprayer with the pressure setting low and make adjustments upwards until the spray pattern is even without “tails” or “fingers”. Run the spray pump at the lowest pressure setting possible while still achieving a good spray pattern. The lower the pressure the less overspray and bounce back preserving material and minimizing cleanup.

Adhesive should not be applied more than 0.9 - 1.2 m (3 - 4 ft) in front of the membrane. While moving the gun from side to side it is recommended to trigger the gun on and off when reaching the edge. This will prevent buildup at the edges and prevent contaminating the seams when rolled with the weighted roller. It is not necessary to overlap the preceding pass assuming proper coverage is obtained.

The membrane should be rolled/pulled into place immediately. The membrane must be broomed immediately to remove air bubbles. Run the broom down the middle of the sheet and then push from the middle out to each edge. Brooming works much better in removing air pockets but rolling with the 45 kg (100 lb) roller immediately after or concurrent with brooming is also critical to ensure proper embedment into the adhesive.

Clean all overspray out of the laps while the adhesive is still wet and before welding.

Most airless sprayers have the capability of attaching one or more pressure rollers. With a pressure roller, the adhesive is pumped through the spray gun to a slotted, medium nap roller and controlled by the gun trigger. This can be a good option on windy days.

By rolling the membrane back evenly there is very little chance of dry laying the sheet as brooming and rolling can follow immediately behind the sheet while the adhesive is wet.

This is typically a five (5) man operation:

- 1-Spray operator,
- 1-Hose person/monitor keeping the hose out of the way and alerting the spray operator of roof obstacles and roof perimeter.
- 1-Person rolling membrane into place and following right behind with a weighted roller.
- 1-Person assisting with rolling and making sure any overspray is quickly removed from the seam area of the preceding sheet.
- 1-Person attending the spray rig and assuring adhesive is mixed and the spray bucket is full.

Membrane Pulled Back Method

When the sheets are pulled back rather than rolled back, it takes 2 workers to pull the sheet into the wet adhesive and it delays brooming and rolling until the top sheet is out of the way.

Adhered Systems

Pulling back membrane

This method requires a minimum of six (6) workers:

- 1-Spray operator
- 1-Hose person/monitor keeping the hose out of the way and alerting the spray operator of roof obstacles and roof perimeter.
- 2-Persons pulling the sheet into place.
- 1-Persons brooming/rolling with a weighted roller.
- 1-Person attending spray rig and assuring adhesive is mixed and the spray bucket is full.

Feltback Membrane General

Feltback membrane may be difficult to reposition over irregular surfaces. To minimize repositioning, unroll the membrane 1.8 m (6 ft) and line up with the lap line. Then completely unroll the membrane. Alternately, a layer of polyethylene can be unrolled prior to unrolling the Feltback membrane. The polyethylene will act as a slip sheet for positioning the Feltback membrane. Remove the polyethylene sheet after the Feltback membrane is in position.

- a. Over the properly installed and prepared substrate surface, apply Sarnacol®-2121 adhesive according to the application instructions above for Roller Method or Spray Method. No adhesive is applied to the back of Feltback Membrane. Wet lay in is required, do not allow the adhesive to skin over or surface to dry prior to the installation of the Feltback Membrane.
- b. Weld coverstrips at all Feltback roll ends and other seams that do not have a factory selvage edge.

Sarnacol® AD Feltback Membrane Adhesive

Application rates vary depending on surface roughness, absorption rate of the substrate, and wind speed approvals. Typical coverage rates for the box sets are 10 - 20 squares per 10 US gal. Typical coverage rates when using the cartridge is 4 - 6 squares per case (4 cartridges of 1500 mL). All coverage rates are based on 300 mm (12 in) on centre maximum spacing.

Box Sets

Install Part A and Part B components following instructions on the packaging. Always ensure that the Part A and Part B containers are always hooked to the same dispensing holders or hoses (i.e. do not reverse the dispenser holders and hoses between Part A and Part B). All valves on the dispensing unit must be completely opened so a 1:1 ratio is achieved when moving the adhesive through the disposable mix tip and onto the substrate in a semi-liquid state. Apply the Sarnacol® AD Feltback Membrane Adhesive directly to the substrate, using a ribbon pattern. Space the 25 mm (1 in) wide beads at a maximum of 300 mm (12 in) o.c. to achieve proper coverage rate. Actual ribbon spacing will depend on the wind uplift rating required. Allow the adhesive to begin to rise before placing the feltback membrane into the adhesive. The adhesive is designed to provide approximately 5 - 10 minutes of open time during a typical summer day. The membrane must be positioned and rolled into place quickly. A 45 kg (100 lb) roller must be used to roll the membrane.

Cartridge Application

Remove the plastic plugs from the cartridge mixing head. Attach a mixing tip to the threaded mixing head. Place the cartridge into the applicator. When starting a new tube, some of the material should be pumped out initially into a bucket or other suitable receptacle to make sure of a proper mix. Apply the Sarnacol® AD Feltback Membrane Adhesive directly to the substrate, using a ribbon pattern.

Space the 25 mm (1 in) wide beads at a maximum of 300 mm (12 in) o.c. to achieve proper coverage rate. Actual ribbon spacing will depend on the wind uplift rating required. Allow the adhesive to begin to rise before placing the feltback membrane into the adhesive. The adhesive is designed to provide approximately 5 - 10 minutes of open time during a typical summer day. The membrane must be positioned and rolled into place quickly. A 45 kg (100 lb) roller must be used to roll the membrane.

Sarnafil® G410 Self-Adhered Membrane Introduction

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.

1. Sarnafil® G410 SA Membrane is installed after proper preparation of the approved substrate.
2. The membrane is unrolled and positioned in place with the selvage edge lapping the adjacent roll to allow for the 75 mm (3 in) side lap.
3. Fold back half the sheet onto itself in the long direction and carefully cut the release liner with the cutting tool provided by Sika without damaging the membrane. Peel back 75 - 125 mm (3 - 5 in) of the release liner and press firmly into the substrate. Weight may be necessary on the membrane when first starting.
4. Continue removing the release liner from the membrane in a smooth, wrinkle-free manner while maintaining the 75 mm (3 in) side lap. Immediately roll the membrane with a 45 kg (100 lb) steel roller.
5. Remove the remaining release liner from the other half of the membrane using the same process as described above and immediately broom and then roll the membrane with the steel roller.
6. Sarnafil® G410 SA Membrane side lap seams are heat-welded together by trained operators using hot-air welding equipment.

End laps and all cut edges are butted together and an 200 mm (8 in) Sarnafil® G410 coverstrip is hot air welded over the butt and cut edge joints.

Sarnafil® Décor Roof System

Sarnafil® Décor Roof Systems combine the appearance of a standing seam metal roof with the watertight performance of Sika®'s time proven PVC membrane. Décor Roof Systems consist of Sarnafil® G410 Feltback roofing membrane and an extruded PVC Profile to achieve the standing seam appearance.

For an interactive guide to estimating and installing Décor, contact your regional office and ask for a "Décor Contractor Kit".

The Décor Contractor Kit provides a detailed guide to estimating Décor jobs as well as an in-depth video on how to install a job from start to finish.

General

***Special Note: Décor Roof Systems are an aesthetic roofing system. Extra time should be allowed when installing a Décor Roof System.

Applicators who have not previously installed a Décor roof are required to attend a Décor training seminar. In addition, a Sika technician must be on site for the first day of rib installation.

Working on Slopes

Steeper slopes present numerous challenges for a Décor installation. Appearance is an important feature of a Décor roof. The steeper the roof, the harder it is to achieve aesthetic objectives.

Membranes are slippery when wet or covered with snow, frost or ice. Working on sloped surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow Federal and Provincial fall protection standards when working on sloped roofs.

A properly staged roof can keep foot traffic to a minimum and reduce the likelihood of slips and falls. A contractor who decides to eliminate the staging and just go with harnesses may not only be putting his workers at more risk but ultimately be hurting his chances of installing a great looking roof. Workers who feel safe on the roof will be more likely to take their time and install the roof properly than to rush the job so that they can get done faster.

Wearing the proper footwear will make working on slopes safer and more comfortable. Certain slip resistant shoes or overshoes are available from a number of different suppliers. The overshoes can be put on as needed when working directly on the membrane providing the added benefit of having clean soles and not scuffing the membrane or transferring contaminants.

The condition of the roof deck is of utmost importance. A concrete deck which is spalled or uneven may cause the finished assembly to look uneven. Surface preparation to fill low spots or grind down high spots may be required. The same is true for steel or wood that may be loose or uneven. Thin gauge metal decking, (less than 22 gauge) can cause the finished product to look uneven and create telegraphing of the underlying substrate due to deflection. In all cases a pre-inspection of the roof deck must be conducted prior to installation to determine what remedial action, if any, should be taken.

Insulation Installation

Please refer to the “Insulation Installation” in the Insulation Attachment section for the proper installation of insulation.

It is critical that all insulation layers and cover boards be installed properly. Board joints must be butted tight and all cut edges must be straight and even to prevent gaps. Gaps or high spots will telegraph through the membrane affecting the final appearance. When using mechanical fastening for the insulation or roof board, it is important not to overdrive the fasteners. It is recommended that low profile insulation plates be used on or adhering, the top layer whenever possible.

Low profile plates have a slight protrusion on the bottom side which will make it difficult to install flush on hard surfaces.

When a roof board is installed, it may be necessary to countersink the screw hole to allow for the metal protrusion to penetrate. This can be done simply by taking the corner of the low-profile plate and turning it with hand pressure to score the top of the facer sufficiently for the plate to penetrate. Standard Sarnaplates can be used but may telegraph through the membrane more so than the low-profile plate. Use 1.2 m x 2.4 m (4 ft x 8 ft) insulation and or roof boards where possible to reduce the amount of board joints.

When using an insulation adhesive to secure the top layer it is critical that all rising adhesive be kept away from board joints and removed from the finished surface. To avoid getting too much adhesive in the board joints, a good recommendation is to place the adhesive on the underside of the board before lying in place rather than applying the adhesive directly to the substrate. On sloped or uneven surfaces it may be necessary to provide temporary securement to the boards while the insulation adhesive is curing. This can usually be done by adding a few screws (which should be removed after the adhesive has cured). Scoring the insulation or roof board facer to make the board conform better is unacceptable as this practice could lead to facer delamination and decreased wind uplift performance.

Membrane Installation

Please refer to the “Installation of Feltback Membrane” in the Adhered Systems section for general installation of membrane.

