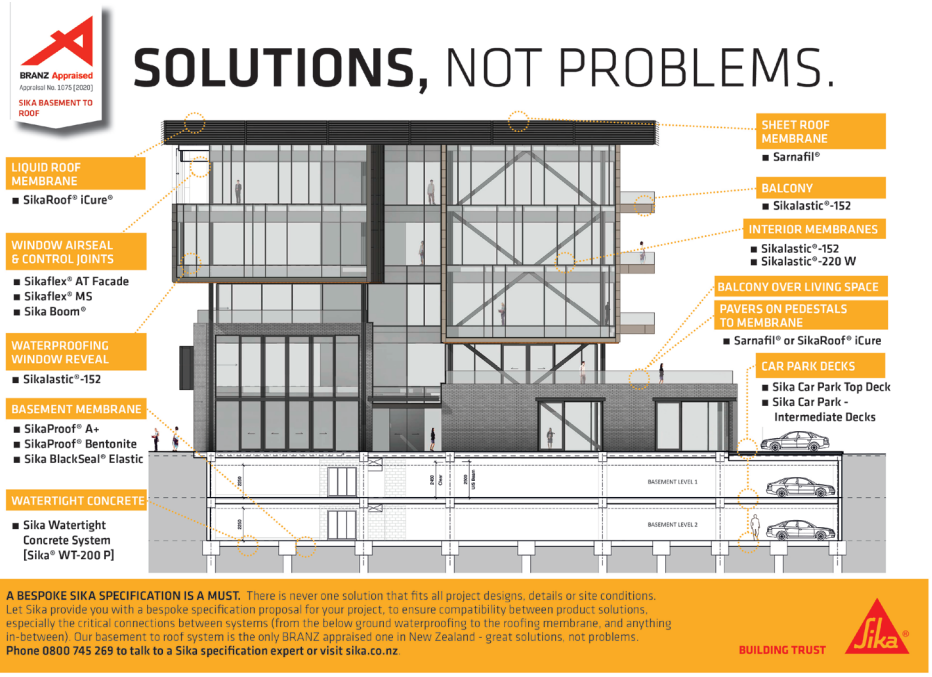
BRANZ Appraised
Appraisal No. 1075 [2020]

SIKA BASEMENT TO ROOF



Appraisal No. 1075 (2020)

Amended 14 June 2022

BRANZ Appraisals

Technical Assessments of products for building and construction.

BUILDING TRUST

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Product

1.1 Sika Basement to Roof is a waterproofing and water vapour system solution for buildings. It includes below ground waterproofing and damp-proofing, construction joint sealants, air seal, under tile deck waterproofing, roof and deck waterproofing, car park deck coating, and green roof waterproofing solutions. Sika Basement to Roof incorporates details of waterproofing connections for various Sika products.

1.2 Sika Basement to Roof includes the following products: Sika BlackSeal Elastic, SikaProof® A + 12, SikaProof® Bentonite, Sika Watertight Concrete, Sikaflex MS, Sikaflex® AT-Façade, Sika Boom®, Sarnafil Green Roof, SikaRoof® i-Cure, Sarnafil®, Sika Car Park Deck and Sikalastic-152. Refer to Table 1 for an overview of the products uses.

Table 1: Solution overview

		Below Ground Tanking Membrane	Below Ground DPM Membrane	Concrete Additive	Joint Sealant	Air Seal	Roof Waterproofing Membrane	Deck Waterproofing Membrane Pedestal Protective System	Deck Balcony Waterproofing Membrane Tile Finish	Trafficable Surface	Roof Garden
BRANZ Appraisal No.	Below Ground										
770 [2018]	Sika BlackSeal Elastic Damp Proof Membrane		✓								
852 [2019]	SikaProof® A + 12 Waterproofing Membrane	✓	✓								
612 [2017]	SikaProof® Bentonite System	✓	✓								
1150 [2021]	Sika Watertight Concrete [Sika WT-200P]			✓							
	Building Sealants and Air Seals										
311 [2019]	Sikaflex MS [Building Sealant]				✓						
613 [2019]	Sikaflex® AT-Façade Sealant				✓						
452 [2019]	Sika Boom® Air Seal					✓					
	Roof and Deck Membranes										
902 [2021]	Sarnafil Green Roof Waterproofing System						✓				✓
670 [2017]	SikaRoof® i-Cure Roof and Deck Membrane						✓	✓			
619 [2020]	Sarnafil® Roof and Deck Membrane Systems						✓	✓			
781 [2019]	Sika Car Park Deck						✓			✓	
811 [2019]	Sikalastic-152 Exterior Waterproofing Membrane								✓		

Scope

2.1 The Sika Basement to Roof system covers multiple components which collectively provide a comprehensive exterior weathertightness system solution for buildings. Where appropriate, the products are compatible with each other.

Below Ground

Scope

3.1 **Sika BlackSeal Elastic** - a water-based bitumen emulsion modified with acrylic latex polymer damp-proof membrane material. Sika BlackSeal Elastic is for use as a damp-proof membrane behind walls of in-situ, precast concrete or concrete masonry to prevent water vapour penetrating to the interior. Sika BlackSeal Elastic is covered by BRANZ Appraisal No. 770.

