

WATERPROOFING TECHNICAL BULLETIN

#03-12

Date: August 16, 2012

To: Authorized Waterproofing Applicators
Sarnafil Sales Staff & Sales Representatives
Sarnafil Regional Technical Staff
Sarnafil Customer Service Staff
Sarnafil Services Staff
Sarnafil Marketing

From: Waterproofing Technical Department

Re: Revision to Waterproofing Quality Assurance Requirements

Effective immediately, electronic leak detection testing will be required on all Sika Sarnafil Waterproofing Systems, including the Self-Adhered System, as the quality assurance method. Drains must be individually water tested.

The table below summarizes the quality assurance requirements for each waterproofing system.

QA Requirements for Sika Sarnafil Waterproofing Systems ¹

System	Required Quality Assurance Test	Applicator's Quality Assurance Responsibilities ²
Loose-Laid	Electronic leak detection testing.	Two cross section seam samples per day. Probe all seams. Perform water test on drains. Installation of grounding layer (Vector Mapping Grid) may be required. See table below.
Self-Adhered direct to concrete deck	Electronic leak detection testing.	Self-Adhered membrane adhesion tests. Two cross section seam samples per day. Probe all seams. Perform water test on drains.
"Conventional" Assembly (insulation below a loose-laid or adhered membrane – including G476 SA)	Electronic leak detection testing.	Two cross section seam samples per day. Probe all seams. Perform water test on drains. Installation of grounding layer (Vector Mapping Grid) may be required. See table below.
Grid System	Electronic leak detection testing.	Grid adhesion tests. Two cross section seam samples per day. Probe all seams. Perform water test on drains. Installation of grounding layer (Vector Mapping Grid) may be required. See table below.

¹ QA not required on Membrane Only warranties, but is recommended.

² See Sika Sarnafil's most current Quality Assurance Procedures for each type of waterproofing system.

WATERPROOFING TECHNICAL BULLETIN

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As always, all contractor personnel performing installation of Sika Sarnafil Waterproofing Systems must be trained prior to the job start. Training is vital to the success of the installation. Any personnel who has not received training within one year of the Sika Sarnafil Waterproofing installation must be re-trained. Training classes are available through the Sika Sarnafil region office or the local Sika Sarnafil Technical Representative.

The table below summarizes when the Vector Mapping Grid (VMG™) for the Electric Field Vector Mapping (EFVM®) system is required to perform the electronic leak detection test. The EFVM system is installed by the Applicator. See the attached EFVM Leak Detection Testing – Vector Mapping Grid (VMG™) Installation Procedure for additional information.

Assembly	Vector Mapping Grid (VMG) Required?	Location of VMG
Conventional Assembly (Insulation below the membrane)	YES	Between membrane and insulation/DensDeck, or between insulation and DensDeck.
Non-conductive Deck (Wood, Cementitious Wood Fiber, Hollow-core Concrete, Gypsum, Lightweight Insulating Concrete)	YES	Conventional Assembly – see above. Protected Membrane Assembly (PMA) – between deck and Sarnafelt NWP-HD Leveling Layer.
Vapor Barrier installed	YES	See appropriate assembly
Loose-Laid System (Sarnafelt NWP-HD Leveling Layer and G476 Membrane) direct to bare concrete deck	NO	NA
Self-Adhered System (G476 SA Membrane) direct to bare concrete deck or concrete with residual asphaltic product.	NO	NA
Grid System (Sarnafelt NWP-HD Leveling Layer and G476 Membrane with Containment Grids) direct to bare concrete deck	NO	NA
Loose-Laid System (Sarnafelt NWP-HD Leveling Layer and G476 Membrane) go-over of existing waterproofing.*	YES	Between existing waterproofing and Sarnafelt NWP-HD.
Grid System (Sarnafelt NWP-HD Leveling Layer and G476 Membrane with Containment Grids) go-over of existing waterproofing.*	YES	Between existing waterproofing and Sarnafelt NWP-HD.

* Coal Tar Pitch requires special consideration. See Sika Sarnafil specifications and Vector Mapping Grid Installation Procedures for additional information when going over Coal Tar Pitch.

Attachments:

- Electronic Leak Detection Testing Procedure (8/16/12)
- Electronic Leak Detection Testing Agreement (Revised 8/12 v2.0)
- EFVM[®] Leak Detection Testing – Vector Mapping Grid (VMG[™]) Installation Procedure (8/16/12)
- Quality Assurance Procedures for Loose-Laid Membrane Applications (8/16/12)
- Quality Assurance Procedures for Self-Adhered Membrane Applications (8/16/12)
- Quality Assurance Procedures for Grid System Applications (8/16/12)

Sika Sarnafil Waterproofing

Electronic Leak Detection Testing Procedure

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The following is an outline of the procedures for electronic leak detection testing when specified or required for quality assurance purposes on Sika Sarnafil waterproofing projects:

1. The Waterproofing Applicator must include the cost of the testing as shown on the most current Electronic Leak Detection Testing Agreement Form.
 - a. The Electronic Field Vector Mapping (EFVM[®]) system (Vector Mapping Grid and Connection Plates and Wire) must be installed by the Applicator if any of the following conditions exist:
 - An existing waterproofing material or vapor barrier will remain in place.
 - There will be insulation and/or cover board installed below the membrane.
 - The structural deck is non-conductive - wood, unreinforced concrete, hollow-core concrete, cellular lightweight concrete.
 - The new waterproofing system includes a vapor barrier over the structural deck.
 - b. The Applicator must carry the cost to furnish and install the EFVM system. See Sika Sarnafil Waterproofing Technical Bulletin #03-12 for more information.
2. The Applicator must submit a signed Electronic Leak Detection Agreement Form to Sika Sarnafil prior to the release of materials.
3. After the Applicator has submitted the Electronic Leak Detection Agreement Form to Sika Sarnafil, the leak detection company will contact the Applicator to schedule the test. The Applicator and a Sika Sarnafil Technical Representative must be present during the test. Weather permitting, the Applicator must make repairs to the membrane the same day as the test immediately following recording by the test provider so that the repaired area can be re-tested. The Applicator must provide an adequate number of trained certified welders. Repairs must be made in a timely manner so that they can be re-tested.



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Electronic Leak Detection Testing Procedure

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4. The test area must be 100% completed and ready for testing. Electronic leak detection testing does not eliminate the need to diligently probe seams. All work must be carefully checked by the Applicator prior to the test. Excessive breaches found at the beginning of the test, i.e. the membrane has not been probed by the contractor constitutes an incomplete installation. **Excessive breaches and water infiltration may require replacement of materials installed below the membrane.** The membrane must be left exposed for testing, i.e., no material stock piles, debris, subsequent layers or overburden. If a return trip is required by the testing company because the project is not completed, the membrane is not exposed for testing, or the Applicator is not on site, the Applicator will be charged \$2,000.00 for the visit.
5. If the test is run during inclement weather, the test provider will issue a document with the breach coordinates following the test. The Applicator must make repairs at the first opportunity with a Sika Sarnafil Technical Representative present.
6. 110 volt electricity supply with required extension cords, water supply, and water hose that will reach all areas of the waterproofing must be provided by the Applicator.
7. The test procedure takes approximately 1 day per 10,000 - 15,000 +/- sf of test area, however, the test time may vary depending on job conditions. Set up time may take from 2 – 8 hours depending on the size of the test area. (Applicator participation is not required during set up, beyond item 6 above).
8. The accuracy of the test is dependent on moisture penetration through the membrane at breach locations. For best results, the waterproofing system must experience a certain degree of wetting. This can occur through rainfall, however if natural wetting does not occur or is inadequate, artificial wetting must be done. Contact the Sika Sarnafil Technical Dept. if you are unsure whether the waterproofing system is ready for testing.
9. A report from the test provider will be issued to Sika Sarnafil and the Applicator.



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Electronic Leak Detection Testing Procedure

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10. The Applicator must receive an “Inspection for Warranty Report” from the Sika Sarnafil Technical Representative indicating that the roof has been accepted for warranty prior to the placement of any subsequent layers or overburden.
11. The Applicator must adequately protect the membrane from damage immediately following the test. This includes limiting access and traffic over completed membrane areas. Subsequent layers (drainage layer, insulation, and overburden) should be installed as soon as possible. **Should damage to the membrane occur after the test, a re-test will be required on the damaged area. The area to be re-tested shall be determined by the Sika Sarnafil Technical Service Representative. A re-test of the entire roof is not required in most cases unless deemed necessary by the Sika Sarnafil Technical Service Representative. All costs related to the re-test are the responsibility of the Applicator.**

Please contact your Sika Sarnafil Region Technical Dept. if you have any questions.



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Electronic Leak Detection Testing Agreement Between the Applicator and Sika Sarnafil, A Division of Sika Corp., 100 Dan Road, Canton, MA 02021

PROJECT NAME _____ Project Horizontal Square Feet _____

Address _____ City/State _____

Applicator _____ City/State _____

Contact Name _____ Contact Phone _____

Estimated Start Date _____ Approximate Completion Date (Req'd.) _____

The above named Sika Sarnafil Applicator acknowledges that electronic leak detection testing will be performed on the above referenced project for quality assurance purposes on the completed membrane. Sika Sarnafil agrees to provide electronic leak detection testing to the Applicator at the following rates:

Project size	Test Price
Up to 10,000 sf	1 site visit - \$3200
	2 site visits - \$4050
	3 site visits - \$6000
	4 site visits - \$8000

Project size	Test Price – See note below
10,001 – 50,000 sf	\$0.32/sf
50,001 – 100,000 sf	\$0.29/sf
100,001 – 150,000 sf	\$0.25/sf
150,001 sf +	\$0.23/sf

See invoice for payment terms.

Note: Projects over 10,000 sf are subject to a maximum number of site visits to which the standard return trip of \$850 applies. The maximum number of site visits is equals the project square footage divided by 5000 sf, rounded to the next highest number. There is no charge for the first site visit. Each additional site visit up to the maximum will be charged at \$850 each. Each site visit exceeding the maximum will be charged at \$2,000 each.

1. The applicator must schedule the test through the Sika Sarnafil Regional Office Technical Department. **Two weeks notice is required.**
2. The applicator has read the Sika Sarnafil Electronic Leak Detection Testing Procedure and understands the requirements.
3. The test is a method for checking membrane water tightness. It does not absolve the applicator from any contract responsibilities or workmanship warranties to Sika Sarnafil or the owner.