Adhesive Application

The Feltback membrane only has one selvage edge. Sheet layout will determine whether welding will be done upslope or down. See “welding membrane” section for more on this.

To achieve a consistent looking finished surface, the adhesive must be applied in a smooth even manner avoiding puddles and dry spots. Puddles of adhesive may result in blistering while dry laid areas may wrinkle or sag. All typical temperature and weather restrictions for storage and application are the same as with any Sika® Roofing adhered application.

With a Décor system these precautions are even more critical, especially with adhesive application regarding blistering and condensation. Late afternoon adhesive application could result in condensation forming and resulting in poor adhesion. When the temperature is within 5 °C of the dew point, condensation can occur and roofing should be suspended.

In extreme heat, the bonding adhesives will dry quickly. It is critical that no more adhesive is applied ahead of the membrane than can be covered before drying.

Dry laid membrane may not be visible right away but the use of a plunger after a reasonable drying period can help determine whether the membrane is properly adhered. When laying out membrane, the “butterfly” method is not accepted. This method is more likely to result in dry laid membrane and it may also leave a crease down the middle of the sheet where it was folded. By using the “back rolled method” where the membrane is pulled back lengthwise, it is easier to control adhesive drying time and eliminate creases.

When aligning seam overlaps, it is critical to use the red line for sheet alignment rather than butting the edges of felt. As the width of the selvage edge may vary from roll to roll, aligning on the red line may result in the felt overlapping and creating a slight high spot along the seam. This high spot should not be a concern as a rib will be positioned alongside making the felt overlap much less noticeable. If the seam alignment is done by butting the edges of the felt there will be inconsistent rib spacing. The distance of felt from the edge may vary but the red line position should be very consistent.

The width of the membrane selvage edge may vary slightly and is typically wider than the weld area. It is important to apply adhesive to the back side of the selvage edge area to avoid an unadhered strip running the length of the sheet. Adhesive must be kept away from the 35 mm (1.5 in) weld area.

After the membrane is laid into the adhesive it should be immediately broomed followed immediately by rolling with a 45 kg (100 lb), or heavier, roller. Brooming alone is not sufficient. On steep slopes the roller will need to be tied off and lowered down from above.

Ensuring that the feltback membrane is sufficiently rolled into the adhesive is one of the most important aspects to achieving a smooth looking finished product. A 45 kg (100 lb) minimum, roller is recommended wherever practical. The weight concentrated into the small, hard, steel rollers, which can move independently, works well to force the felt into the wet adhesive. It is important to take care when turning the roller to prevent wrinkling of the sheet.

On very steep slopes or vertical applications it can be difficult to roll properly. Rolling should not be taken lightly as it is a critical component to a proper looking Décor roof. Brooming alone is not sufficient. Large, steel hand rollers can make rolling much easier and more effective when working on hard to reach areas.

Rolling on vertical surfaces is dependent on sufficient hand pressure to force the felt into the adhesive.

Welding Membrane

To prevent blistering near the seam area, welding must be done either immediately after the sheet is adhered or waiting a minimum of 2 hours.

Welding seams on slopes can be done either upslope or down slope. Membrane layout, (left to right or right to left) must be established based on welding direction as the selvage edge is only available on one side of the sheet. When membrane is unrolled from high to low the

salvage edge will be aligned for downhill welding. The sheets will have to be turned for uphill welding. It is preferable to weld uphill as downhill welding could strain the Sarnamatic drive gear and cause premature wear. In either case a rope should be tied to the Sarnamatic for safety reasons. If welding downhill, the rope should be held by another person above the machine keeping tension on the rope to reduce tension on the drive gear.

When welding upslope it may be necessary to increase the speed beyond what would normally be used on a flat surface to prevent burning. When welding downhill it may be necessary to decrease the speed to ensure a proper weld. The best approach is to first run the welder cold to see if it is capable of traveling uphill or downhill on the slope without slipping.

Cleaning the Sarnamatic wheels with a solvent-based cleaner will improve traction and also help to keep the membrane clean. Do not use solvent-based cleaners on the exposed membrane. The use of solvent-based cleaner may cause a slight discoloration to the membrane if you go beyond the overlap or use directly on the surface of the membrane.



Preassembling Décor Profiles

Décor Profile

A 32 x 19 mm (1-¼ x ¾ in) high x 3,04 m (10 ft) long PVC extrusion, used to simulate the appearance of a standing seam metal rib roof system.

Either the Sarnamatic hot-air welder with the appropriate “kit” or a hand welder can be used to attach the Décor Profile (ribs) to the membrane. The following instructions apply to both methods.

The Décor ribs shall be installed parallel with the roof slope where possible. The top surface of Membrane must be clean to obtain a proper weld of the Décor ribs and to enable positive traction for the Sarnamatic welding equipment. Clean and dry the welding area of roof membrane. If the membrane is only slightly dirty it can be cleaned with water and a damp rag. Otherwise, a sponge or mop and a solvent-free cleaner such as Simple Green or Orange ZEP can be used. Use only solvent-free cleaners on Décor membranes. It is advantageous to install the Décor ribs as soon after membrane installation as possible to avoid the need for heavy cleaning.

Preparation for Installation

Pre-assemble the Décor ribs to create the required length using the plastic connectors provided. Insert a connector into the end of one Décor rib and insert the exposed portion of the connector into a second Décor rib.

Décor ribs should be installed on the top of the overlap directly next to the seam whenever possible. Do not cover the seam. This practice helps to hide the membrane overlaps.

Décor Rib Spacing

Additional intermediate rows of Décor ribs may be installed between those on the overlaps according to project specifications. Décor ribs installed on the overlaps will be spaced approximately 1,9 m (75 in) apart. The following can be used as a guide for intermediate Décor placement to achieve the look of a metal roof:

Always measure the distance between seams to verify correct Décor rib spacing. Seam width can vary and the distance between the ribs may therefore need to be adjusted on the roof. A closer rib spacing is more effective at washing substrate irregularities. This is a decision based on the designer's preference but the spacing must be done in such a manner as to allow for even spacing and ribs being positioned alongside every seam.

Once the proper spacing is determined, chalk a line to mark the correct placement of the rib. The chalk line should be adjusted from the correct "on center" spacing to account for the Décor profile flange width of 32 mm (1-¼ in)

The chalk line should always be made along the edge of the rib, not at the "on center" measurement. The chalk line placement will depend on the direction the Sarnamatic machine will be welding (up slope vs. down slope) as well as the direction of the membrane overlap. Some chalks will permanently stain the membrane. Be sure to confirm that chalk can be easily removed before proceeding.

It is recommended that ribs be left short of the eaves and the peak. This is due to the difficulty in running the welder over the edge and secondly, if there is a coverstrip and edge metal at the eave, the additional thickness may cause the rib to look uneven.

The Sarnamatic can run either up or down the slope, although up the slope is recommended. Running the machine down the slope could result in premature wear on the drive gears if proper tension is not kept on the machine while welding.

Position the flange of the first rib along the chalk line. Run the rib on the right side of the of the chalk line if you are looking up the slope in order to see the chalked line while welding (left side looking up slope if you are running the machine down slope). The rib must be positioned as close to the line as possible. The rib may stick to the membrane, especially in warm weather.

Therefore, do not rely on the Sarnamatic to automatically position and align the rib. Do not tack weld the rib into position as this will interfere with the Sarnamatic welding process.

A safety rope should be used to tie off above the Sarnamatic. One worker should hold the rope to help guide. The proper speed and temperature of the Sarnamatic are the same as for membrane hot air welding. Position the Sarnamatic with the guide centered on the Décor rib. Using the front guide, position the Décor rib on the chalk line or seam line.

As the machine starts to move keep the guide on the chalk line or seam line. It is critical that the guide remains on the chalk or the seam line. Slight variations in the machine's direction will result in ribs that are not straight. Regularly check the guide to ensure it is tightly secured and cannot move laterally. Aesthetics are critical to a satisfactory Décor installation.

Allow adequate time to ensure a continuous straight line. Due to the slope of the roof, misalignment of Décor is visible from the ground.

Carefully guide the Sarnamatic during the welding process.

Stop the machine approximately 150 mm (6 in) from the point at which the rib ends. The ribs can stretch during the welding process depending on temperature. The ribs will need to be trimmed evenly.

When welding downhill the ribs may stretch. Welding uphill may cause the rib to shrink as the weight of the welder may cause the rib to contract. This contraction or growth should not affect the appearance or performance of the membrane but may require adjustments of adding rib length or cutting back on rib length

Stop the ribs 200 - 300 mm (8 - 12 in) before the roof edge. Once trimmed to the proper length, hand weld the last few inches of the ribs. The first few inches of the rib will also need to be hand welded.

Using a Hand Welder

There may be situations where the rib will need to be hot-air welded by hand. This will normally occur on very steep sloped roofs (9:12+), when welding short sections of the rib, or when a Sarnamatic is not available.

Membrane preparation is the same as that described for Sarnamatic welding.

Grasp the raised portion of the rib with one hand and lift it off of the membrane enough to get the welder nozzle tip under it. Heat the membrane and the underside of the rib and then press the rib to the membrane using a rubber roller.

Follow the chalk line or seam line for a straight weld. Continue in a steady, consistent manner.

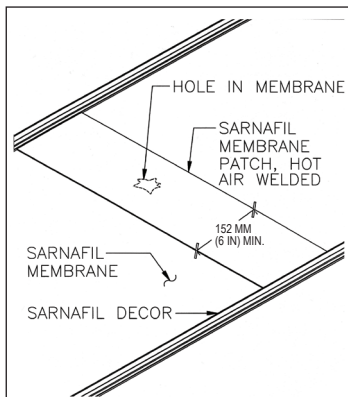
Trim the Décor to the proper length as previously described, in the last section.

A method for keeping ribs straight when hand welding is to use a simple straight edge made of sheet metal

Rib Finish

Cutting the ribs can be done with a fine toothed saw or with a Rigid pipe cutting tool.

NOTE: End Caps or a welded piece of membrane is not required to be installed on the end of the profile.



Patching a Décor Roof

Patches

When repairs are required due to punctures, cold welds, misaligned ribs etc. the repair must be made of membrane that is cut straight and extends from one rib to another. This repair method will maintain the continuity of the system by keeping lines straight whether vertical or horizontal. In other words, small round patches will be very noticeable and not look like something typically seen on a metal roof. For repairs to a puncture where the feltback membrane is left in place the repair can be done with bareback membrane directly over the felt back.

If the repair involves cutting out a rib or removing the feltback membrane, the void created by the removal of feltback must be filled completely with new feltback to avoid a crater. The filled space is then overlaid with bareback membrane.