3.2 **SikaProof® A + 12** - a flexible polyolefin (FPO) sheet waterproofing membrane. SikaProof® A + 12 Waterproofing Membrane is for use as a pre-applied membrane for waterproofing and tanking structural concrete floors and walls to buildings subject to specific design with in-situ structural concrete floors and walls complying with NZS 3101. It is suitable subjected to hydrostatic pressure not exceeding the equivalent of a 15 m (1.5 bar) head of water. SikaProof® A + 12 is covered by BRANZ Appraisal No. 852.

3.3 **SikaProof® Bentonite** - natural sodium bentonite contained within a geosynthetic fabric together with other accessory products completing an underground waterproofing system. The system is used as a waterproofing or damp-proofing membrane below ground to protect basements and other underground structures against water penetration and/or water vapour transmission from the ground. The buildings must be subject to specific design. The waterproofing membrane is external to in-situ concrete, precast concrete and concrete masonry basement constructions. It is suitable subjected to hydrostatic pressure not exceeding the equivalent of a 20 m (2 bar) head of water. SikaProof® Bentonite is covered by BRANZ Appraisal No. 612.

3.4 **Sika Watertight Concrete (Sika WT-200P)** - is a permeability-reducing admixture used to assist with the waterproofing of concrete for structures of importance level 1-5 as defined by AS/NZS 1170. Buildings containing Sika Watertight Concrete (Sika WT-200P) must be subject to specific design. Sika Watertight Concrete (Sika WT-200P) must be supplied by a ready-mixed concrete supplier that is certified to the requirements of NZS 3104. Sika Watertight Concrete (Sika WT-200P) is covered by BRANZ Appraisal No. 1150.

Building Regulations

New Zealand Building Code (NZBC)

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

Building Sealants and Seals

Scope

4.1 **Sikaflex MS** - a gap-filling silicon-modified organic polymer-based sealant for building construction joints in both interior and exterior locations. Sikaflex MS is covered by BRANZ Appraisal No. 311.

4.2 **Sikaflex® AT-Façade** - a gap-filling silane terminated polyurethane polymer-based sealant for building construction joints for both interior and exterior locations. Sikaflex® AT-Façade is covered by BRANZ Appraisal No. 613.

4.3 **Sika Boom® Air Seal** - a self-expanding polyurethane foam air seal for around window and door penetrations and other cladding fenestrations. Sika Boom® Air Seal is covered by BRANZ Appraisal No. 452.

Building Regulations

New Zealand Building Code (NZBC)

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years, B2.3.1 (c) 5 years (interior use of sealant), and B2.3.2 (air seal).

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2.

Clause E3 INTERNAL MOISTURE: Performance E3.3.3, E3.3.1, E3.3.5 and E3.3.6.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

Roof and Deck Membranes

Scope

5.1 **Sarnafil Green Roof Waterproofing System** - a waterproofing and base system for green roofs. It incorporates ridged foam insulation, plasticised PVC waterproofing membranes, geotextile material, vapour barrier and accessories. It is for ballasted green roofs on buildings with substrates of suspended reinforced concrete. The building and each specific structure must be subject of specific structural engineering and weathertightness design. The design must take into account the construction of the substrate, movement and control joints, and include penetration and termination detailing. The design and installation of the drainage board, filter sheet and ballast is the responsibility of the green roof contractor. Sarnafil Green Roof Waterproofing System is covered by BRANZ Appraisal No. 902.

5.2 **SikaRoof® i-Cure** (liquid-applied aliphatic polyurethane based), and **Sarnafil® Roof and Deck Membrane Systems** (glass-fibre reinforced PVC sheets) for use as waterproofing membranes on buildings with substrates of plywood or suspended concrete slab. The buildings are to be within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area and situated in NZS 3604 Wind Zones up to, and including, Extra High. Buildings not designed in accordance with NZS 3604 must be subject to specific structural design. Buildings may also be subject to specific structural and weathertightness design and situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 6 kPa. The design and construction of the substrate and movement and control joints is specific to each building. SikaRoof® i-Cure is covered by BRANZ Appraisal No. 670. Sarnafil® is covered by BRANZ Appraisal No. 619.

5.3 **Sika Car Park Deck System** - a flexible polyurethane car park deck coating system which is a waterproofing, crack bridging and wearing surface for exposed and covered car parking buildings. The system is designed for car traffic and pedestrian access with a slip resistant walking surface. It is for application to suspended in-situ reinforced concrete slabs and concrete slab-on-ground not subject to hydrostatic pressure. The buildings must be subject to specific design with reinforced concrete complying with NZS 3101 and AS/NZS 1170. Sika Car Park Deck System is covered by BRANZ Appraisal No. 781.