Full payment for the testing, as well as materials and warranty fees, is required in order to secure a Sika Sarnafil Warranty.

We acknowledge and agree to the aforementioned terms.

Sika Sarnafil Applicator:

Printed Name

Signature

Date



Sika Sarnafil, A Division of Sika Corporation, 100 Dan Road, Canton, MA 02021
Tel. 800-451-2504, Fax: 781-828-5365, www.sikacorp.com

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EFVM[®] Leak Detection Testing

Vector Mapping Grid (VMG[™]) Installation Procedure

August 16, 2012

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General

1. Wear gloves and eye protection during the installation of the Vector Mapping Grid (VMG).
2. Unroll the VMG over the substrate covering the entire horizontal area to be waterproofed.
3. Overlap the VMG a minimum of 2 inches at side laps and end laps. Positive contact between the VMG is required at all overlaps. Tape adjacent VMG together using duct tape or aluminum tape spaced approximately 5 feet on center to assure positive contact and to prevent shifting of the VMG. Full taping of the overlap areas is acceptable.
4. For best results, use heavy duty shears or wire cutters to cut the VMG. Cut the VMG as close to the perpendicular strand as possible at both end and side edges to eliminate sharp strands at the edges.
5. Terminate the VMG approximately one inch from all projections, interior drain bodies and perimeter upstands. Do not allow VMG to contact any elements connected to the structure.

Installation Between a Loose-Laid Membrane and Insulation/Cover Board or Existing Product

1. Unroll the VMG over the insulation/cover board or existing asphaltic product following steps 1-5 above. Unroll membrane over VMG.
2. Sarnafelt NWP is required between the VMG and the membrane when the VMG is installed directly over XPS (Polystyrene) insulation. The membrane must not come in direct contact with Polystyrene insulation.
3. When installing over an existing product, Sarnafelt NWP-HD is required over the VMG. In addition, use fasteners and plates to ground the VMG to the structure. Use one fastener and plate for each Connection Plate and Wire as described below. (Refer to Sika Sarnafil Loose-Laid System specifications for installation of Sarnavap-10 polyethylene sheet over Coal Tar Pitch, prior to subsequent layers.)



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Vector Mapping Grid (VMG™) Installation Procedure

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Installation Between an Adhered Membrane and Cover Board

1. Unroll the VMG over the cover board following steps 1-5 above. Apply the membrane adhesive to the cover board over the VMG at the required rate. Place the membrane into the adhesive according to the adhesive product application instructions. Thoroughly roll-in the membrane with a weighted roller. The membrane adhesive will bond the membrane to the cover board through the VMG.

Installation Between Insulation and an Adhered Cover Board

1. Unroll the VMG over the insulation following steps 1-5 above. Apply low rise insulation adhesive directly to the insulation over the VMG according to the product application instructions. Place the cover board over the VMG and walk-in to assure adequate contact. The insulation adhesive will bond the cover board to the insulation through the VMG.

Installation for Go-over Applications with the Grid System

1. Remove a minimum 16 inch wide area of the existing product at the location of the 12 inch wide grid strip (Photo 1). Unroll the VMG over the existing material following steps 1-5 above. Make sure the VMG contacts 1 – 2 inches of bare concrete while keeping it 1 – 2 inches away from the edge of the grid strip. Use a fastener and plate to secure the VMG to the bare concrete in two places per grid containment area. Install Sarnafelt NWP-HD leveling layer over the VMG (Photo 2). (Refer to Sika Sarnafil Grid System specifications for installation of Sarnavap-10 polyethylene sheet over Coal Tar Pitch, prior to subsequent layers.)



Photo 1



Photo 2



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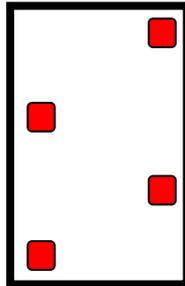
Vector Mapping Grid (VMG™) Installation Procedure

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Installation of Connection Plate and Wire (not for use with Grid System)

1. Install two Connection Plates with attached connection wire in opposite diagonal corners of the roof area. The Connection Plates must be in contact with the VMG. Two Connection Plates are necessary per roof level up to a maximum roof area of 25,000 square feet. Use four (4) plates for roofs that are 25,000 – 50,000 square feet (see schematic below), six (6) plates for roofs 50,000 – 75,000 square feet, etc. Install the additional connection plates in a zigzag pattern equally spaced along the perimeter of the roof. For a square or rectangular shaped roof with the long side running south to north place the connection plates as follows:
 - a. Place the first connection plate in the southwest corner.
 - b. Place the second connection plate one-third (1/3) of the way up the east wall from the southeast corner.
 - c. Place the third connection plate two-thirds (2/3) of the way up the west wall from the southwest corner.
 - d. Place the fourth connection plate in the northeast corner.



For roofs that are not square or rectangular, or roofs that are an unusual shape, submit a roof plan to ILD for proper connection plate location.

2. The Connection Plate Wire is brought through the waterproofing membrane either behind a counterflashed flashing (see detail EFVM-1, attached) or through a conduit penetration (see detail EFVM-2, attached).
3. Call the Sika Sarnafil regional office to schedule the EFVM® test. The test must be scheduled for after the completion of the waterproofing membrane installation and prior to the installation of any overburden materials.