Patches on a Décor roof must be wide enough to cover the surface between adjacent profiles and be no less than 150 mm (6 in) in height.

Edge Metal

The Sarnaclad edge metal design is a common choice for Décor due to the available matching colors of the metal and membrane.

Edge metal must be fastened sufficiently to prevent bowing and buckling. Slight irregularities in the edge metal will transfer through the membrane cover strip and take away from the roof's overall appearance. There are two detail options with Sarnaclad metal, one with a metal fascia cover plate on top, the other eliminating the fascia cover plate on top by using a continuous cleat below, bent at 90 degrees.

Overnight Tie In

Unprotected feltback membrane will wick and hold substantial amounts of water. It is important that the night tie in protect the edges of the feltback to prevent wicking and adhesion/welding problems.

Night tie-ins must be done in such a manner that no cutting of the sheet the next day is required. If the membrane is cut due to contaminants from tie in material, rib alignment will be off due to a shorter distance to the next seam.

One method of tie in is done by using Aluminum tape and polyethylene. Tape the poly on the membrane side and use one of the urethane foam type products to embed the poly on the deck side. The aluminum tape will stick well to the membrane and leave little residue behind. Aluminum tape is only 50 mm (2 in) wide and may require multiple strips to achieve more width for sufficient adhesion. Duct tape or other tapes may leave a stain on the membrane creating long term discoloration or contaminating the weld.

General

Prior to hand welding, calibration tests of the Leister hand welder are required.

1. All side and end lap joints shall be hot-air welded. Lap area shall be a minimum of 75 mm (3 in) wide when machine welding, and a minimum of 100 mm (4 in) wide when hand welding.
2. All Fitters must have successfully completed a course and be in possession of a valid certification of instruction provided by a Sika Canada prior to welding.
Non-certified individuals are not permitted to weld on Sika® Sarnafil® roofing membranes.
3. All surfaces to be welded shall be clean and dry. No adhesive, dirt, or any other material shall be present within the lap areas.

Hand Welding

Prior to welding, check the seal between the nozzle and the hand welder and that hot air is not escaping from the seal.

Check that the power source and cable are acceptable.

The Leister hand welder shall be allowed to warm up for at least five minutes prior to the start of welding.

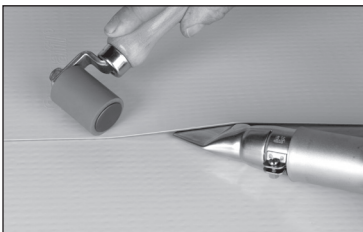
Perform the appropriate calibration tests.

The accepted welding temperatures for hand welding Sika® Sarnafil® membranes is between 375 °C and 475 °C. using approved welding techniques

Hand welded seams shall be completed in two stages.

The pre-weld must be a continuous weld to prevent the loss of hot air during the final welding allowing enough room for the final weld with the selected nozzle.

During the final weld, the nozzle shall be inserted into the seam at a 45° angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to “flow”, the edge of the hand roller is positioned parallel to the tip of the nozzle and pressed lightly as shown below.



Finish Weld

Ensure the hand roller passes behind the pre weld and over the edge of the seam during the welding process to prevent knuckling of the bleed out.

For straight seams, the 40 mm (1-½ in) wide nozzle shall be used where possible. For corners and compound connections, the 20 mm (¾ in) wide nozzle shall be used.

APPENDIX A

Hand Welding Procedures

Following each weld, the nozzle will be cleaned with a wire brush.

A continuous bleed out should be visible along the entire edge of the completed seam joint.

Allow the hand welder to cool for five (5) minutes to prevent damage to the welder element.



Cotter pin puller with a dull rounded tip

All completed welded seams shall be checked after cooling for continuity using a #3 rounded screwdriver or Cotter pin puller which has had the tip hand filed to a rounded dull tip.

Always check that there are no sharp edges on the probe and file down with a hand file as necessary.

Tack welding is not permitted when welding Sika® Sarnafil® membranes.

APPENDIX B

Automatic Welding Procedures

Only the Sarnamatic series and Liester Verimat welders are approved for use in Canada.

1. Machine welded seams are achieved by the use of either the Sarnamatic welder or the Liester Verimat welder. When using this equipment, welding instructions supplied by Sika Canada shall be followed and local codes for electric supply, grounding, etc. observed.
2. Dedicated circuit house power or a dedicated portable generator is required.
- 3. No other equipment shall be operated off the generator.**
- 4. Never tack weld membranes prior to machine welding.**
5. With any non-adhered membrane, weighted, 50 x 200 mm (2 x 8 in) lumber or metal tracks may be laid on the top sheet approximately 100 mm (4 in) past the edge of the seam to prevent wrinkles in the sheets while welding to hold in place on windy days.
- 6. Tack welding of sheets is not an accepted method for holding sheets in place prior to machine welding.**

APPENDIX C

Welding To Aged Membrane

Using a dull pencil, mark out the size of the required patch to be welded adding 1/8 in larger than the patch to allow for a complete weld.

When repairing a seam, the above steps are not required.

Using a Terry style cloth slightly damp with MEK, clean only the surface area within the marked out area.

Cleaning must be done in one direction only to avoid smearing the contamination.

Typically, 20 minutes should be allowed for the MEK to flash off. If the MEK has not flashed off sufficiently the membrane can discolour with a dull yellow when mild heat from the heat gun is applied.

Once the MEK has flashed off the new patch can be applied as per recommended welding techniques.

For heavy soiling, a sponge scrub pad with a small amount of MEK may be needed to loosen the imbedded soiling prior to wiping with a cloth as per above.

Caution should be used when using solvent based cleaners to avoid removing the lacquer coating in areas not being patched.

NOTE: Weathered membrane cleaner, gas and other non approved chemicals are not acceptable for cleaning Sika® Sarnafil® membranes.

Contact Sika Canada for further assistance

T JOINT PATCHES

T joint patches are required when welding membranes greater than 1.5 mm (60 mil) thick or when using the Speed nozzle with a Speedweld setting on a Sarnamatic welder.

A 100 mm (4 in) patch of 1.2 mm (48 mil) G410 membrane must be welded over each T-joint. Either a round patch or a square patch with rounded corners is acceptable as long as the patch is centered above the T-joint intersection.

Precut 100 mm (4 in) round patches are available. These are not to be used as normal patching or flashing material.

APPENDIX D

Welding Quality Control

Visible evidence that welding is proceeding acceptably is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of grey material from the edge of completed welds.

On-site evaluation of welded seams shall be made daily by the contractor.

51 mm (2 in) wide cross-sectional samples shall be taken a minimum of three (3) times a day and whenever welding equipment is turned off and started again.

The contractor is to mark the sample with the date, time, temperature and speed of the weld and shall be kept for evaluation by a Sika Technician.

Correct welds display failure from shearing of the membrane prior to separation of the weld.

Each test cut shall be patched by the contractor at no extra charge to the owner.

All completed welded seams shall be checked daily after cooling for continuity using a rounded flat head screw-driver or other suitably approved rounded probe by the roofing contractor



APPENDIX E

Flashing Procedures

This section provides the basic procedures for the flashing of common roof penetrations. The following is a list of guidelines to follow when installing flashings.

1. All flashings shall extend a minimum of 200 mm (8 in) above roof level unless otherwise accepted in writing by the owner's representative and Sika Canada's Technical Department.
2. All flashing membranes shall be mechanically-fastened along the top edge.
3. All details are to be installed concurrently with the remainder of the roofing.
No temporary flashings are acceptable unless approved in writing by the owner's representative and Sika Canada.
4. All flashings are adhered.
5. All flashings that exceed 0.75 m (30 in) in height shall receive additional securement.

NOTES:

Acceptance of all detail work by Sika Canada is subject to the following requirements:

- a) All detail work is to be completed by Sika® Sarnafil® certified Fitters or Sikaplan® applicators.
- b) All detail work must be installed in accordance with Sika Canada recommended details.
- c) If no standard detail applies to a particular field condition, the contractor shall submit a drawing of the proposed detail to Sika Canada for consultation and acceptance.

FLASHING WITH MEMBRANE GENERAL

Flashings shall be completed using approved Sarnafil® G410 membrane

Tie-ins between Sika® Roofing membranes and existing asphaltic B.U.R. can be performed with Sarnafil® G459 membrane. Contact Sika Canada when tying into coal tar pitch roofs.

FACTORY-PREFABRICATED FLASHINGS

Factory-prefabricated flashings are also available for vents and inside and outside corners.

CUSTOM-PREFABRICATED FLASHINGS

Custom-prefabricated flashings are also available for odd shaped penetrations.

All overlaps of flashing membrane are to be hot-air welded. For this reason, care must be taken during the application of adhesives to avoid contaminating flashing surfaces that are to be hot-air welded.

TERMINATIONS

Terminate flashings in accordance with Sika Canada recommended details (see typical details). Flashings are always hot-air welded to the field sheet to ensure permanent, watertight seams.

APPENDIX E

Flashing Procedures

MECHANICALLY-ATTACHED SYSTEMS

The base of all walls, curbs and penetrations must be secured at the same fastener spacing as the field sheets, to a maximum of 300 mm (12 in) on centre (minimum 4 per penetration).

On Engineered Systems, use Sarnabar® and cord.

ADHERED SYSTEMS

The base of all walls, curbs, penetrations and any angle change greater than 2:12, must be secured using Sarnastop or Sarnadiscs fastened 300 mm (12 in) on center. When insulation is adhered to the substrate, additional bars may be required in the perimeter zone.

Contact Sika Canada.

DETAIL WORK

1. All detail work must be installed in accordance with Sika Canada recommended details.
2. If no standard detail applies to a particular field condition, the contractor shall submit a drawing of the proposed detail to Sika Canada for consultation and acceptance.

FOR FURTHER INFORMATION

Should you require additional technical assistance, please remember that technical advice and guidance are available to you through your local Sika Technical Services Representative.

Their purpose is to answer your questions and provide any other technical information, including application techniques - that you may need to install Sika® Sarnafil® Roofing systems.

APPENDIX F

Cleaners

Solvent-based cleaners will remove the lacquer finish from the PVC membrane. When the lacquer finish is removed, a dull finish is left behind and the membrane is more susceptible to dirt pick up making these cleaned areas very obvious. Solvent-based cleaners should only be used on heavily soiled membrane in seam areas or in locations that are not noticeable.

For general cleaning of lightly soiled membrane or scuff marks in the visible field of the roof, solvent-free cleaners such as Simple Green or Orange ZEP work well without removing the lacquer coating. After cleaning with these products, a dry film may be left behind which should be removed with water.