5.4 **Sikalastic–152 Exterior Waterproofing Membrane** – a liquid-applied, two-part waterproofing membrane for use under trafficable floor finishes on decks and balconies of buildings with substrates of plywood or suspended concrete slab. The buildings are to be within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area and situated in NZS 3604 Wind Zones up to, and including, Extra High. Buildings may also be subject to specific structural and weathertightness design and situated in specific design wind pressures up to a maximum design differential ULS of 6 kPa. The design and construction of the substrate and movement and control joints is specific to each building. Sikalastic–152 is covered by BRANZ Appraisal No. 811.

Building Regulations

New Zealand Building Code (NZBC)

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2, B1.3.3 [a], [b], [e], [h] and [m] and B1.3.4 [only applies to Sarnafil Green Roof Waterproofing System].

Clause B2 DURABILITY: Performance B2.3.1 [b] 15 years and B2.3.2 [only applies to Sarnafil Green Roof and Sikalastic–152].

Clause D1 ACCESS ROUTES: Performance D1.3.3 [d] [only applies to Sika Car Park Deck System].

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Sika Basement to Roof range of Sika products. The Technical Literature must be read in conjunction with the relevant Sika product Appraisals. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of the Appraisal must be followed.

Design Information

General

7.1 The following gives an overview of each Sika Basement to Roof Sika product under the groupings of "Below Ground", "Concrete Additive", "Building Sealants and Seals" and "Roof and Deck Membranes".

7.2 Reference should be made to each Sika products' BRANZ Appraisal for further information on technical specification, design and installation.

Below Ground - Sika BlackSeal Elastic Damp Proof Membrane

Sika BlackSeal Elastic Damp Proof Membrane is a water-based bitumen emulsion modified with acrylic latex polymer damp-proof membrane material for basement and retaining walls of in-situ, precast concrete or concrete masonry to prevent water vapour penetrating to the interior.

Design Information

Substrate Design

8.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete and NZS 4230 or NZS 4229 for concrete masonry.

8.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane.

Control Joints

9.1 Where control or construction joints are formed in the substrate consult Sika [NZ] Ltd.

Backfilling and Drainage

10.1 The membrane must be protected against damage by the placement of a Sika BlackSeal protection sheet between the membrane and the granular fill.

10.2 Backfilling is a granular, free-draining material used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope at a minimum of 1:30 fall away from the wall.

10.3 A minimum 100 mm diameter subsoil perforated drainage pipe must be installed at the bottom of the wall. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.

External Moisture

11.1 Sika BlackSeal Elastic will prevent water vapour from penetrating to the interior face of basement retaining walls in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.

11.2 All penetrations and construction joints should be made waterproof before the application of the membrane which must be terminated at ground level and protected.

11.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint.

Installation

12.1 The membrane must be installed by trained installers, approved by Sika [NZ] Ltd.

Further information on Sika BlackSeal Elastic Damp Proof Membrane:

- BRANZ Appraisal No. 770.
- Refer to Sika Technical Literature - Sika BlackSeal Elastic Damp Proof Membrane.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Below Ground - SikaProof® A + 12 Waterproofing Membrane

SikaProof® A + 12 Waterproofing Membrane is a flexible polyolefin [FPO], pre-applied sheet waterproofing and tanking membrane for structural concrete floors and walls.

Design Information

General

13.1 SikaProof® A + 12 Waterproofing Membrane is pre-applied to surfaces before the fixing of reinforcing steel and before concreting. For floors, the membrane is applied to site concrete. For walls, the membrane is applied to either permanent formwork or removable double face formwork. The membrane is installed so that cast in-situ concrete or shotcrete is applied directly to it.

Structural Concrete Floors

14.1 The membrane must be laid on a minimum of 50 mm thickness of site concrete. The structural concrete slab placed over the membrane must be a minimum of 100 mm thick.

Structural Concrete Walls

15.1 The surface to which the membrane is applied must be sound and solid to eliminate movement during the pouring of concrete. Following the removal of double-faced formwork after concreting, special protection sheets must be used over the membrane to provide protection before backfilling takes place. In the case of permanent formwork, the formwork must protect the membrane throughout its serviceable life. Where this is not concrete the advice of Sika [NZ] Ltd should be sought.

Control Joints

16.1 Where control or construction joints are formed in the substrate, Sika [NZ] Ltd must be consulted for use of the membrane at these joints.

External Moisture

17.1 SikaProof® A + 12 Waterproofing Membrane will prevent water vapour from penetrating to the interior face of basement retaining walls and floors in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.

17.2 The membrane has self-adhesive joints and tapes that can be used to form sealed joints and to seal penetrations. The top edge of the membrane must be sealed to the wall as set out in the Technical Literature and protected.

Installation

18.1 The membrane must be installed by trained installers, approved by Sika [NZ] Ltd.

Further information on SikaProof® A + 12 Waterproofing Membrane:

- BRANZ Appraisal No. 852.
- Refer to Sika Technical Literature - SikaProof® A + 12 Waterproofing Membrane.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Below Ground - SikaProof® Bentonite System

SikaProof® Bentonite System is based on natural sodium bentonite contained within a geosynthetic fabric together with other accessory products completing an underground waterproofing or damp-proofing system. The waterproofing membrane is external to in-situ concrete, precast concrete and concrete masonry basement constructions.

