

METHOD STATEMENT

SikaProof® A+

05.09.2019/ V01 / SIKA LIMITED (VIETNAM) / TM ROOFING & WATERPROOFING

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1 SCOPE

This *Method Statement* describes the system and installation procedure of the **SikaProof® A+** membrane waterproofing system.

2 SYSTEM DESCRIPTION

The **SikaProof® Yellow Box** system offers a unique solution against water ingress of concrete structures. This high level protection is achieved through the resistance to lateral water migration. The system can be used as a pre-applied solution, where the concrete is casted onto the waterproofing membrane and as a post-applied system, where the waterproofing membrane is applied onto the hardened concrete. This versatility is made possible through the high-end technology of **SikaProof®**:

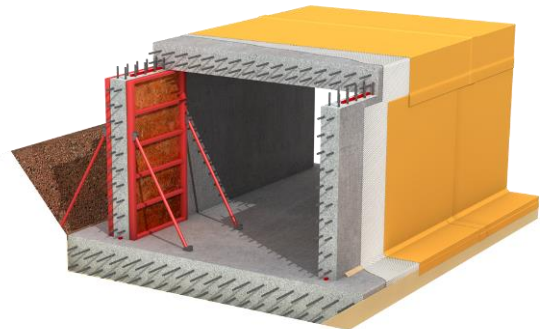
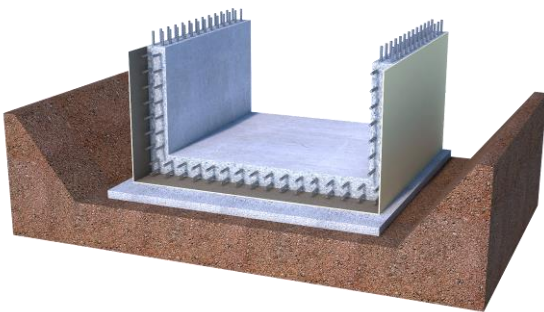
- Highly flexibly TPO-based membrane
- Fully bonded technology without any lateral water migration
- Adhered overlap joints with special adhesive tape for simple application

The technology used in the **SikaProof® Yellow Box** system gives an all-round compatible system solution for a dry and waterproof basement and other below ground structures.

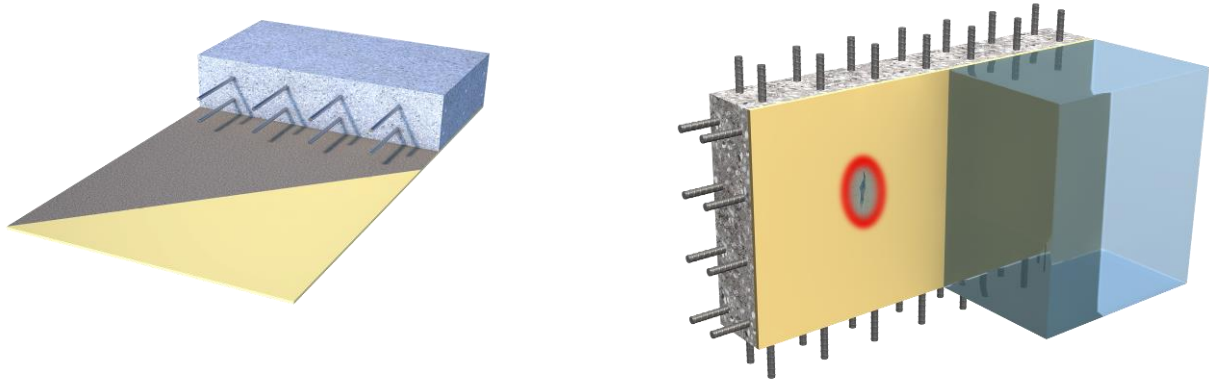


The **SikaProof® A+** pre-applied waterproofing system can easily be applied on the blinding concrete for the base slab and to the prepared vertical excavation wall (e.g. on diaphragm walls, piled walls, or similar). Alternatively, it can be applied directly onto double-faced formwork in open-cut excavation. In this type of projects, the shuttering anchor / tie-bar penetration holes have to be sealed after the removal of the formwork.

The **SikaProof® P-1201**, post-applied waterproofing system, can be easily applied on existing concrete structures in open excavations on vertical walls and horizontal areas, e.g. protrusion/junction slab to wall or roof decks. In this case, the shuttering anchor penetrations will be sealed in one step together with the membrane on the entire area.



2.1 SIKAPROOF® A+ PRE-APPLIED WATERPROOFING SYSTEM



SikaProof® A+ is a fully and permanently bonded, flexible sheet membrane waterproofing system. It consists of a **flexible polyolefin (FPO) membrane** containing a **unique hybrid polyolefin (FPO) based bonding layer**.