Sarnafil® Roof Surface General Cleaning Techniques

The ideas outlined below are the most common methods used by building owners.

Extra care should be taken to make sure that the cleaning process does not cause physical damage to the membrane.

Individuals conducting the general cleaning should be made aware that excessive foot traffic, the use of sharp tools, and excessive pressure can and will cause damage to the roofing membrane.

In all instances, be sure to use a non-abrasive cleaner.

Workers should also comply with all Provincial and local safety protocols when working at heights.

Most environmentally approved dish soaps work well, try various brands in different areas and choose the cleaner with the best results.

1. A Sponge, mop, or brush cleaning is the least aggressive method of cleaning. This works well on new material and is typically used in smaller areas. Apply water and a non-abrasive cleaner to the area and sponge, mop, or brush off. Wire brushes should never be used as they scratch the material and cause punctures in the membrane.
2. Larger buildings have used pressure washing to perform roof maintenance cleaning. There are a large variety of machines available and they are all calibrated differently. Some machines don't allow you to dial in a PSI, just remember a lower PSI is preferable. Using too high a pressure will cut right into or through the membrane causing leaks and possibly damage other components of the roof system, and possibly the structure. A wide dispersal nozzle should also be used. The narrow dispersal nozzles will create too fine a spray and can damage the membrane. The wand itself should be kept at a constant 400 to 600 mm (16 to 24 in) above the membrane. Lowering the wand to concentrate the spray can damage the membrane. The spray must be directed from the field sheet over the overlap.

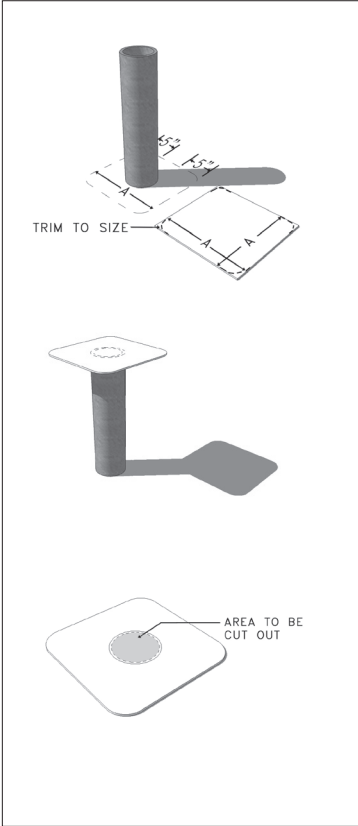
Washing against the overlap could damage the edge of the material or cause problems with the weld.

As with any cleaning process using a small test area and some common sense should provide you with the desired results.

For further assistance, please contact Sika Canada.

APPENDIX G

Vent Stack



1. Cut field sheet tight to the vent stack. From membrane, cut a base plate large enough to provide a 125 mm (5 in) flange.

NOTE: In all systems, install a minimum of four Sarnadisc around the base of the vent stack.

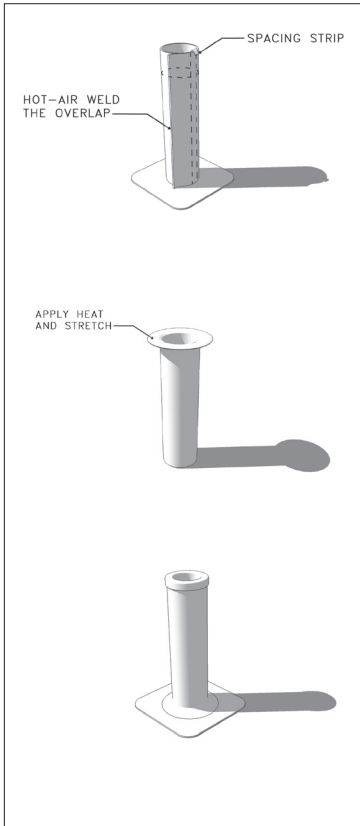
2. Cut a hole in the center of the baseplate membrane that is 13 mm (1/2 in) smaller than outside diameter of the stack. Stretch the base plate down over the stack until it is flat on the field sheet, except where it will neck up the base of the stack.

3. Install a spacing strip slightly longer than the height of the vent stack loosely to the vent stack. Wrap the vent stack with flashing membrane, allowing for an approximately 25 mm (1 in) overlap, and hot-air weld the overlap.

NOTE: Use aluminum tape as a barrier if the vent stack is contaminated.

APPENDIX G

Vent Stack



4. Slide out the spacing strip and remove the now tubular flashing. Flange the bottom of the flashing by applying moderate heat and stretching the membrane, creating a scalloped effect.

5. Slide the flashing, scalloped-end down, back onto the vent. Hot-air weld the scalloped flange to the base plate. Hot-air weld the base plate to the field sheet. Trim the top of the flashing even with the top of the stack. Finish with clamping ring 200 mm (8 in) above the field sheet.

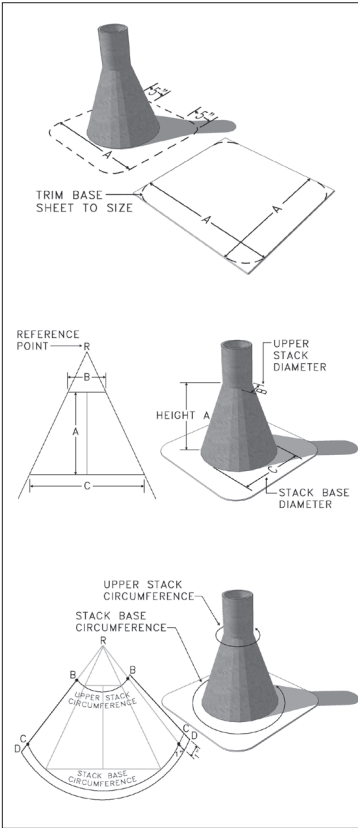
6. Install a separate piece of membrane flashing so that it extends into the stack (dark side of membrane should be facing out) a minimum of 50 mm (2 in), tight to the inside diameter of the stack and extending a minimum of 25 mm (1 in) above the stack. Bend the protruding part of the internal flashing so that it is tight to the external stack flashing.

Hot-air weld the overlap.

7. After welds are thoroughly cooled, check all welds with a rounded screwdriver blade. Reweld any inconsistencies.

APPENDIX G

Conal Stack



1. Cut Sarnafil® field sheet tight to the penetration.

NOTE: In a Mechanically-Attached, Adhered, or Ballasted system, install Sarnadisc around the base of the vent stack.

2. Measure the height "A", upper stack diameter "B", and stack base diameter "C".

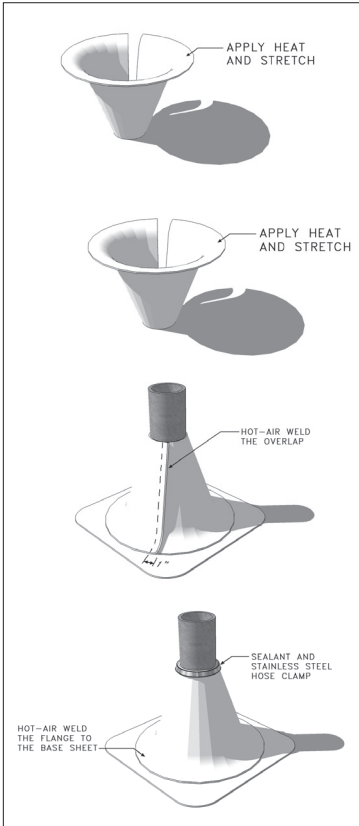
3. Lay out and draw these three dimensions on Sarnafil® "C" membrane as shown. Draw center line "A", whose length is equal to the height of the flashing. At one end of line "A" draw line "B" (equal to small vent diameter) centered over line "A"; at the other end of line "A" draw line "C" (equal to large vent diameter) centered over line "A" as indicated.

4. Connect the lines of "B" and "C" and continue these lines until they intersect. This intersection is reference point "R".

5. With reference point "R" as the center, draw arc B-B through the end points of line "B" as shown. Then draw arc C-C through the end points of line "C" as shown.

APPENDIX G

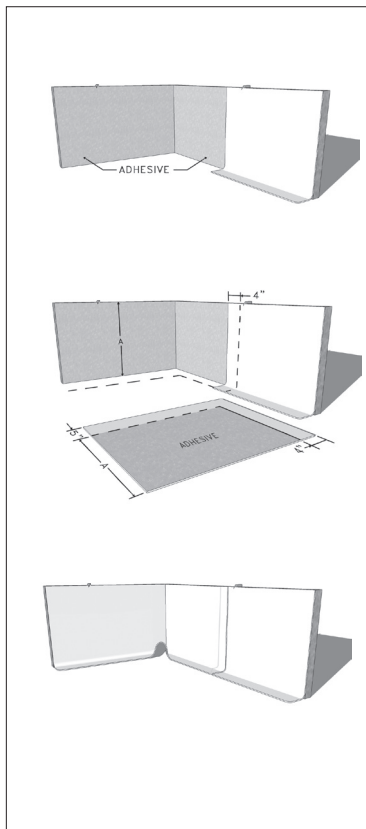
Conal Stack



6. Add 25 mm (1 in) to the radius from center "R" to arc C-C, and draw arc D-D.
7. Measure the circumference of the upper stack. Center this circumference dimension over the center line, and trace it along arc B-B. Draw a dot at each end of the circumference trace.
8. Measure the circumference of the base of the stack. Center this circumference dimension over the center line and trace it along arc C-C. Draw a dot at each end of the circumference trace.
9. Draw lines from "R" connection the circumference dots on arcs B-B and C-C and extend until they intersect arc D-D. Add 25 mm (1 in) on one side to allow for 25 mm (1 in) on one side allow for overlap.

APPENDIX G

Inside Corner Detail



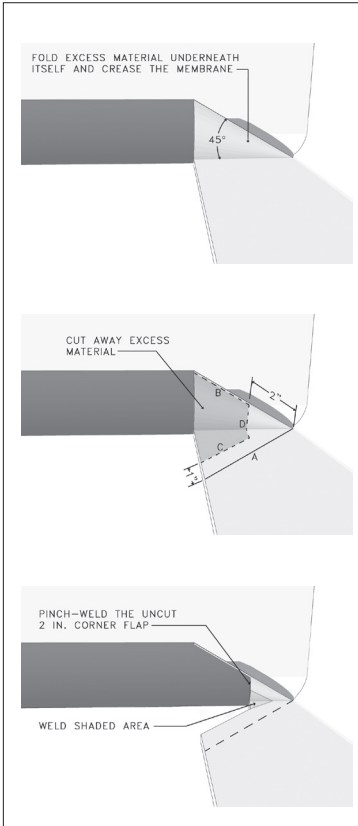
1. Install Sarnafil® field sheet tight to curb or wall.