Design Information

Substrate Design

19.1 Substrate design must be in accordance with the NZBC to relevant standards, such as, AS/NZS 1170 for design loadings, NZS 3101 for in-situ or precast concrete and NZS 4210, NZS 4229 and NZS 4230 for concrete masonry. All concrete block masonry walls will use open ended, depressed web units; i.e. 1516, 2016 or 2516 and be solid filled.

Control Joints

20.1 Where control or construction joints are formed in the substrate consult Sika [NZ] Ltd.

Backfilling and Drainage

21.1 The SikaProof® Bentonite membrane must be confined and protected against damage.

21.2 After placing the SikaProof® Bentonite System, backfilling should be undertaken as soon as possible. When being used as a DPM, a subsoil drainage system is included.

21.3 Backfill material must be free from debris and angular aggregate and must be compacted. After backfilling, the installation is completed with a flashing to protect the upper edge of the membrane. Exposed laps must be protected from the weather and termination bars must be sealed with an approved sealant.

Chemical Resistance

22.1 The gelling of sodium bentonite is adversely affected by the presence of electrolytes [particularly trivalent ions]. The SikaProof® Bentonite System therefore must not be used where ground water conductivity exceeds 2,500 $\mu S/cm^{-1}$ except on advice from Sika [NZ] Ltd.

Resistance to Loading

23.1 Providing the SikaProof® Bentonite membrane is adequately confined and not subject to point loading, an installation beneath a foundation slab will transmit dead and imposed loads safely without excessive deformation.

External Moisture

24.1 The SikaProof® Bentonite System will provide an effective barrier to liquid water and water vapour penetrating to the interior face of basement retaining wall and floors.

24.2 The membrane has a vapour flow resistance of not less than 90 MN s/g.

24.3 The system forms sealed joints and seals at penetrations.

Installation

25.1 The membrane must be installed by trained installers, approved by Sika [NZ] Ltd.

Further information on SikaProof® Bentonite System:

- BRANZ Appraisal No. 612.
- Refer to Sika Technical Literature - SikaProof® Bentonite Waterproofing Membrane.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Concrete Additive - Sika Watertight Concrete [Sika WT-200P]

Sika WT-200P is a combined water-resisting and crystalline waterproofing admixture which incorporates a high-range water-reducer [HRWR] and/or superplasticiser used to reduce the permeability of concrete.

Design Information

Use

26.1 Sika Watertight Concrete [Sika WT-200P] must be the subject of specific design when intended to provide resistance to water penetration and/or resistance to water vapour. The building structure design must also incorporate waterstops and other appropriate means to waterproof joints, penetrations and formwork ties. The critical aspects of Sika Watertight Concrete [Sika WT-200P] design are:

- minimum cement content
- water/cement ratio
- minimum concrete thickness
- methods of crack control; and,
- curing.

Design must be carried out in association with Sika [NZ] Ltd.

Water Penetration

27.1 Sika Watertight Concrete [Sika WT-200P] has greater resistance to water penetration than the equivalent plain concrete. Subject to proper design, Sika Watertight Concrete [Sika WT-200P] provides watertight concrete for slab-on-grade, basements, pools, tanks, tunnels, culverts, car park decks and the like.

Water Vapour Permeability

28.1 Sika Watertight Concrete [Sika WT-200P] has a lower permeability to water vapour than the equivalent plain concrete. Subject to proper design Sika Watertight Concrete [Sika WT-200P] can provide water vapour resistant concrete for slabs and walls in damp-proofing situations.

Additional

29.1 Sika WT-200P admixture may be used in concrete that does not meet the specific design criteria of this Appraisal. Sika Watertight Concrete [Sika WT-200P] may be used as an additional protection should the damp-proof membrane [DPM] fail.

Concrete

30.1 Sika Watertight Concrete [Sika WT-200P] must be supplied as ready-mixed concrete in accordance with NZS 3104, NZS 3109, the instructions of Sika [NZ] Ltd and this Appraisal. Sika WT-200P admixture is added to concrete mixes at a rate of 1% by weight of the cementitious binder.

30.2 Sika Watertight Concrete [Sika WT-200P] has a minimum binder content of 350 kg/m³ and a maximum water/binder ratio of 0.45. Depending on the specific mix design, the dosage of HRWR/superplasticiser has to be evaluated in order to achieve a S3/F4 consistence class [EN206-1]. Further details of suitable mixes can be obtained from Sika [NZ] Ltd.

30.3 Where the control of water vapour is required, it will be necessary to provide a mix with sufficiently low vapour permeability in combination with adequate section thickness.

30.4 Concrete mix design must be in accordance with this Appraisal and the Technical Literature. Once mixed, further materials must not be added to the fresh concrete.

Structure

31.1 Concrete buildings must be designed in accordance with NZS 3101, NZS 3106 or other suitable design standard.

31.2 The reinforcement of structures incorporating Sika Watertight Concrete [Sika WT-200P] for critical applications must be detailed to limit the maximum crack width in the concrete to 0.3-0.4 mm.