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Conduit Penetration Installation (Detail EFVM-2)

The following mock-up describes the installation of a conduit flashing penetration for bringing the EFVM Connection Wire above the membrane when bringing it behind a counterflashed wall flashing is not possible.

1. Attach a 1 inch PVC pipe to the structural deck with either “L” brackets (Photo 3) or a pipe flange (McMaster-Carr part # 4881K214 – Photo 4). Calculate the length of the pipe so that there will be a minimum of 8 inches from the top of the overburden to the top of the pipe flashing.



Photo 3

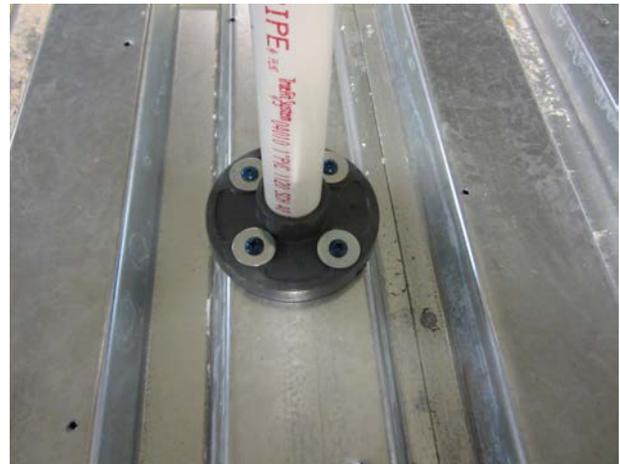


Photo 4

2. For Protected Membrane Assemblies (PMA), use Sarnafelt NPW-HD to protect the membrane from any sharp edges of the pipe securement.
3. For Conventional Assemblies, install the insulation and, if specified/required, the DensDeck® cover board (Photo 5). Drill a hole large enough for the EFVM Connection Wire at the insulation/DensDeck level (Photo 6).



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Vector Mapping Grid (VMG™) Installation Procedure

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Photo 5



Photo 6

4. Cut a piece of membrane $\frac{3}{4}$ - 1 inch wide and long enough to reach the hole from the top of the pipe. Cut a slot in the membrane about the same width as the EFVM Connection Wire (Photo 7). Insert the strip of membrane, slot first, into the pipe so that the slot faces the hole (Photo 8).



Photo 7

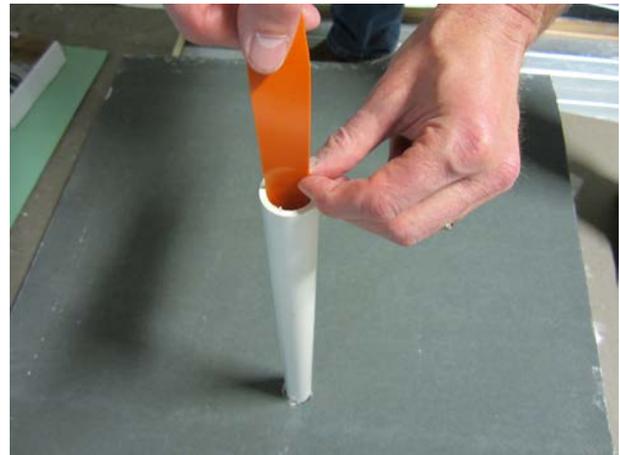


Photo 8

5. Push at least 6 inches of the EFVM Connection Wire through the hole and into the slot in the membrane (Photo 9). Continue to feed the wire into the hole as you gently pull up on the membrane strip (Photo 10).



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Vector Mapping Grid (VMG™) Installation Procedure

August 16, 2012

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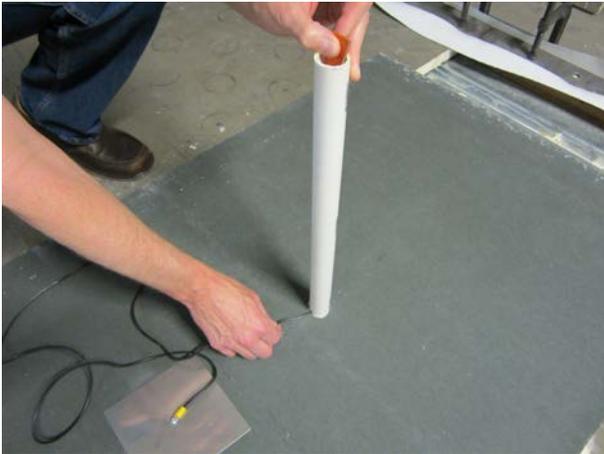


Photo 9

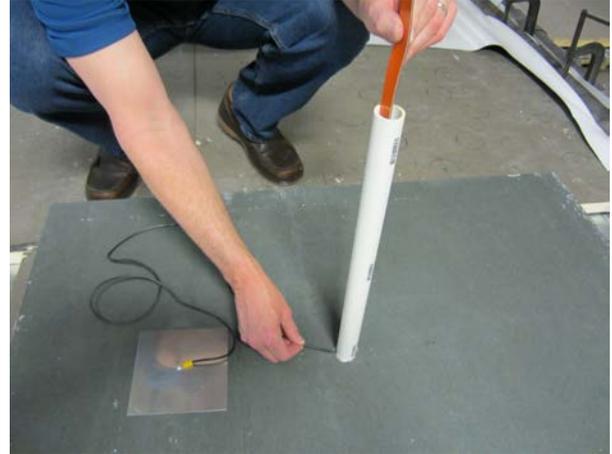


Photo 10

6. Continue to pull until the wire can be grabbed (Photo 11). Pull all of the excess wire through the pipe, install the VMG over the EFVM Connection Plate and Wire, and add a goose neck to the end of the pipe using 1 inch PVC elbows. Wrap the exposed EFVM Connection Wire around the goose neck and tie it securely (Photo 12).