NOTES:

- a. In the Mechanically-Attached Sarnafast® System install Sarnadisc at base of curb or wall.
 - b. In the Mechanically-Attached Express System use either Sarnadisc or Sarnarail at base of curb or wall.
 - c. In a Mechanically-Attached (Engineered), or Ballasted System, install Sarnabar and cord at base of curb or wall.
 - d. In an Adhered System, install Sarnastop at base of curb or wall and fasten 300 mm (12 in) o.c.
2. Coat the curb or wall with Sarnacol®-2170 adhesive. Allow adhesive to dry.
 3. Cut flashing from Sarnafil® G410 membrane in workable lengths. For the height of the flashing membrane, allow 125 mm (5 in) more than the height of the curb or wall to overlap onto the Sarnafil field sheet.
 4. Coat the underside of the precut Sarnafil® flashing with Sarnacol®-2170 adhesive. Do not allow adhesive in areas that will be hot air welded. Install flashings when adhesive strings on finger touch. Set Sarnafil® flashing in place. Overlap previous flashing sheet by 100 mm (4 in). Keep top edge of flashing level with termination line. **Do not allow flashing membrane to bridge at base of curb or wall.**

APPENDIX G

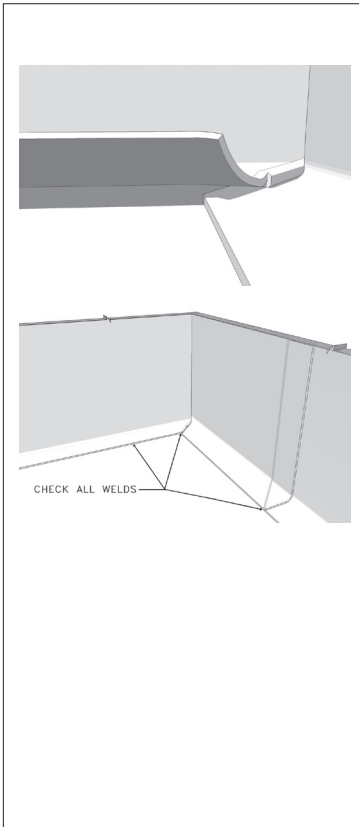
Inside Corner Detail



5. Form in inverted “V” or “pig’s ear” into the base of the corner. Press flashing into base of corner. Fold excess material underneath itself to form an angle of 45° from the corner. Crease the membrane in this position. Rub in flashings with a silicone hand roller to ensure full adhesion.
6. Trace a line along the crease onto the lower flashing sheet (shown as line A). Continue line into the corner.
7. Draw a line over the 45° crease (shown as line B). Stop line B, 50 mm (2 in) from corner.
8. Lift the inverted “V” to expose excess material. Draw a line parallel to and 25 mm (1 in) from line A (shown as line C). Stop line C, 50 mm (2 in) from the corner.
9. Connect the ends of line B and line C with short black line D. Cut away excess material outlined by lines B, C, and D.
10. Insert hot-air welder nozzle into fold and pinch-weld uncut 50 mm (2 in) corner flap, fusing membrane underside together, grey surface to grey surface.

APPENDIX G

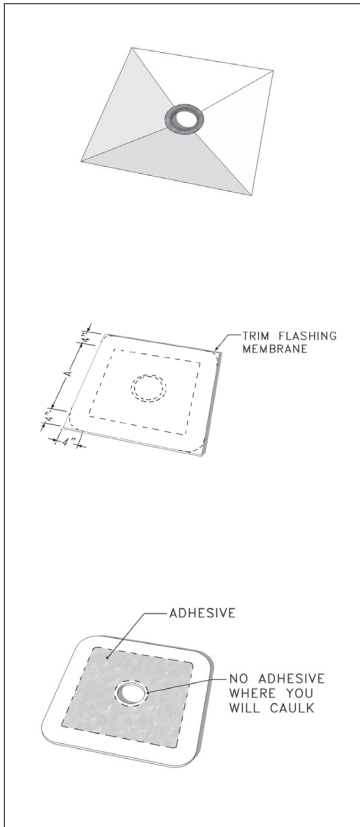
Inside Corner Detail



11. Weld lower lap to field sheet.
12. Start corner weld; heat up the inner most part of the fold and press with a roll of the finger to fuse top surface to top surface.
13. Finish hot-air weld with hand roller from the corner outward. Complete the welding of overlaps.
14. After welds are thoroughly cooled, check all welds with a rounded screwdriver blade. Reweld any inconsistencies.

APPENDIX G

Clamping Ring Installation



1. Install accepted tapered insulation to drain elevation. For Adhered Systems apply Sarnacol®-2170 / VC adhesive to the tapered insulation and allow it to dry. Trim the field sheet where tapered insulation starts.

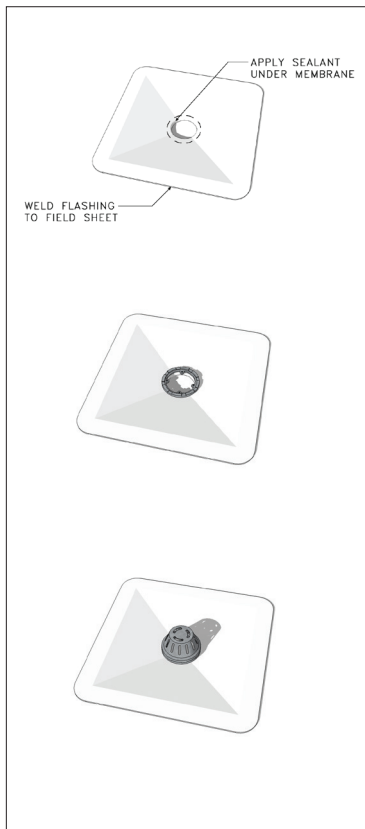
NOTE: Install Sarnadiscs, Sarnarail or Sarnastop at insulation transition.

2. Cut flashing membrane, allowing for a 100 mm (4 in) overlap onto field sheet. Trim excess membrane at the drain bowl, leaving a minimum of 25 mm (1 in) of membrane extending into the drain bowl past the clamping ring.

3. For Adhered Systems, coat the underside of the flashing with Sarnacol®-2170 / VC adhesive. Do not allow adhesive in areas that will be hot-air welded.

APPENDIX G

Clamping Ring Installation



4. Install one full tube of Sikaflex® sealant under flashing membrane at clamping ring and drain flange.
5. Install clamping ring and tighten fasteners.
6. Trim excess membrane in drain and install strainer onto clamping ring.
7. After welds are thoroughly cooled, check all welds with a rounded screwdriver blade. Re-weld any inconsistencies.

NOTE: Membrane must lay flat within sump, if this can not be achieved use Steep Sump detail shown on next page.

APPENDIX H

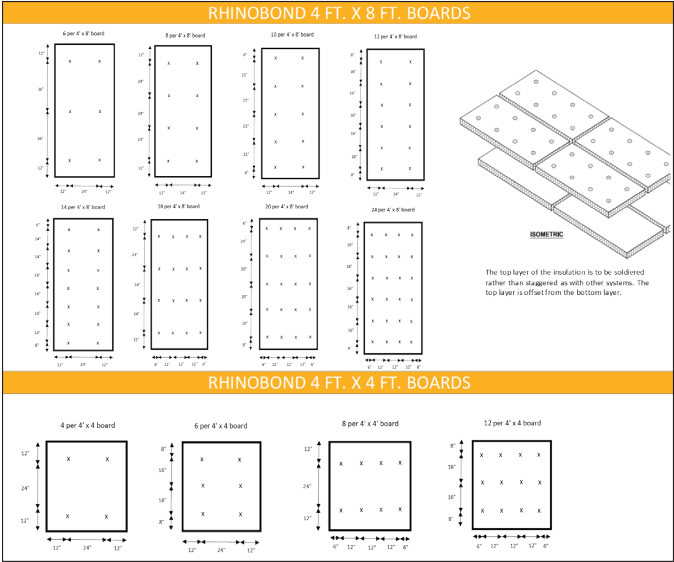
Fastener Installation

- Always check you have the right fastening pattern prior to laying out
- Never overdrive a screw when installing a plate and fastener
- Plates must be snug without deforming the plate and not move when checked
- Plates must be installed as straight as possible
- When using low profile plates, remember to bevel the Densdeck prior to plate installation
- Always use a caulk line when installing Rhinobond grids
- Do not place Rhinobond plates in a seam, adjust the sheet accordingly to prevent welding issues.
- Use a depth gauge for the screw gun whenever possible
- Ensure the fastener penetrates the top flute of the deck by 25 mm (1 in)

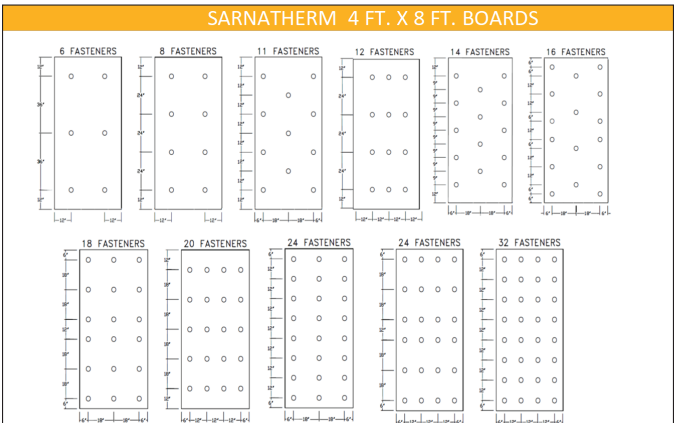
APPENDIX I

Typical Fastening Patterns

Rhinobond Typical Fastening Pattern



Mechanically Attached Sarnatherm 4' X 8' Boards



APPENDIX I

Typical Fastening Patterns

Mechanically Attached DensDeck (Prime) 4' X 8' Boards

MECHANICAL ATTACHMENT DENS DECK 4' X 8'

For up to date and accurate information, please consult the current Product Data Sheet for all Sika products at www.sika.ca

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 Head Office: 625, Desmar Avenues, Pointe-Claire, Québec H9B 4A9
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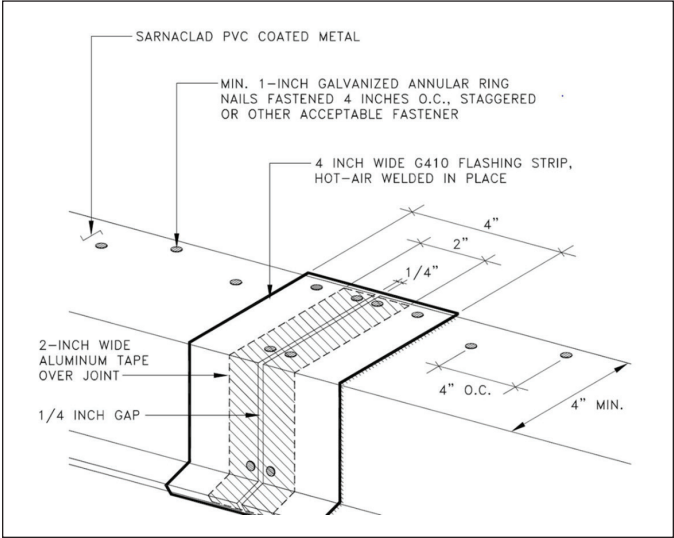
Other locations:
 Toronto, Cambridge, Edmonton, Vancouver

1-800-933-SIKA
www.sika.ca

Certified ISO 9001 (CERT-01027810)
 Certified ISO 14001 (CERT-01027791)

APPENDIX J

Sarnaclad Metal



When installing Sarnaclad metal, ensure that metal foil tape is installed prior to welding the G410 patch over the joint.