31.3 The mechanical properties of concrete incorporating Sika WT-200P will not be adversely affected by its inclusion. Due to the set-retarding nature of Sika WT-200P, early age concrete strengths may be slightly lower than the equivalent plain concrete, but final strengths will be higher

External moisture

32.1 Concrete containing Sika WT-200P admixture provides watertight concrete for structures and can provide water vapour resistance for concrete slabs and walls when designed and used in accordance with the instructions of Sika [NZ] Ltd and this Appraisal.

32.2 The building structure design must incorporate details for waterstops and waterproofing of joints, junctions, penetrations and the like. These details have not been assessed and are outside the scope of this Appraisal.

Installation

33.1 The membrane must be installed by trained installers, approved by Sika [NZ] Ltd.

Further information on Sika Watertight Concrete [Sika WT-200P]:

- BRANZ Appraisal No. 1150.
- Refer to Sika Technical Literature - Sika Watertight Concrete [Sika WT-200P].
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Building Sealants and Seals - Sikaflex MS [Building Sealant] and Sikaflex® AT-Façade Sealant

Sikaflex MS is a gap-filling silicon-modified organic polymer-based sealant and Sikaflex® AT-Façade is a gap-filling silane terminated polyurethane polymer-based sealant for building construction joints in both interior and exterior locations.

Design Information

General

34.1 Sikaflex MS and Sikaflex® AT-Façade are designed to be used as a gap-filling sealant in building construction joints for the exclusion of moisture. They may be used in both interior and exterior locations, and along with their high elasticity and good adhesion, are suitable for use with a wide range of substrates.

34.2 Sikaflex MS suitable substrates are:

- timber [unpainted and unstained] – treated or untreated softwoods and hardwoods, plywood, hardboard, treated or untreated particleboard; or,
- fibre cement; or,
- plastics – polyester, acrylic, unplasticised or plasticised PVC; or,
- metals – stainless steel, mild steel, galvanised steel, enamel coated steel, powder coated [polyester or epoxy] aluminium, anodised aluminium, mill finished aluminium, copper, brass, zinc; or,
- concrete and masonry – standard concrete, glass fibre reinforced concrete, concrete and clay blocks, marble, granite, or natural stone tiles; or,
- glass and ceramics – glazing, tiles; or,
- butyl rubber products.

34.3 Sikaflex® AT-Façade suitable substrates are:

- timber [unpainted and unstained] - particleboard, fibreboard, untreated pine, boric treated pine, tanalised pine, New Zealand natives or untreated Cedar or Douglas Fir; or,
- plastics - PVC, melamine sheet, fibreglass [gelcoat side only], polyurethane coatings, epoxy and polyester coatings or epoxy mortars; or,
- mineral - concrete, mortar, plaster, blockwork, brickwork, fibre cement sheeting and weatherboards, unglazed tiles, earthenware [clay], glazed ceramic tiles, stoneware [e.g. Hinuera stone and Oamaru stone], marble or granite; or,
- metal - stainless steel, copper, brass, zinc anneal, aluminium-zinc, zinc bronze, lead, tin, galvanised steel, mild steel, cast iron or aluminium [milled, anodised or powder coated]; or,
- stoved enamel.

34.4 Once cured, the sealant can be painted over with a water-based paint system.

34.5 The design of weathertight joints and detailing for all applications must be in accordance with good design principles. In most situations, joint design should see the sealant used as a first line of defence, in conjunction with flashings [second line of defence] which drain to the building exterior. Other good design principles include the optimum width to depth ratio, correct sealant profile, and use of a bond breaker system. Refer to BRANZ Bulletin No. 584 and 601 for further information.

Sikaflex MS

35.1 Sika [NZ] Ltd recommends all moving joints should be designed to an optimum width to depth ratio of 2:1. This ratio is subject to the following overriding minimum sealant depths:

35.2 5 mm minimum bonding depth against metals, glass and other non-porous surfaces, providing that joint faces are in good condition.

35.3 8 mm minimum bonding depth against masonry or other porous surfaces, or any non-porous surfaces where joint faces are in poor condition.

35.4 Shear joints shall be a minimum joint width to depth ratio of 1:2 up to a maximum of 1:1.

Sikaflex® AT-Façade

36.1 Sika [NZ] Ltd recommends the following joint width to depth ratios for Sikaflex® AT-Façade:

- Joints up to 10 mm wide: 1:1.
- Joints between 10 mm and 20 mm wide: width x 10 mm deep.
- Joints over 20 mm wide: 2:1.

Sikaflex MS and Sikaflex® AT-Façade

37.1 A bond breaker is required in all joints, and with shallow joints the bond breaker may be a self-adhesive polyethylene tape. In deeper joints, a polyethylene backer rod must be used to act as the bond breaker, and at the same time set the joint depth and support the sealant.

37.2 The performance of Sikaflex MS and Sikaflex® AT-Façade makes them a suitable sealant for weather sealing exterior wall constructions. It is important, however, that the sealant/bond breaker rain screens are backed by a waterstop or an air seal so that a free-draining enclosed joint cavity is formed. This is particularly important for walls that extend over one storey in height. In weather sealing applications, the bottom of vertical joints must be open to allow water drainage. Horizontal joints between thin sheet materials, e.g. plywood or fibre cement, should be weather sealed with Z flashings and not a sealant. Horizontal joints in other materials must be rebated and the seal formed at or near the top of the rebate. All joints must be designed to drain to the exterior of the building.

