


# Ground Terraces

## Part A: Technical Design Guide



Enjoy problem-free ground terraces with Gutjahr System Technology from BAL – market leaders in full tiling solutions.

This technical guidance includes full system build-ups, product information and technical advice to ensure you specify the right system for your project.

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## Full system solutions for long-term, problem-free installations

Gutjahr System Technology provides innovative solutions for problem-free construction – a vision shared by BAL.

For more than 25 years, Gutjahr have developed practical solutions to guarantee simple installation and long-lasting trouble-free coverings even on problem substrates throughout Europe.

Gutjahr are the inventor of the passive capillary surface drainage system. Complete with edge profiles, drain grates and guttering, the patented system is simple to install and protects coverings of ceramic and porcelain tiles, natural stone tiles and pavers from even the harshest of conditions. It has even become standard in Germany since 2002, being incorporated into the standards for external floor coverings of the German Construction Industry Association (ZDB).

BAL are proud to incorporate sister company Gutjahr's product range exclusively within the BAL portfolio as a further development of a full system service from the UK market-leader for tiling.

Gutjahr System Technology from BAL offers designers and contractors innovative drainage, ventilating and uncoupling systems for cantilevered balconies, roof terraces, and ground-floor terraces.

As well as protecting against frost damage, staining and water damage, the system can also reduce the weight loading on a balcony by utilising thinner assemblies, lighter materials and limiting water absorption and retention, which in turn reduces water loading.

With a collective 80 years of commercial tiling experience across the BAL and Gutjahr range, the BAL portfolio ensures a guaranteed, full-system solution for inside-outside installations from the UK market-leader for tiling.

The technical drawings and recommendations in this guide have been developed in accordance with the DIN requirements and British Standards, and in accordance with practical and theoretical knowledge of the BAL Technical Advisory and Specification Service. Please observe the relevant BAL Technical Data Sheets.



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## Specification support you can rely on

In BAL you can call on a company in its fifth decade of specification support. We understand the challenges and pressures faced by specifiers and architects when designing tiling projects, which is why we provide a full range of support services to solve your specification queries including:

- Free M40/M20 specification writing service
- RIBA-accredited CPDs
- Bespoke system training and masterclasses
- BIM objects in NBS National BIM Library
- Fast Track Project enquiry and market-leading Technical Advisory Service
- Sample testing service
- Free online specification builder Powerspec – [www.powerspeconline.com](http://www.powerspeconline.com)
- National Specification Support Team for advice or on-site consultancy
- Innovative range of products for full tiling systems
- Leading product guarantee

Contact our specification support team for straight-forward advice and specification support, whatever stage you're at, or get technical assistance from our dedicated Technical Advisory and Specification Service (TAS):

**0845 600 1222**

**[info@bal-adhesives.com](mailto:info@bal-adhesives.com)**

## On-site support

As further assistance at all stages of the project BAL's specialist Product Support Technicians provide UK-wide coverage and are on hand to give practical, experience-based consultations and support on-site.

## On the web

Log-in today for:

- Products details, download literature including Technical Data Sheets, Materials Safety Data Sheets
- Free project specification
- CPDs
- Case studies and gallery of images
- Gutjahr demos
- FAQs and technical advice

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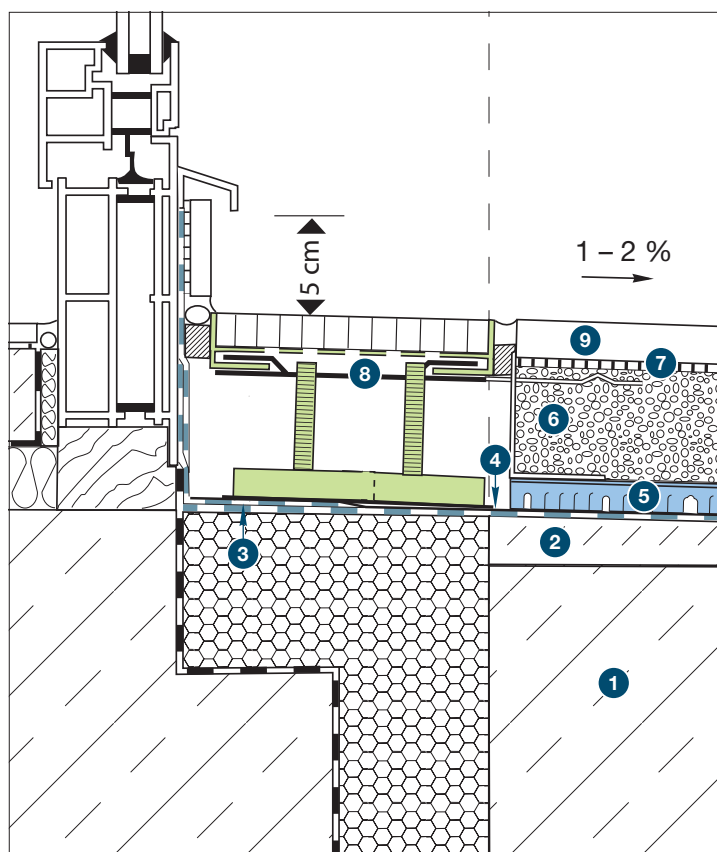
For full installation guidance see the accompanying document "Ground Terraces. Part B: Installation Guide."