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 Canada. Approval 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 contractor's expense.

1. Sarnaclad metal flashings shall be formed and installed per the contract documents.
2. The nailing flange of the Sarnaclad metal shall be a minimum of 100 mm (4 in) in width.
3. All metal flashings shall be fastened into solid wood nailers with two rows of post galvanized flat head annular ring nails, 100 mm (4 in) on center staggered. Fasteners shall penetrate the nailer a minimum of 25 mm (1 in). Note: hold back nails 25 mm (1 in) from outside edge of Sarnaclad metal so that membrane and/ or flashing can be welded to the Sarnaclad completely covering all nails by 25 mm (1 in) minimum.
4. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.

APPENDIX J

Sarnaclad Metal

5. Adjacent sheets of Sarnaclad metal shall be spaced 7 mm ($\frac{1}{4}$ in) apart. Sarnaclad shall be secured at joint. The joint shall be covered with 50 mm (2 in) wide aluminum foil tape. A 100 mm (4 in) wide strip of flashing membrane shall be hot-air welded over the joint (see detail above).
6. 24-gauge (minimum) hook strips are required behind the Sarnaclad metal. The hook strip is to be fastened 300 mm (12 in) on center into the wood nailer or the masonry wall. Alternatively, the Sarnaclad can be face fastened with grommets face screw fasteners.
7. Install Sarnaclad and metal hook strip in accordance with Factory Mutual Loss Prevention Data Sheet 1-49.
8. Exercise caution at perimeter of roof. Workers shall follow all local Provincial and Federal safety procedures.

APPENDIX K

Overnight Tie In

1. When a break in the day's work occurs a temporary waterstop shall be constructed to provide a 100 % watertight seal. When work on the new system is suspended, the stagger of the insulation joints shall be maintained by installing partial fillers. 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.

***When work resumes, the contaminated PVC membrane, insulation fillers, etc. shall be removed from the work area and disposed of off site. None of these materials shall be used in the new work.**

2. If inclement weather occurs while a temporary waterstop is in place, the contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.
3. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the contractor's expense.

NOTES:

- i. Where possible, work shall be laid out so that the tie-in is at a high spot on the roof. Tie-in should not buck water.
- ii. To seal the feltbacked edge of the membrane, weld an 200 mm (8 in) strip of bareback membrane to the membrane edge and seal the remainder of the flashing strip as described above. Unprotected feltback membrane will wick and hold substantial amounts of water. It is important that the night tie in protect the edges of the feltback to prevent wicking and adhesion / welding problems.
- iii. In a tear-off situation, it may be necessary to seal the new roof system to the deck and to the existing roofing.

*Depending on substrates, the following sealants are options for temporary overnight Tie-ins, Type III hot asphalt conforming to ASTM D312 (latest revision), Sarnafiller, multiple layers of roofing cement and felt, spray applied water resistant urethane foam, mechanical attachment with rigid bars and compressed sealant.

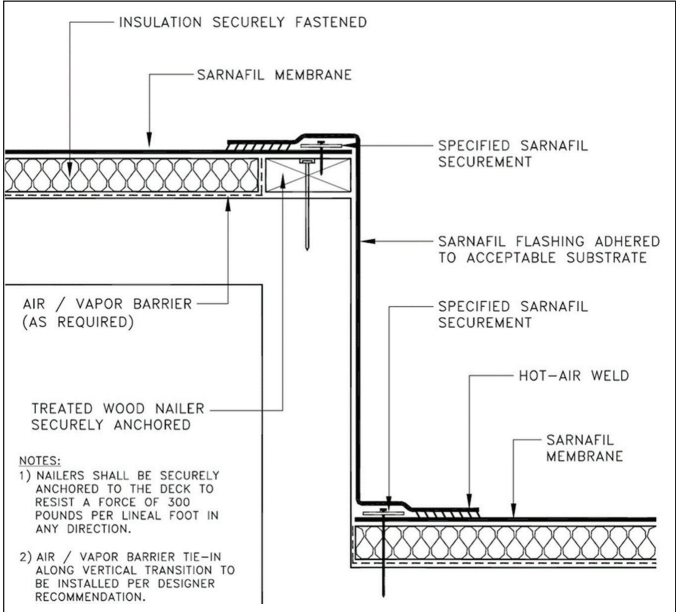
APPENDIX L

Typical detail drawings

For further detail and system specific drawings please visit the Sika Canada website.

The following drawings are not to scale.

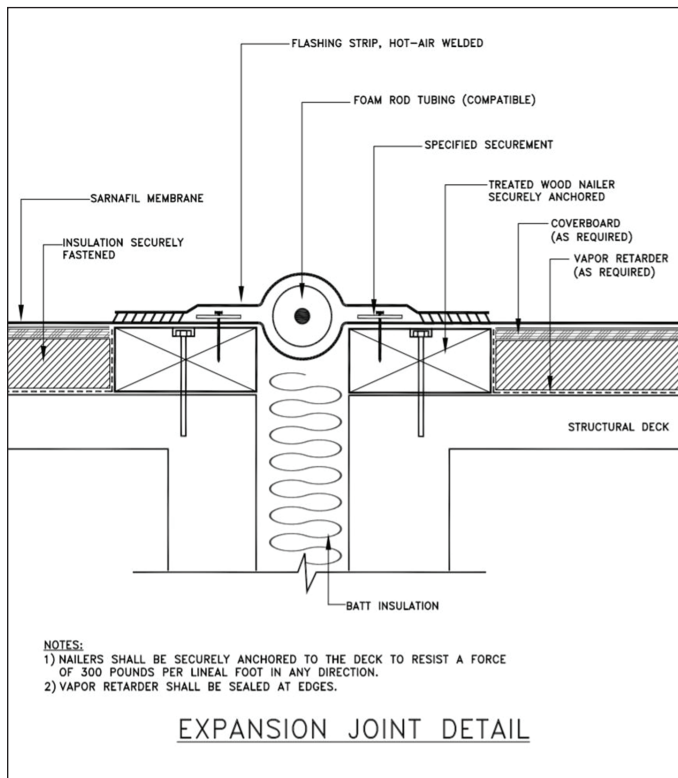
Fixation at transitions



Fixation is required at all angular transitions.

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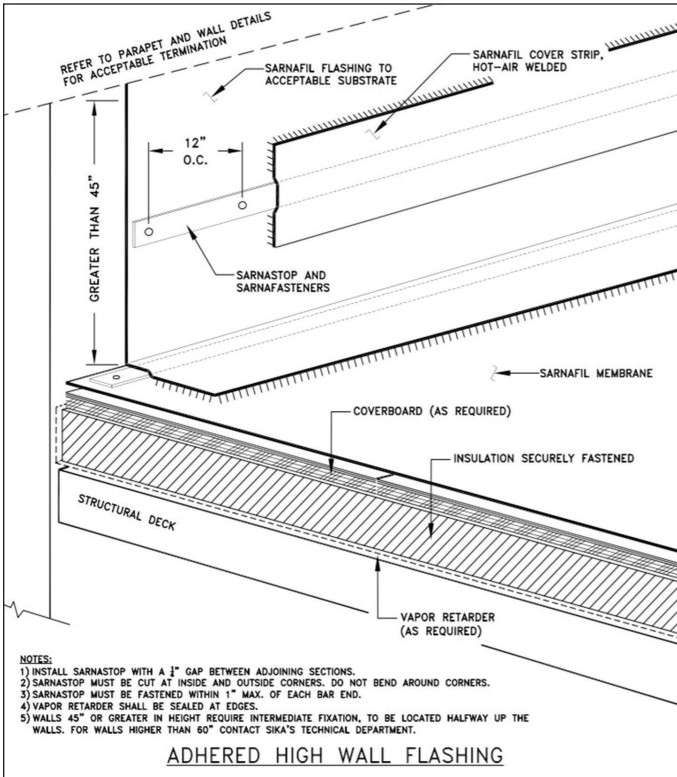
Typical detail drawings