37.3 Good adhesion can be gained on most of the specified substrates without the use of primers. However, on some surfaces, adhesion may be improved by using a primer. For optimum adhesion and in areas of critical, high performance applications such as multi-storey building work, high stress joints or extreme weather exposure, the use of substrate primers and cleaners is required. Sika [NZ] Ltd must be consulted where doubt arises. Surface priming or activation must be undertaken in accordance with the instructions of Sika [NZ] Ltd.

37.4 Sika [NZ] Ltd must be consulted when proposing the sealing of material not specifically stated.

Fire

38.1 For fire requirements, refer to NZBC Acceptable Solutions C/AS1 and C/AS2.

External Moisture

39.1 Sikaflex MS is an equivalent sealant to those specified in NZBC Acceptable Solution E2/AS1. Sikaflex® AT-Façade complies with Type F Class 25LM of ISO 11600.

39.2 Sikaflex MS and Sikaflex® AT-Façade may be used with a range of exterior construction methods and materials to meet the requirements of NZBC Clause E2. It can be used, for example, in the control joints of masonry veneer, to weatherproof the joints between fibre cement weatherboards, to seal around pipes and penetrations, to weatherproof joints between flashings and claddings, or act as an air seal around window, door and other penetrations.

39.3 The designer, builder or contractor is responsible to ensure sound joint design principles are followed and must ensure that second line of defence flashings drain to the building exterior

Internal Moisture

40.1 Sikaflex MS and Sikaflex® AT-Façade can be used to form an impervious joint between sheet lining materials and also a joint between fixtures and lining materials in accordance with NZBC Acceptable Solution E3/AS1, Paragraph 3.2.2 to prevent water splash penetrating behind linings or into concealed spaces.

Installation

41.1 Sikaflex MS and Sikaflex® AT Façade may be used as a sealant to seal the perimeter of sound insulation elements.

Further information on Sikaflex MS and Sikaflex® AT Façade:

- BRANZ Appraisal No. 311.
- BRANZ Appraisal No. 613.
- Refer to Sika Technical Literature - Sikaflex MS.
- Refer to Sika Technical Literature - Sikaflex® AT Façade.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Building Sealants and Seals - Sika Boom® Air Seal

Sika Boom® Air Seal is a self-expanding polyurethane foam air seal for around window and door penetrations and other cladding fenestrations.

Design Information

General

42.1 The use of air seals is critical to assist the weathertightness performance of window and door joinery installations at the trim cavities, and other wall penetrations by preventing air leakage at the interior face. Air seals also assist energy efficiency by reducing heat loss through these cavities.

42.2 Sika Boom® is designed to be used as a gap-filling air seal around window and door trim cavities and wall penetrations, e.g. plumbing pipes. It is designed for use in interior locations, and along with its good gap-filling capacities it has excellent adhesion to most materials. A PEF backing rod must be used.

External Moisture

43.1 Sika Boom® is a self-expanding polyurethane foam complying with the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6.

43.2 Buildings outside the scope of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 are the subject of specific weathertightness design.

Installation

Further information on Sika Boom® Air Seal:

- BRANZ Appraisal No. 452.
- Refer to Sika Technical Literature - Sika Boom® Air Seal.
- Sika (NZ) Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Roof and Deck Membranes - Sarnafil Green Roof Waterproofing System

Sarnafil Green Roof Waterproofing system is a waterproofing and base system for green roofs. It incorporates ridged foam insulation, plasticised PVC waterproofing membranes, geotextile material, vapour barrier and accessories.

Design Information

General

44.1 The Sarnafil Green Roof Waterproofing System is a means for building green roofs which are defined as roofs onto which vegetation is intentionally grown. It is for installation on concrete roof structures and comprises of a vapour layer, insulation material, separation layer, waterproofing membrane, drainage material, geotextile fabric and growing media. The waterproofing system is loose laid with heat-welded joint on the flat surfaces with mechanical fastening around the perimeter. The upstands are fully adhered and then heat welded over the perimeter fastenings. The system is impervious to water and will resist penetration by roots.

Structure

45.1 The structural concrete roofs must be designed to transmit the dead, imposed and wind loads experienced in service and are calculated in accordance with AS/NZS 1170. The ballast [growing medium] requirements should be calculated in accordance with Sika [NZ] Ltd guidance. The membrane must always be ballasted to prevent wind uplift with a minimum ballast weight of 80 kg/m² [dry]. The required ballast weight will vary depending on the wind exposure. Growing medium used in green roofs should be of a type that will not be removed or become localised by wind scour experienced on-site. The type of plants used in a green roof can significantly affect the expected wind loads experienced in service.

45.2 Dead loads for green roofs can increase if the drains become partially or completely blocked, causing waterlogging of the drainage layer.