The **SikaProof® A+** system is a cold- and pre-applied waterproofing system that is designed for installation before the steel reinforcement is fixed and the structural concrete is cast. The concrete is cast directly onto the **SikaProof® A+** membrane system, where the fresh concrete is embedded completely into the hybrid bonding layer and creates a permanent dual bond (mechanically and adhesively). The dual bond prevents any lateral water migration between the **SikaProof® A+** membrane system and the hardened reinforced concrete of the structure.

To adhere and seal all overlaps of the membrane sheets and all detailing joints/connections within the **SikaProof® A+** system, the unique **SikaProof® Tape A+** and **SikaProof® Sandwich Tape** or hot-air welding are used.

USES

Damp-proofing, waterproofing and concrete protection for basements and other below ground concrete structures against ground water:

- Below ground reinforced concrete slabs
- Below ground reinforced concrete walls with both single and double-faced formwork
- Extensions and reconstruction works
- For prefabricated constructions / pre-casted elements

CHARACTERISTICS/ ADVANTAGES

- Fully and permanently bonded to the reinforced concrete of the structure
- No lateral water migration between the concrete structure and the membrane system
- High watertightness tested according to many different standards
- High flexibility and crack-bridging capabilities
- Easy to install with fully adhered joints
- Resistant to ageing
- Resistant to aggressive natural mediums in ground water and soil
- Cold-applied and pre-applied, prior to fixing of the reinforcement and casting of concrete
- Temporarily weathering and UV-resistant during the installation / construction work
- Can be combined with other approved Sika waterproofing systems including: Sikadur® Combiflex SG system, FPO-based joint sealing system

3 PRODUCTS & SYSTEM

3.1 SYSTEM COMPONENTS

The **SikaProof® A+** system consists of the following system components:

- a) **SikaProof® A+ 12** membrane
- b) **SikaProof® Tape A+** for sealing and bonding the joints and detailing (**always essential!**)
- c) **SikaProof® Sandwich Tape** for sealing and bonding the joints
- d) **Accessories** for external sealing of details after removal of formwork (as required)

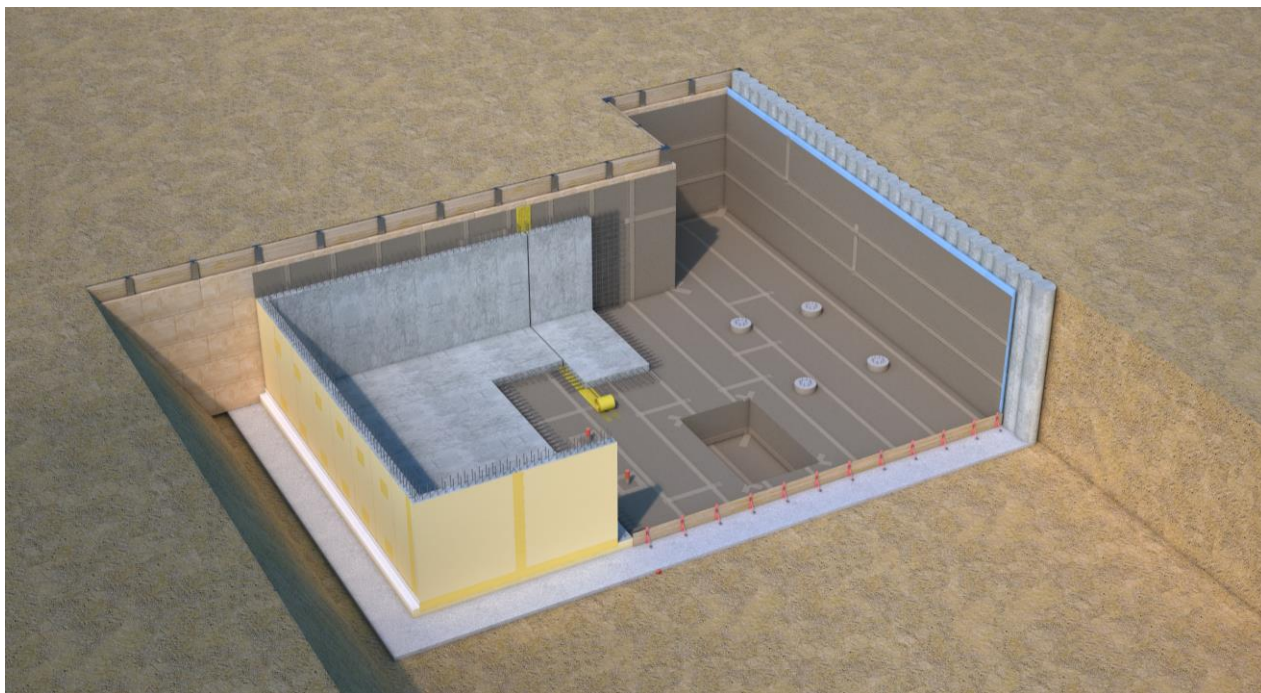
3.2 SYSTEM BUILD-UP

The **SikaProof® A+** system is a cold- and pre-applied waterproofing system that is designed for installation as a single-ply membrane, which is loosely laid onto the prepared substrate before the steel reinforcement is fixed and the structural concrete is poured.