Photo 11



Photo 12

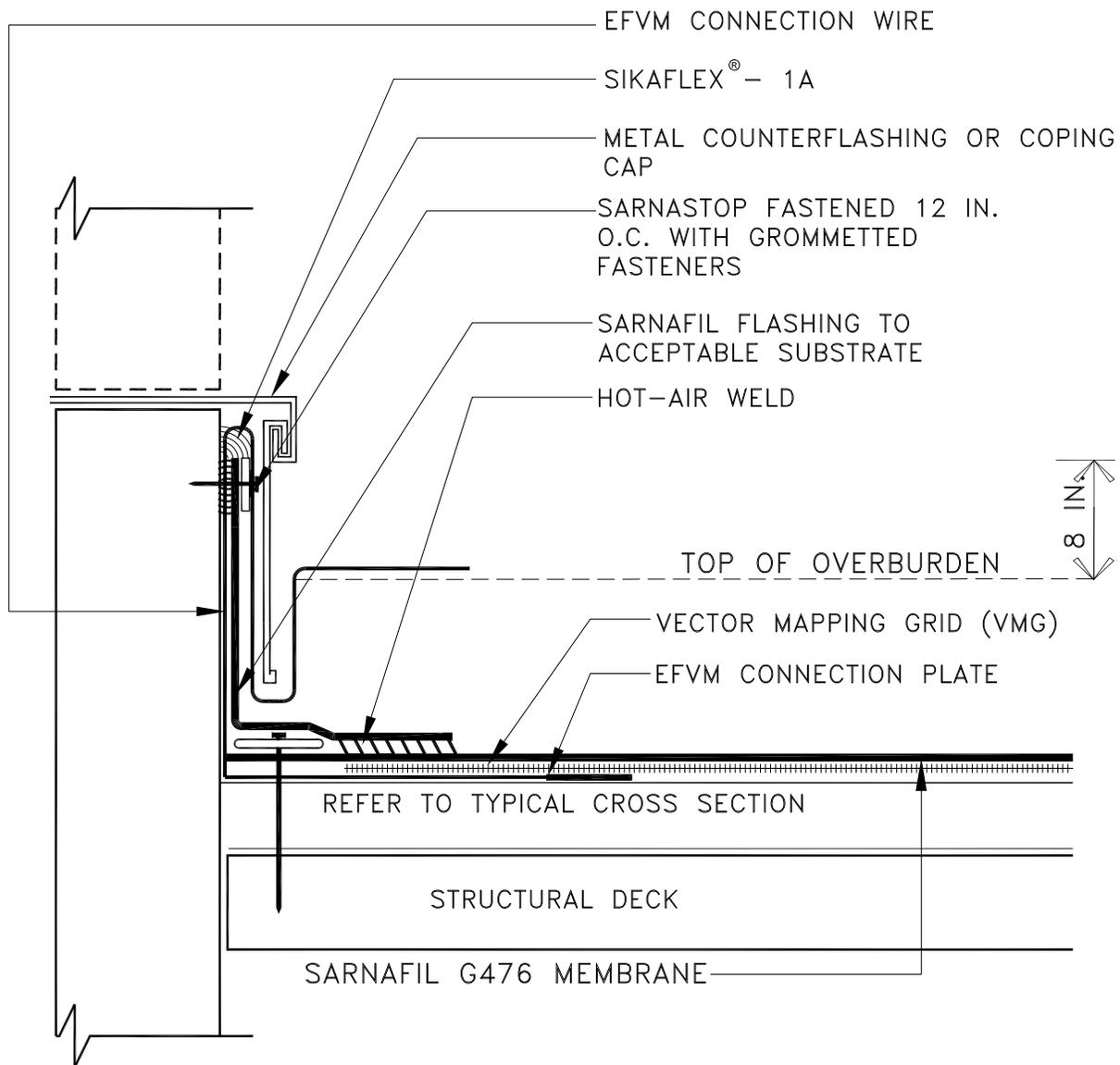
7. Install the waterproofing membrane and flash the pipe using a typical pipe flashing detail.

EFVM® is a registered trademark and VMG™ is a trademark of International Leak Detection. DensDeck® is a registered trademark of Georgia-Pacific.

Attachments:

Detail EFVM-1, EFVM Connection Wire at Flashing
Detail EFVM-2, Conduit Penetration for EFVM Connection Wire





NOTE: SUBSEQUENT LAYERS NOT SHOWN FOR CLARITY

EFVM CONNECTION WIRE AT FLASHING



Sarnafil
781-828-5400 sikaCorp.com

JOB NAME:

SCALE:

N.T.S.