External Moisture

46.1 The Sarnafil Green Roof Waterproofing System including joints when completely sealed, will adequately resist the passage of moisture into the building and enable the roof to meet the requirements of NZBC Performance Clause E2.3.2. Roof falls must be built into the concrete substrate. The minimum fall to roofs is 1:30 and gutters is 1:100. All falls must slope to an outlet. Allowance for settlement of the substrate must be made in the design of the roof to ensure falls are maintained and no ponding of water can occur. Inadequate falls will allow moisture to collect.

46.2 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

46.3 An overflow must be provided where the roof does not drain to an external gutter.

46.4 Penetrations and upstands must be raised above the level of any possible flooding caused by the blockage of roof drainage.

Internal Moisture

47.1 In Climate Zone 3, as defined by the definitions, NZBC H1/VM1 and AS1, a Sarnavap vapour control membrane is required and is installed over the structural deck prior to installing the insulation.

47.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes.

Installation

48.1 The Sarnafil Green Roof Waterproofing System must be installed by Sika [NZ] Ltd approved applicators.

Further information on Sarnafil Green Roof Waterproofing System:

- BRANZ Appraisal No. 902.
- Refer to Sika Technical Literature - Sarnafil Green Roof Waterproofing System.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Roof and Deck Membranes - SikaRoof® i-Cure Roof and Deck Membrane and Sarnafil® Roof and Deck Membrane Systems

SikaRoof® i-Cure is a aliphatic polyurethane-based liquid-applied membrane and Sarnafil® Roof and Deck Membrane Systems are glass fibre reinforced PVC sheet membranes for waterproofing roofs and decks.

Design Information

General

49.1 SikaRoof® i-Cure Roof and Deck Membrane and Sarnafil® Roof and Deck Membrane Systems are for use on roofs and decks requiring an impervious waterproof membrane.

49.2 Deck membranes must be protected by a pedestrian protection system using Sika [NZ] Ltd approved pedestal supports. On roofs where regular foot traffic is envisaged, i.e. maintenance of equipment, special protection precautions must be taken.

49.2 Sarnafil® may be used in ballasted systems [concrete roofs only] with mechanical fixing at the upstands and edges.

Structure

50.1 All membranes are suitable for use in areas subject to maximum wind pressures of 6 kPa design differential ULS subject to the limitations of the substrate.

50.2 Sarnafil® ballasted system must be the subject of specific engineering design. The precise ballast requirements must be calculated using AS/NZS 1170 and account taken of the additional dead load of the ballast roof. Dead loads on ballasted roofs can dramatically increase if drains become partially or completely clogged, therefore gravel guards must be used on all rainwater outlets.

Substrates

51.1 Plywood must be treated to H3 [CCA treated]. Timber framing must comply with NZS 3604 or where specific engineering design is used, it must comply with the serviceability criteria of AS/NZS 1170.

51.2 Concrete substrates must be to a specific engineering design meeting the requirements of NZS 3101.

External Moisture

52.1 Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. The Technical Literature aligns with details in NZBC Acceptable Solution E2/AS1 for buildings within that scope. The design of details not covered by the Technical Literature is subject to specific weathertightness design.

52.2 The membranes are impervious to water and will give a weathertight roof or deck. They are also impermeable, therefore a means of dissipating construction moisture must be provided in the building design and construction.

52.3 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membrane. The minimum fall to roofs is 1:30, decks 1:40 and gutters are 1:100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. There must be no steps within a deck level, no integral roof gardens and no downpipe direct discharge to a deck.

52.4 Allowance for deflection and settlement of the substrate must be made in the design of the roof or deck to ensure falls are maintained and no ponding of water can occur.

52.5 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

52.6 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof or deck drainage.

Installation

53.1 SikaRoof® i-Cure Roof and Deck Membrane and Sarnafil® Roof and Deck Membrane Systems must be installed by trained applicators, approved by Sika [NZ] Ltd.

Further information on SikaRoof® i-Cure Roof and Deck Membrane and Sarnafil® Roof and Deck Membrane Systems:

- BRANZ Appraisal No. 670.
- BRANZ Appraisal No. 619.
- Refer to Sika Technical Literature - SikaRoof® i-Cure Roof and Deck Membrane.
- Refer to Sika Technical Literature - Sarnafil® Roof and Deck Membrane Systems.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Roof and Deck Membranes - Sika Car Park Deck System

Sika Car Park Deck System is a flexible polyurethane waterproofing membrane and trafficable surface for car parking buildings.

Design Information

General

54.1 Sika Car Park Deck System is for use on car parking decks where an impervious, trafficable waterproof membrane is required to prevent damage to building elements and adjoining areas.

54.2 The system is designed for car traffic, but regular checks must be made to ensure no physical damage has occurred i.e. chemical attack, tyre burnout marks etc.

54.3 Sika Car Park Deck System has been tested and has a slip resistance of greater than 0.6 μ which exceeds the requirement of a minimum slip resistance when wet of 0.4 μ as specified in NZBC D1/AS1, Paragraph 2.1.1.