Typical expansion joint detail

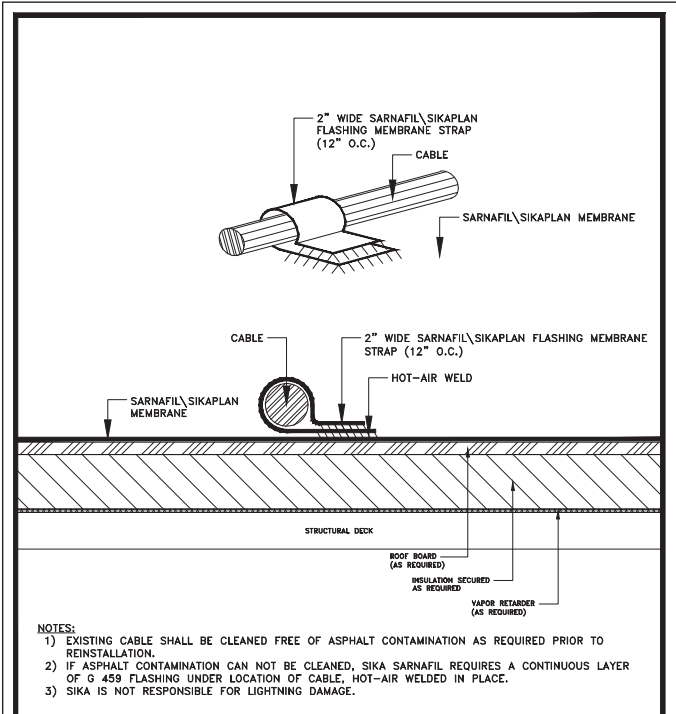
APPENDIX L

Typical detail drawings



APPENDIX L

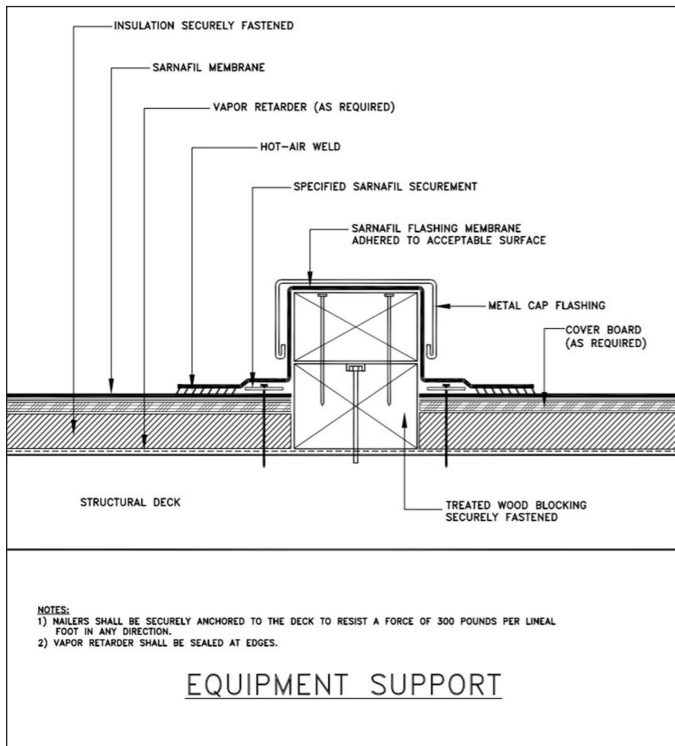
Typical detail drawings



NOTE: As an alternative, lengths of G410 coverstrip can be welded to encapsulate the cable. Leave the ends of the coverstrip unwelded. Contact Sika Canada for further details.

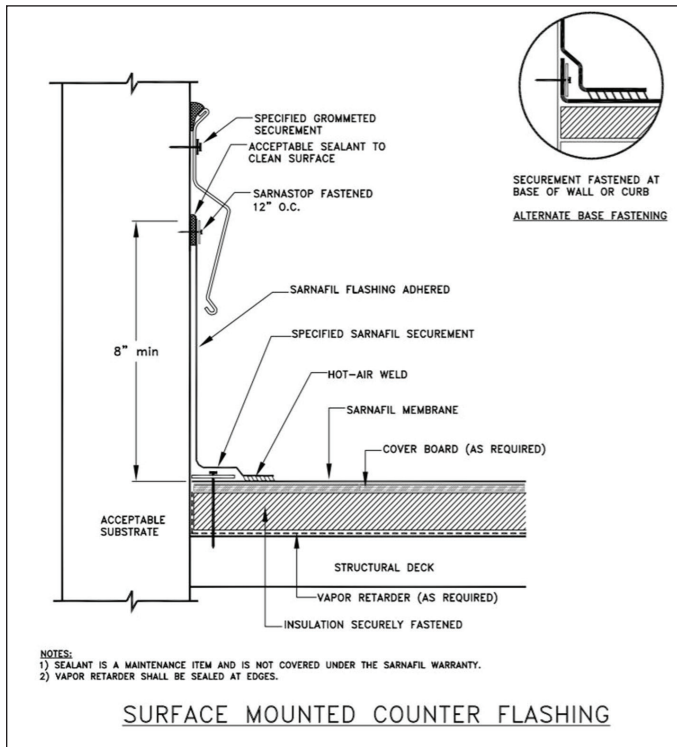
APPENDIX L

Typical detail drawings



APPENDIX L

Typical detail drawings



For the complete list of our details available, please refer to the Sika Canada Website at <https://can.sika.com/en/construction/67113/roofing-membrane-pvc/roofing-ressource-center/download-roofing-details.html>

APPENDIX M

Perimeter Zones

This appendix includes basic calculations to help you calculate roof zones.

The roof area is divided into three (3) zones. Field, perimeter and corner areas. To calculate the required zones, use the formula associated with the drawing.

We have provided the most common calculations for your convenience, for other roof types not listed, please consult the Sika® Sarnafil® Roof Zone Selection Guide or for further assistance in calculating perimeters and corners or for Factory Mutual calculations please contact Sika Canada.

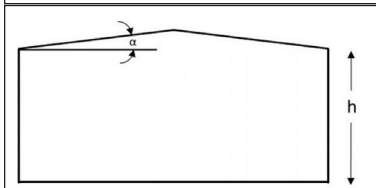
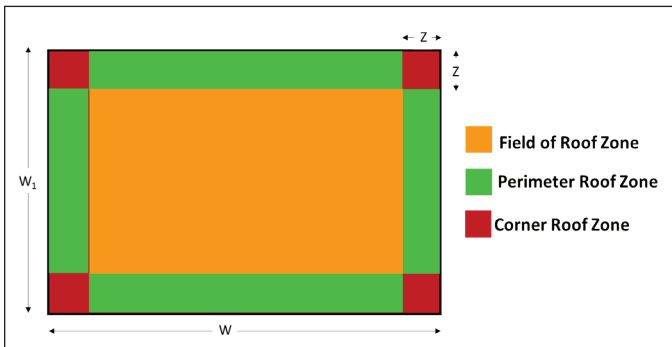
All roof zones are to be confirmed and approved by the design professional.

NOTES:

When the height of the project roof does not exceed 3 m (10 ft) of the existing or planned connected roofs areas, the entire building dimensions must be used in the calculation of zones.

When a building height exceeds 19 m (65 ft) the above calculation is used but the perimeter value cannot be less than 10 % of the greater horizontal dimension.

Low Slope



Criteria:

- $h \leq 19 \text{ m (65 ft)}$
- slope: $0^\circ \leq \alpha \leq 7^\circ$ (0 @ 1.5:12)
- $h < W_1$ (lessor Building Plan dimension)
- if $h > W_1$ refer to High Rise

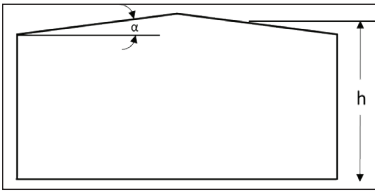
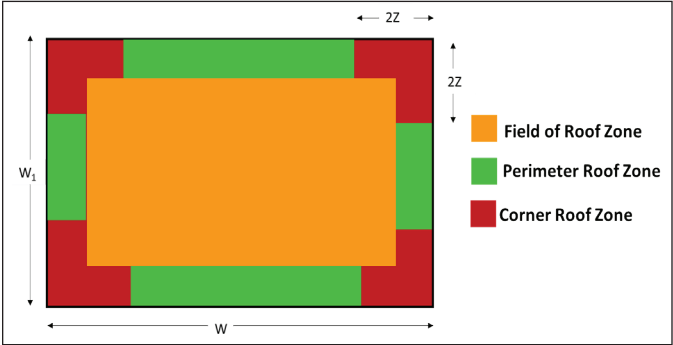
Calculation:

$Z = \text{Lessor of: } 40\% \text{ of the Roof Height (h) or } 10\% \text{ of the lessor Building Plan (NOT ROOF) dimension (} W_1 \text{), but not less than } 4\% \text{ of } W_1$

APPENDIX M

Perimeter Zones

High Rise



Criteria:

- $h > 19 \text{ m (65 ft)}$
- or if $h > W_1$

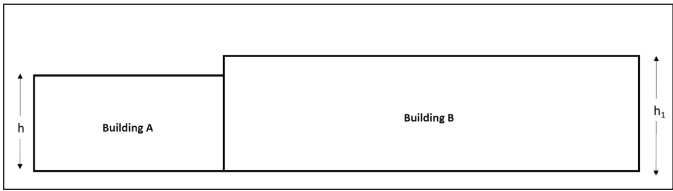
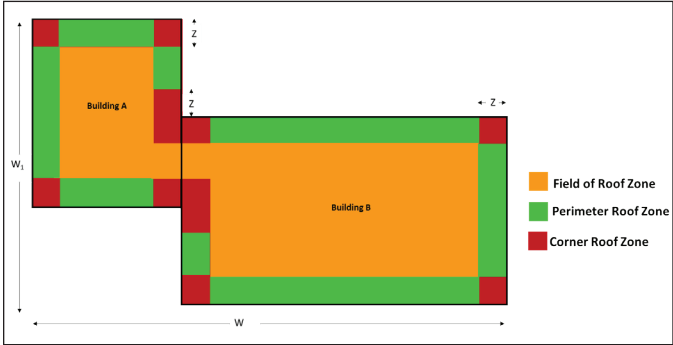
Calculation:

$Z = 10 \%$ of the greater Building Plan (NOT ROOF) dimension (W)

APPENDIX M

Perimeter Zones

Stepped Roof 1



Criteria:

- $h < 19$ m (65 ft)
- slope: $0^\circ < \theta < 7^\circ$ (0 ∂ 1.5:12)
- Elevation of Building B is less than 10 ft above the Elevation of Building A ($h_1 - h < 3$ m (10ft.))
- $h < W_1$ (lessor Building Plan dimension)
- if $h > W_1$ refer to High Rise

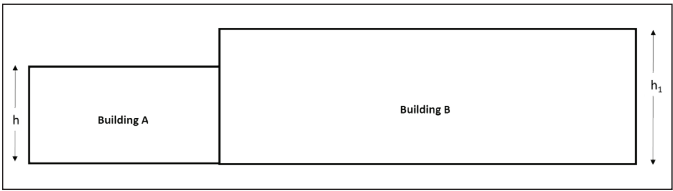
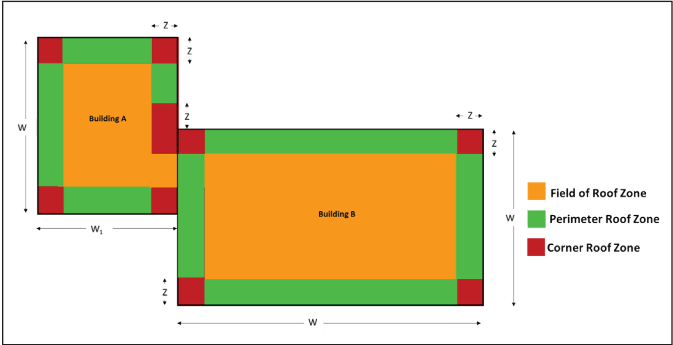
Calculation:

Z = Lessor of: 40 % of the Roof Height (h) or 10 % of the lessor Building Plan (NOT ROOF) dimension (W_1), but not less than 4 % of W_1

APPENDIX M

Perimeter Zones

Stepped Roof 2



- $h < 19 \text{ m (65 ft)}$
- slope: $0^\circ < \theta < 7^\circ$ (0 @ 1.5:12)
- Elevation of Building B is less than 10 ft. above the Elevation of Building A ($h_1 - h > 3 \text{ m (10ft)}$)
- $h < W_1$ (lessor Building Plan dimension)
- $h_1 < W_2$ (lessor Building Plan dimension)
- if $h > W_1$ refer to High Rise
- if $h_1 > W_2$ refer to High Rise

Calculation:

Z = Lessor of: 40 % of the Roof Height (h) or 10 % of the lessor Building Plan (NOT ROOF) dimension (W_1), but not less than 4 % of W_1

APPENDIX N

General Troubleshooting

Problem: Voids in the welded seams.