DATE:

6/12

FILE NO.:

EFVM-1

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.

SIKAFLEX-1A SEALANT

STAINLESS STEEL HOSE CLAMP

8 IN.
TOP OF OVERBURDEN

1IN. PVC PIPE ATTACHED TO DECK

FLASHING MEMBRANE

G476 WATERPROOFING MEMBRANE

VECTOR MAPPING GRID (VMG)

EFVM CONNECTION PLATE AND WIRE

REFER TO TYPICAL CROSS SECTION

STRUCTURAL DECK

NOTE: SUBSEQUENT LAYERS NOT SHOWN FOR CLARITY

CONDUIT PENETRATION FOR EFVM CONNECTION WIRE



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

SCALE:

N.T.S.

DATE:

6/12

FILE NO.:

EFVM-2

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.

Sika Sarnafil Waterproofing

Quality Assurance Procedures for Loose-Laid Membrane Applications **8-16-12**
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General

The following quality assurance (QA) procedures must be followed by the Sika Sarnafil Waterproofing Applicator to ensure proper performance of the Sika Sarnafil Loose-Laid Waterproofing System. Following these procedures will help ensure proper installation. Seam integrity is a critical system performance parameter which can minimize the exposure to liability for the Applicator, Sika Sarnafil, and the building owner. It is the Applicator's responsibility to ensure the quality of the installation by confirming seam integrity and membrane water tightness.

Training

All personnel performing installation of Sika Sarnafil Waterproofing Systems must be trained prior to the job start. Training is vital to the success of the installation. Any personnel who have not received training within one year of the Sika Sarnafil Waterproofing installation must be re-trained. Training classes are available through the Sika Sarnafil regional office or the local Sika Sarnafil Technical Representative.

Seam Samples – A minimum of 2 seam test samples, each approximately 1 inch wide, must be taken on a daily basis by the Applicator. Samples should be taken at the start of each days welding, and when starting back up after lunch breaks.

1. Allow the membrane to cool off after hot-air welding. The sample is taken by cutting out a cross-section of the seam approximately one-inch wide by eight inches long with the seam in the center.
2. Using Vice-Grips or pliers, pull the seam apart. The seam is considered acceptable when the top membrane separates within itself.
3. Repair the sample area by hot-air welding a patch that is at least 3 inches larger than the opening in all directions.

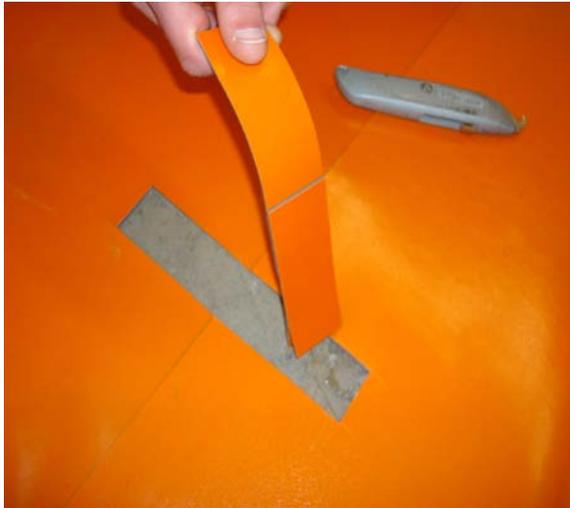


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Quality Assurance Procedures for Loose-Laid Membrane Application 8-16-12

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Samples must be dated and held for inspection by the Sika Sarnafil Technical Representative.



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Quality Assurance Procedures for Loose-Laid Membrane Application 8-16-12

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Seam Probing – The Applicator is responsible for probing of all seams.

After the membrane has cooled from hot-air welding, check the seams for continuity using a rounded flat head screwdriver or other acceptable tool (seam probe). Firmly press the edge of the screwdriver firmly into the seam area while moving it along the seam. Mark areas where the probe can penetrate the seam for repair.



Electronic Leak Detection Testing

Electronic Leak Detection Testing (ELD) is required on the completed membrane for all loose-laid system applications. The Applicator must arrange for the testing through Sika Sarnafil. See the Sika Sarnafil “Electronic Leak Detection Testing Procedure” and “Electronic Leak Detection Testing Agreement.”

Water Testing of Drains

A water test must be performed on all drains. The day before the ELD test, the applicator must plug the drains and flood them with water. Enough water to completely cover the clamping ring must be used. The Sika Sarnafil Technical Representative attending the ELD test will inspect the underside of the deck below the drains for leakage upon his arrival the next day. The test must take place for a minimum of 16 hours. The water over the drains can then be released. If there is leakage, the source must be determined and corrected immediately.