In order to achieve a full and permanent bond to the concrete structure, it is essential that the fresh concrete is cast directly onto the installed membrane system, to achieve a full surface dual bond of the concrete with the hybrid bonding layer of the **SikaProof® A+** membrane.

In addition to the membrane system, Sika joint solutions are required to ensure watertightness on construction joints. Depending on the requirements of a project, different setup of joint solutions can be chosen. The Sika joint solutions range from swelling materials to waterbars and up to preventive installation for injections.

For further details on the Sika joint solutions, contact the *Sika Technical Services* for assistance on the selection and specification of the appropriate solution for a specific project.



4 ENVIRONMENT, HEALTH & SAFETY

4.1 PERSONAL PROTECTION EQUIPMENT (PPE)

For the installation of **SikaProof® A+ membrane** system, there is no special personal protection equipment (PPE) or safety equipment required. Except for compliance with any specific local regulations or requirements.

4.2 WASTE DISPOSAL

The generation of waste should be avoided or minimized wherever possible. For further information about specific products, please refer to the current *Material Safety Data Sheet*. Any waste from **SikaProof® A+** membrane sheets and the ancillary tapes produced from synthetic polymers, plus the packaging material (cardboard and liners) can all be recycled and/or disposed in accordance with local regulations.

5 APPLICATION & INSTALLATION

5.1 APPLICATION

SikaProof® A+ is a cold- and pre-applied waterproofing system that is installed as loose-laid, single-ply membranes onto prepared substrates before the steel reinforcement is fixed and the concrete is cast. **SikaProof® A+** membranes must be installed with the hybrid bonding layer upwards and positioned so that it will be in direct contact with the structural concrete when it is cast.

Membrane overlap joints and other detailing connections are sealed and bonded using **SikaProof® Tape A+** and **SikaProof® Sandwich Tape**, or hot air welding method.

5.2 SUBSTRATE PREPARATION

Substrates for installation of the **SikaProof® A+** membrane system need to have sufficient stability to avoid movement during the installation and subsequent construction works, including concreting. The requirements for substrates and their preparation include the following:

- A smooth, uniform and clean substrate surface is mandatory to prevent damages the membranes.
- The substrate has to be free from oil and grease, dust and any other loose particles.
- Large gaps and voids (> 12-15 mm) must be filled before the installation.
- The substrate can be damp or slightly wet, but ponding water has to be avoided.
- The substrate temperature has to be +5°C min. / +60°C max.

Suitable substrates:

- Concrete blinding with a smooth surface finish (an additional geotextile layer is recommended, $\geq 300 \text{ g/m}^2$ depending on the blinding)
- Formwork
- Rigid thermal insulation
- Plywood

If there is an uneven, rough surface or ponding water, then an additional protection or drainage layer is required, e.g. Sika Geotextile ($300 - 500 \text{ g/m}^2$).



5.3 GENERAL INSTALLATION PROCEDURE

First ensure the substrate fulfils the requirements described in *Section 5.2*.

1. Use **SikaProof® A+** membrane sheets for the perimeter edges and connections on the walls and upstands.
2. Form internal and external corners by folding the laid out **SikaProof® A+** membrane used for the perimeter edges.
3. Lay out the **SikaProof® A+** membrane sheets in the area (horizontal or vertical) using 2.0 m width rolls and bond the sheets together using the self-adhesive tape **SikaProof® Tape A+** or the double-sided tape **SikaProof® Sandwich Tape** or hot air welding method.
4. Form all of the necessary details, such as pipe penetrations, connections, sumps or lift pits, pile caps, expansion joints and any others that are required using the appropriate **SikaProof® A+** system accessories and other compatible Sika waterproofing solutions.
 - After the installation is completed inspect the installed **SikaProof® A+** membrane system to check all the overlap joints, connections and details, to ensure they are correctly installed.
 - After the reinforcement is fixed and before the concrete is poured a final inspection is recommended to check if there is any damage or other negative influences that could harm the full-surface bond formation (e.g. release liners from tapes) of the **SikaProof® A+** system to the structural concrete.
→ See *Section 7*
5. After removing the formwork all penetrations (such as tie-bars), any construction or expansion joints, plus any membrane damage have to be sealed using the appropriate **SikaProof® A+** accessories or complementary Sika waterproofing solution (e.g. **SikaProof® Patch-200 B** or the **Sikadur® Combiflex SG** system).
 - After removing the formwork the **SikaProof® A+** membrane system has to be inspected and repaired if any damage has occurred.
 - Before backfilling the structure, the **SikaProof® A+** membrane has to be appropriately protected.