Solution: Check all seams daily for voids using a rounded screwdriver. Open void along seam to a solid weld. Solvent clean the area and reweld or patch.

Problem: Punctures in the membrane.

Solution: Inspect the membrane for punctures. Solvent clean the punctured area and hand weld a patch in place.

Problem: Contaminates on the membrane.

Solution: Inspect the membrane for contamination. Clean the contaminated area with approved solvents using clean, cotton rags.

Problem: Contaminates under the membrane.

Solution: Cut out the contaminate and clean the membrane to receive the patch with an acceptable solvent. Weld patch in place.

Problem: Debris on the membrane.

Solution: Sweep the membrane free of all debris with a soft bristle broom.

Problem: Unadhered flashing areas.

Solution: Cut open all unadhered flashings and fold back until fully adhered. Apply Sarnacol®-2170 to the substrate and let dry. Apply Sarnacol®-2170 to the underside of the flashing at a rate of 0.2 L/m² (½ US gal/100 ft²). Apply flashing into the previously coated area while the adhesive on the underside of the flashing is tacky to the touch. Do not let the adhesive completely dry.

Rub in the flashing to ensure full adhesion. Clean the membrane in areas to be welded with an approved solvent. Weld a patch strip over the cuts in the flashing membrane. Check all welds.

Note: If large areas of the flashing are unadhered, remove the entire flashing and adhere new flashing material.

Problem: No termination of flashings at non-removable curbs.

Solution: Install a metal extender piece on all non-removable curbs. Secure with grommets fasteners 300 mm (12 in) on center.

Problem: No vertical termination of flashing.

Solution: Terminate all vertical flashings with metal, sealant, and grommets fasteners 300 mm (12 in) on center.

Problem: No sealant at details.

Solution: Apply an acceptable (compatible) sealant to the drains, vent stacks, reglets, etc. All surfaces to receive the sealant must be cleaned.

APPENDIX N

General Troubleshooting

Problem: No hose clamps on vent stacks or other round penetrations.

Solution: Install stainless steel hose clamp and multi-purpose sealant.

Problem: Loose insulation.

Solution: Secure all loose insulation panels with acceptable fasteners and plates. Clean the membrane around the plates with an acceptable solvent. Hand weld a patch in place. Check all seams with a rounded screwdriver.

Problem: Blisters in the membrane.

Solution: Caused by excessive amounts of adhesive (adhesive spill, etc.) or not letting the adhesive dry enough on the back of the membrane. Cut out and install a patch.

Problem: Unadhered areas.

Solution: Cut the membrane and pull back until fully adhered to the substrate.

Apply Sarnacol®-2170 to the substrate according to specified coverage rates and let dry. Apply Sarnacol®-2170 to the existing membrane or new membrane at a rate of a 0.2 L/m² (1/2 US gal./square). Roll the membrane to the primed substrate. Immediately apply a silicone hand roller or weighted foam-covered lawn roller over the prepared area to ensure full adhesion. Clean the membrane to receive the patch with an acceptable solvent and hand weld it in place.

Problem: No 1.2 m (4 ft) perimeter bar (generally required when insulation is set to hot asphalt or cold adhesive).

Solution: Secure the Sarnabar® with an acceptable fastener 300 mm (12 in) on center. Clean the existing membrane on both sides of the Sarnabar® and weld a 200 mm (8 in) coverstrip in place.

APPENDIX O

Materials Checklist

		SYSTEM			
		Mech. Attach.	Adhered	Décor	Flashings
MATERIAL	USE				
MEMBRANES					
Sarnafil® S327	Deck sheet	•			
Sarnafil® S327 Feltback	Deck sheet	•			
Sarnafil® S327	Half-sheets, Perimeter sheets	•			
Sarnafil® G410	Deck sheet		•		•
Sarnafil® G410 SA	Deck sheet		•		•
Sarnafil® G410 Feltback	Deck sheet		•	•	
Sarnafil® G459	Asphalt resistant flashing sheet, Drains, Tie-ins				•
Sikaplan®	Deck sheet	•			•
Sikaplan® Feltback	Deck sheet	•			
ADHESIVES					
Sarnacol® -2170 R (solvent-based)	Adhering deck sheet		•	•	•
Sarnacol® -2170 VC (Low VOC)	Adhering deck sheet		•	•	•
Sarnacol® -2121 (water-based)	Adhering deck sheet to water absorptive substrates		•	•*	•*
Sarnacol® OM Feltback Membrane Adhesive (urethane-based)	Adhering deck sheet		•	•	
Sarnacol® AD Feltback Membrane Adhesive (urethane-based)	Adhering deck sheet		•	•	
Sarnacol® OM Board Adhesive (urethane-based)	Adhering insulation to approved decks		•	•	
Sarnacol® -2163 Board Adhesive (urethane-based)	Adhering insulation to approved decks		•	•	

* Requires special procedures. Contact Sika Canada Technical Services.

APPENDIX O

Materials Checklist

		SYSTEM			
		Mech. Attach.	Adhered	Décor	Flashings
MATERIAL	USE				
FASTENING SYSTEMS					
Sarnafasteners	Securing membrane and insulation to approved decks	•	•	•	
Sarnaplates	Plates for insulation attachment	•	•	•	
Sarnadiscs	Plates for membrane attachment	•			
Sarnabar	Bar for membrane attachment (Engineered System)	•			•
Sarnarail	Batten strip for membrane attachment (Express System)	•			•
Sarnastop	Perimeter securement of membrane (Adhered System)		•	•	
UNDERLAYMENTS / SEPARATORS					
Sarnatherm (CG) Insulation	Isocyanurate insulation for use in System Warranties	•	•	•	•
½" Sarnatherm HD	HD Isocyanurate Coverboard for use in System Warranties	•	•	•	•
EPS	Expanded polystyrene insulation for use in System Warranties (not to be used with 2170)	•	•	•	•*
XPS	Extruded polystyrene insulation for use in System Warranties (not to be used with 2170)	•	•	•	
Sarnafelt, Sarnafelt NWP and Sarnafelt NWP HD	Slip sheet or contamination barrier	•			
Sarnavap 10 & 6	Vapour/air retarder sheet	•	•	•	
Vapour Retarder SA 31 & SA 106	Self-adhered vapour barrier	•	•	•	
Dens-Deck®	Hardboard/Coverboard	•			
Dens-Deck® Prime	Hardboard/Coverboard		•	•	

APPENDIX O

Materials Checklist

		SYSTEM			
		Mech. Attach.	Adhered	Décor	Flashings
MATERIAL	USE				
ACCESSORIES					
Sarnaclad Metal	PVC coated metal for flashing	•	•	•	
Sarnastack	Prefabricated pipe flashing	•	•		
Open Post Flashing	Prefabricated pipe flashing	•	•		
Sarnacorner	Prefabricated corner patch for curbs and walls	•	•	•	•
Sarnadrain	Drain insert with PVC coated flange	•	•	•	•
Sikaflex® 1a	Sealant compatible with Sarnafil membrane	•	•	•	
Sikalastomer-65 tape	Reduces air and moisture infiltration at roof edge	•	•	•	•
Sarnafiller	Pitch pocket filler	•	•	•	•
Aluminum Tape	Asphalt barrier on vent pipes	•	•	•	
Sarnacord-PVC	Used at the base of walls and curbs with Sarnabar	•	•	•	
SarnaTred	Sarnafil membrane rolled walkway	•	•	•	
Crossgrip	Walkway	•	•	•	
Décor Profile	Small aesthetic profile for metal roof appearance			•	
NON-SIKA CANADA MATERIALS					
Wood Nailers					•
Plywood					•
Sheet Metal					•*
Misc. Fasteners & Anchors					

APPENDIX P

Sika Canada Roofing Certifications

In order to maintain the highest standards to which Sika maintains the roof installations, all Fitters must have successfully passed one of the available courses prior to installing any Sika® Sarnafil® system:

A. Sikaplan® certification (2 days) requires that the applicator attend and successful pass a two-day welding course with an emphasis on the practical applications of welding.

This course entitles the successful applicator to install all Sikaplan® membranes but not Sarnafil® systems.

Cards are valid for two (2) years less a day and require a recertification prior to expiration.

A. Sarnafil® Fitters course (3 days) requires that applicators attend a three-day practical and theoretical course and obtain at least a 75 % grade to pass the Fitters course.

This course entitles the successful fitter to install both Sikaplan® and Sarnafil® systems.

Cards are valid for two (2) years less a day and require a recertification prior to expiration.

Disclaimer

This information and recommendations contained herein are offered as a service to our customers and are not intended to relieve the user from responsibility.

The information and recommendations provided are believed by Sika Canada to be accurate at the time of preparation, or obtained from sources believed to be generally reliable. Sika Canada makes no warranty concerning their accuracy and will not be liable for claims relating to any use regardless of whether it is claimed that the information or recommendations are inaccurate, incomplete, or otherwise misleading.



Sika Canada Inc.

Head Office

601, Avenue Delmar
Pointe-Claire, Quebec
H9R 4A9

Other locations

Boisbriand (QC)

Brantford; Cambridge;

Sudbury; Toronto (ON)

Edmonton (AB) Surrey (BC)

1-800-933-SIKA
www.sika.ca

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