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Quality Assurance Procedures for Self-Adhered Membrane Applications 8-16-12

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General

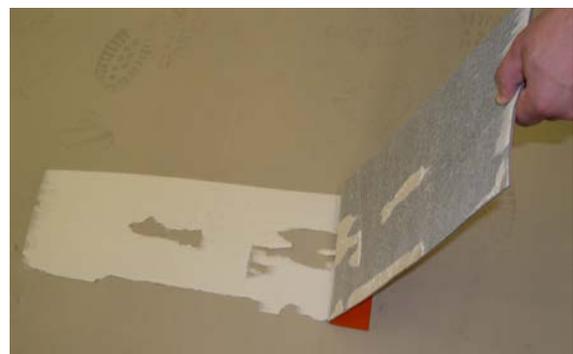
The following quality assurance (QA) procedures are set forth to ensure the performance of the Sika Sarnafil Self-Adhered Waterproofing System which utilizes the G476 Self-Adhered membrane (G476 SA). Following these procedures will help ensure a quality installation. Membrane adhesion and seam integrity are critical system performance parameters which can minimize the exposure to liability for the Applicator, Sika Sarnafil, and the building owner. It is the Applicator's responsibility to ensure the quality of the installation through acceptable membrane adhesion and water tightness.

Training

All personnel performing installation of Sika Sarnafil Waterproofing Systems must be trained prior to the job start. Training is vital to the success of the installation. Any personnel who have not received training within one year of the Sika Sarnafil Waterproofing installation must be re-trained. Training classes are available through the Sika Sarnafil regional office or the local Sika Sarnafil Technical Representative.

Pre-installation Adhesion Test (concrete substrates only) – Pre-installation adhesion tests are required over conditioned/primed concrete substrates – see the table below for surface conditioner/priming requirements. On a daily basis the Sika Sarnafil Waterproofing Applicator (Applicator) shall test adhesion to the substrate ahead of the next day's work. Each day, on a properly prepared area of substrate which includes surface conditioner or primer, the Applicator shall install a test strip of G476 Self-Adhered membrane approximately 6" - 8" wide by 18" – 24" long in the area of the next day's work. See G476 Self-Adhered System Installation Instructions.

Random areas are to be selected and 1 test strip per 2000 sf of substrate to be covered shall be applied. The following day, prior to actual installation, the test strips shall be pulled from the substrate. Always wait at least 24 hours - do not attempt to conduct pull tests the same day that the test samples were installed. **The adhesion sample must be dated and saved for inspection by the Sika Sarnafil Technical Representative.**



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Acceptable Adhesion Criteria – Adhesion shall be considered acceptable when the cohesive failure of the foam backing occurs over at least 75% of the sample, i.e., 75% of the foam tears from the membrane and remains on the substrate when the sample is pulled.

If the result of the adhesion test is unacceptable, no further installation shall take place until acceptable adhesion can be demonstrated and maintained. Unacceptable adhesion may be due to one or more of the following factors:

1) substrate preparation/condition, 2) surface conditioner/primer application, 3) the self-adhered membrane installation method, including proper rolling-in of the membrane. Contact the Sarnafil Regional Technical Department for assistance.

Several factors can affect adhesion such as moisture, dust, temperature, humidity, concrete additives, and substrate smoothness. The substrate must be clean, smooth, and dry.

The following table shows substrate options and surface conditioning/priming requirements:

Surface Conditioner/Primer Requirements			
Substrate	40° F (4° C) and Above	25° F (-4° F) and Above	QA Adhesion Test Required?
Concrete/Masonry	Surface Conditioner 150	Sarnavap SA Primer	Yes
Plywood – Flashing Substrate Only	Not Required	Not Required	No
DensDeck Prime	Not Required	Sarnavap SA Primer	No

Surface conditioner/primer must be applied immediately preceding membrane installation and allowed to dry completely. If any substrate is not covered by membrane the same day that the surface conditioner/primer was applied, the surface preparation and surface conditioner/primer application must be repeated immediately prior to membrane application. Consult Sika Sarnafil G476 Self-Adhered membrane application instructions for more information.



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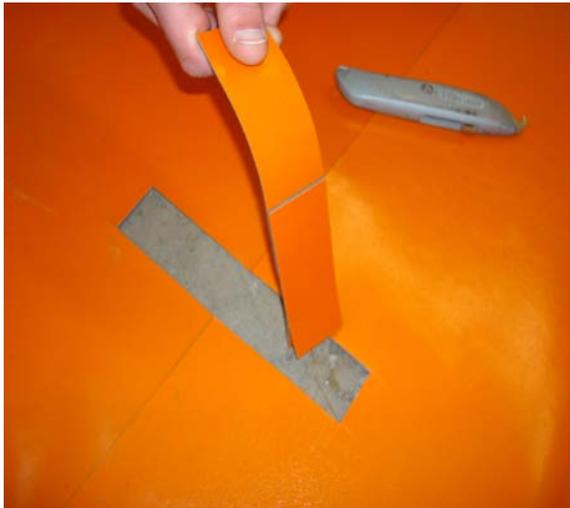
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Seam Samples – A minimum of 2 seam test samples, each approximately 1 inch wide, must be taken on a daily basis by the Applicator. Samples should be taken at the start of each days welding, and when starting back up after lunch breaks.

1. Allow the membrane to cool off after hot-air welding. The sample is taken by cutting out a cross-section of the seam approximately one-inch wide by eight inches long with the seam in the center.
2. Using Vice-Grips or pliers, pull the seam apart. The seam is considered acceptable when the top membrane separates within itself.
3. Repair the sample area by hot-air welding a patch that is at least 3 inches larger than the opening in all directions.



Samples must be dated and held for inspection by the Sika Sarnafil Technical Representative.