5.4 DETAILING

Details are the most critical part in fully bonded waterproofing systems. The execution with precise workmanship is mandatory to ensure a watertight basement. Therefore, the application for detailing must be easy and secure. The **SikaProof® A+** system offers with its taping solution a highly reliable and easy way of executing proficient details.

5.5 SEALING OF JOINTS

Any designed joints or connections in or from the structure have to be sealed by complementary Sika® Waterproofing Joint Sealing solutions. Water can easily enter structures through all types of joints, gaps, voids, cracks or honeycombs, where the membrane is not fully bonded to the reinforced concrete. Therefore, all joints, gaps and voids have to be pre-sealed with the following solutions:

- **Sika® Hydrotite CJ-Type / SikaSwell® S-2 / Sika® Swellstop**
- **Sika® Waterbars / Waterstops**
- **SikaFuko®** injection hose system

Depending on the requirements of a project, different joint sealing solutions shall be applied.

6 PROTECTION AND CLEANING

In general, damages, soiling and any other impairments of the **SikaProof® A+** system have to be prevented at any time during and after the application. For this purpose, the protection, cleaning and repair have a substantial role for the successful application of the **SikaProof® A+** system.

6.1 PROTECTION

The installed **SikaProof® A+** membrane system has to be protected temporarily in order to:

- Prevent soiling from construction work and uncommon conditions on site (e.g. high level of mud or sand)

- Prevent any damages caused by the installation of steel reinforcement or other trades
- Protect the membrane for weathering (e.g. UV exposure)

Fully bonded waterproofing membranes have to be in direct contact with fresh concrete over the entire bonding area, to ensure a full surface bond and no lateral water migration. Hence, any other materials (e.g. membrane cut-off, release liners, protective films, protective mortar, etc.) will impair the bond formation with fresh concrete, if these materials are not completely removed prior to casting the concrete.

Consequently, **every membrane protection layer is temporary!**

During the concreting of any area close to the **SikaProof® A+** membrane, a protection layer is required to prevent any soiling on the membrane. Additionally, in cases, where the membrane is exposed longer than 90 days, the **SikaProof® A+** system has to be protected by a UV-resistant layer. Some options for protection layers are listed in the following.

- Plastic film/foil (UV resistant)
- Geotextile (UV resistant)
- Other equivalent measures

Important note:

If any materials such as reinforcement have to be stored temporarily on the membranes, always use some protection (e.g. plywood sheets) to prevent any damage to the membrane.

6.2 CLEANING

The **SikaProof® A+** membrane has to be cleaned if it is soiled or contaminated with any other materials to ensure a full bond with fresh concrete on the entire area of the membrane.

Remove all:

- Liners, membrane cut-offs and other waste materials
- Debris, dirt, dust, soil, sand, concrete / cement residues
- Anything that could create a separation layer or cause delamination

Cleaning procedure:

Clean the **SikaProof® A+** membrane surface with compressed air or controlled high-pressure water cleaner.

6.3 REPAIR

Any damage of the **SikaProof® A+** membrane system must be repaired to achieve a tight waterproofing system. This ensures that the **SikaProof® A+** system remains a durable, watertight and protective waterproofing system.

7 INSPECTION, QUALITY CONTROL

The **SikaProof® A+** system must only be installed by Sika trained and approved contractors. As a rule, a continuous workflow during the installation and a well-defined procedure is most appropriate to prevent any mistakes. Sika recommends that membrane installation contractors record all relevant details and facts in a written record / report with pictures, to ensure a successful application and provide a reference for the owner.

8 EQUIPMENT, TOOLS

SikaProof® A+ membrane system is an easy, fast and secure system with a simple application. For a correct and safe installation, the following tools are required. For more information on the installation, consult the application manual:



- Tape measure
- Marking pen
- Membrane cutter
- Scissors
- Small pressure roller
- Telescopic roller
- Metal straight edge for cutting
- Protective sheet for cutting on clean, dry cloth
- Hot air welding machine (for hot air welding application method where is applied)

9 LEGAL NOTE

According to individual countries The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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Method Statement
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