External Moisture

55.1 Car parking decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. Sika Car Park Deck System is impervious to water and will give a weathertight car deck.

55.2 The minimum fall to car parking decks must be specified by the designer and must be built into the substrate. Allowance for deflection and settlement of the substrate must be made in the design of the car deck to ensure falls are maintained and no ponding of water can occur.

55.3 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the car parking deck does not drain to an external gutter or spouting.

55.4 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by blockage of car parking deck drainage.

55.5 The design of details not covered by the Technical Literature is subject to specific weathertightness design.

Installation

56.1 The Sika Car Deck System must be installed in accordance with the Sika [NZ] Ltd Technical Literature and by Sika [NZ] Ltd trained installers.

Further information on Sika Car Park Deck System:

- BRANZ Appraisal No. 781.
- Refer to Sika Technical Literature - Sika Car Park Deck System.
- Sika [NZ] Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Roof and Deck Membranes - Sikalastic-152 Exterior Waterproofing Membrane

Sikalastic-152 Exterior Waterproofing Membrane is a two-part liquid applied waterproofing membrane for use under trafficable floor finishes on external decks and balconies.

Design Information

General

57.1 Sikalastic–152 Waterproofing Membrane is for use on tiled decks and balconies where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.

57.2 The membrane must be protected from physical damage by trafficable floor finishes but may be exposed in non-trafficable areas where physical damage is unlikely.

57.3 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to the BRANZ Good Practice Guide: Membrane Roofing.

57.4 Movement and control joints may be required depending on the shape and size of the deck, and the finish specified. Design guidelines for control joints for tiles can be found in the BRANZ Good Practice Guide: Tiling.

57.5 Timber framing supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span, and that all substrate sheet edges are fully supported. Allowance for deflection and settlement must be made at the design stage to ensure falls are maintained and no ponding of water can occur.

External Moisture

58.1 Decks and balconies must be designed and constructed to shed precipitated moisture and also take account of snowfalls in snow prone areas. Sikalastic–152 Waterproofing Membrane is impervious to water and will give a weathertight deck or balcony.

58.2 The minimum fall to decks and balconies is 1:40 and gutters are 1:60, and all falls must slope to an outlet and must be built into the substrate and not created with mortar screeds applied over the membrane. There must be no steps within the deck level, no integral roof gardens and no down pipes discharging directly onto the deck.

58.3 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the deck or balcony does not drain to an external gutter or spouting.

58.4 Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of deck and balcony drainage.

58.5 The design of details not covered by the Technical Literature is subject to specific weathertightness design.

Installation

59.1 Sikalastic-152 Exterior Waterproofing Membrane must be installed by trained installers, approved by Sika (NZ) Ltd.

Further information on Sikalastic-152 Exterior Waterproofing Membrane:

- BRANZ Appraisal No. 811.
- Refer to Sika Technical Literature - Sikalastic-152 Exterior Waterproofing Membrane.
- Sika (NZ) Ltd.
- Basement to Roof Standard Details and Connection Details, Version 1018.

Basis of Appraisal

60.1 This Appraisal is an overview summary of Sika Basement to Roof products as specified under Scope. The basis of this Appraisal is the relevant Appraisal also given under Scope.

Tests

61.1 The Basis of Appraisal covering each Sika Basement to Roof product is covered by the relevant Appraisal. The methods and results have been reviewed by BRANZ and used as supporting evidence.

Other Investigations

62.1 BRANZ technical experts provide supporting opinions for durability and other technical aspects. BRANZ also reviews Technical Literature, reviews quality certifications, carries out audits and site inspections.

Sources of Information

- Appraisal No. 311 Sikaflex MS [Building Sealant].
- Appraisal No. 452 Sika Boom® Air Seal.
- Appraisal No. 612 SikaProof® Bentonite System - Below Ground Waterproofing.
- Appraisal No. 613 Sikaflex® AT-Façade Sealant.
- Appraisal No. 619 Sarnafil® Roof and Deck Membrane Systems.
- Appraisal No. 670 SikaRoof® i-Cure Roof and Deck Membrane.
- Appraisal No. 770 Sika BlackSeal Elastic Damp Proof Membrane.
- Appraisal No. 781 Sika Car Park Deck System.
- Appraisal No. 811 Sikalastic-152 Exterior Waterproofing Membrane.
- Appraisal No. 852 SikaProof® A + 12 Waterproofing Membrane.
- Appraisal No. 902 Sarnafil Green Roof Waterproofing System.
- Appraisal No. 1150 Sika Watertight Concrete [Sika WT-200P].
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 21 February 2022.

This Appraisal has been amended to update Appraisal No. 852 title to SikaProof® A + 12 Waterproofing Membrane.

Amendment No. 2, dated 14 June 2022.

This Appraisal has been amended to update SikaRoof MTC to SikaRoof® i-Cure, to remove Sika Index Roof and Deck Membranes and to add Sika Watertight Concrete [Sika WT-200P].

BRANZ

In the opinion of BRANZ, Sika Basement to Roof is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Sika (NZ) Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Sika (NZ) Ltd :
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Sika (NZ) Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Sika (NZ) Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
14 June 2022