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Seam Probing – The Applicator is responsible for probing of all seams.

After the membrane has cooled from hot-air welding, check the seams for continuity using a rounded flat head screwdriver or other acceptable tool (seam probe). Firmly press the edge of the screwdriver firmly into the seam area while moving it along the seam. Mark areas where the probe can penetrate the seam for repair.



Electronic Leak Detection Testing

Electronic Leak Detection Testing (ELD) is required on the completed membrane for all self-adhered membrane applications. The Applicator must arrange for the testing through Sika Sarnafil. See the Sika Sarnafil “Electronic Leak Detection Testing Procedure” and “Electronic Leak Detection Testing Agreement.”

Water Testing of Drains

A water test must be performed on all drains. The day before the ELD test, the applicator must plug the drains and flood them with water. Enough water to completely cover the clamping ring must be used. The Sika Sarnafil Technical Representative attending the ELD test will inspect the underside of the deck below the drains for leakage upon his arrival the next day. The test must take place for a minimum of 16 hours. The water over the drains can then be released. If there is leakage, the source must be determined and corrected immediately.



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General

The following quality assurance (QA) procedures must be followed by the Sika Sarnafil Waterproofing Applicator to ensure proper performance of the Sika Sarnafil Grid System waterproofing. Following these procedures will help ensure proper installation. Grid strip adhesion and seam integrity are critical system performance parameters which can minimize the exposure to liability for the Applicator, Sika Sarnafil, and the building owner. It is the Applicator's responsibility to ensure the quality of the installation through acceptable grid strip adhesion and membrane water tightness. Consult the Sikaflex®-11FC or Sarnafiller Grid Adhesive product data sheet for installation instructions and additional information.

Training

All personnel performing installation of Sika Sarnafil Waterproofing Systems must be trained prior to the job start. Training is vital to the success of the installation. Any personnel who have not received training within one year of the Sika Sarnafil Waterproofing installation must be re-trained. Training classes are available through the Sika Sarnafil regional office or the local Sika Sarnafil Technical Representative.

Pre-installation Adhesion Test – Sika Sarnafil requires that test grids be installed prior to starting actual grid installation. One grid test strip must be installed for each 300 lin. ft. of grid strip, or 3000 sf of area, whichever is less. The total number of grid test strips must be installed at evenly spaced intervals over the entire grid strip application area to achieve an accurate sampling of the entire substrate. Do not start actual grid strip installation until a successful grid peel test is achieved.

On a properly prepared area of substrate the applicator shall install a test grid strip of 12" wide G459 membrane approximately 1-1/2 ft. long in the area of the next day's work. (See Grid System Installation Instructions). Leave 6" of the membrane unadhered at one end to grab and pull on the sample. Perform pull tests only when the grid adhesive has completely set.

The grid strip should be very difficult to peel from the substrate. The grid adhesive should **not** peel cleanly from the substrate or from the back of the grid strip membrane. Adhesive residue should remain on both the back of the grid strip membrane and the substrate. If the adhesive peels cleanly from the substrate or grid strip membrane, the adhesion is unacceptable. In addition to test strips, always conduct a pull test on the actual grid strip installation to verify that acceptable bond has been achieved prior to welding waterproofing membrane to the grid strip membrane.

The adhesion sample must be dated and saved for inspection by the Sika Sarnafil Technical Representative.



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If the result of the adhesion test is unacceptable, no further installation shall take place until acceptable adhesion can be demonstrated and maintained. Unacceptable adhesion may be due to one or more of the following factors:

- 1) Application of primer. The back of all G459 grid strip membrane must be primed with Sikaflex Primer 449 and allowed to dry completely prior to setting the grid strip into the grid strip adhesive.
- 2) Substrate preparation/condition. Several factors can affect adhesion such as moisture, dust, concrete additives, curing compounds, and substrate smoothness. The substrate must be clean, smooth, and dry.
- 3) The grid strip installation method, including proper rolling-in of the grid strip. The grid strip must be sufficiently rolled-in to assure 100% contact with the grid strip adhesive.
- 4) Product storage and handling – always follow storage and application temperature guidelines of the grid adhesive.

The preparation process and adhesion test is to be repeated. Once acceptable adhesion can be demonstrated, the grid strip installation can proceed.



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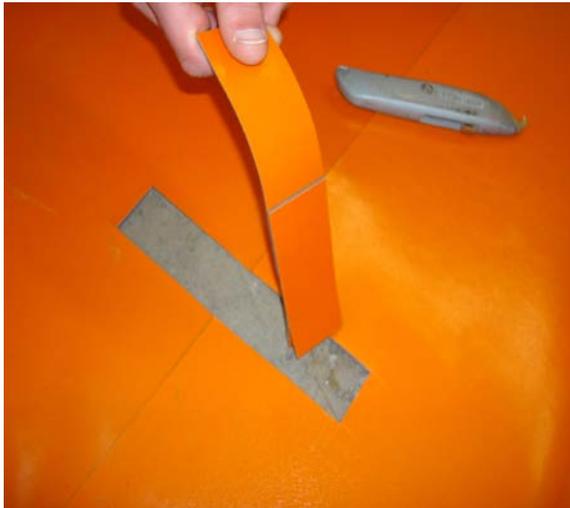
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