## External living in all weathers

With so many usable areas externally where tiles and stone are installed, there is a necessity to protect and ensure longevity so that they continue to promote the benefits of their use. These important extensions of our usable living areas should be well constructed, functional and remain as usable as the internal spaces that we occupy frequently. To have these available to us all year round requires that the tiled coverings used are durable, hard wearing and all weather.



## Ground Terrace 1 – Standard Drainage Screed Assembly



The standard drainage screed assembly with thick screed is suitable for most tile types and provides variable height build-up from 68mm for ground terraces. Excellent for use in highly exposed or larger areas, the assembly is typically more cost effective.

Utilising the AquaDrain® EK drainage mat and associated profiles, the assembly provides dynamic drainage through to a water management system out and away from the assembly. Also prevents trapped water from rising back through and facilitating efflorescence and staining of natural materials such as stone.

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### 1 Ground bearing reinforced Concrete Slab with Damp Proof Membrane installed

The concrete should be constructed as per the recommendations in BS 8204 and BS 5385. Should be structurally sound and capable of carrying all expected static and dynamic loads i.e. strong enough for its intended purpose. A minimum of 6 weeks drying time should be afforded to new concrete prior to covering. Minimum Thickness = 100mm.

A DPM should be incorporated in the assembly.

### 2 Bonded Screed

Cement:Sand Screed bonded to the slab. The slope should be at between 1 – 2 %. Screed should achieve SR1 finish. Should be allowed to fully cure, dry and be suitably protected.

Please note: A bonded screed should never be less than 25mm thick at any point according to BS 8204-1.

### 3 BAL Tank-it

Should be applied to protect the screed from water ingress – this should not be penetrated by fixings etc.

Balustrades should be fixed to the side or underneath and should never penetrate the primary waterproofing layer.

### 4 PE Foil

Normally recycled polyethylene (PE) is used to separate the assembly and protect the primary or roof waterproofing.

### 5 AquaDrain® EK

AquaDrain® EK sheet is a high performance, capillary drainage mat which provides a complete support, drainage and protection system for external areas.

Available in 8mm and 16mm membranes, the matting guarantees the fastest drying out of the covering and drainage screed, preventing the discolouration of moisture-sensitive coverings.

### 6 Drainage Mortar and AquaDrain® Lochwinkel 70x50mm (plastic)

Drainage mortar with a 3-6mm aggregate. Overall thickness of screed is 50mm (minimum).

AquaDrain® Lochwinkel is an L shaped screed angle to be used as a screed edge support. This prevents screed from falling back and blocking the channels or adversely affecting the drainage.

### 7 BAL Stone & Tile PTB\*

Frost and water resistant tile adhesive for use with tiles.

\*It may be suitable to use other BAL adhesives dependent upon the selected tile. The BAL specification team can advise.

### 8 AquaDrain® FLEX

AquaDrain® FLEX drain grates guide surface water directly into the attached drainage. This helps solve connection problems even for low door/wall connections.

The possibility of thermal bridging (cold bridges) exists where a construction connects to a building and extends outside, which can cause the temperature to be lost from a building via an uninsulated point. It is therefore an important consideration/element in the assembly when designing this particular edge detail.

In areas exposed to a marine environment consideration should be given to using stainless steel of the correct grade – consult BAL TAS regarding suitability.

### 9 Tile/Stone/Slab

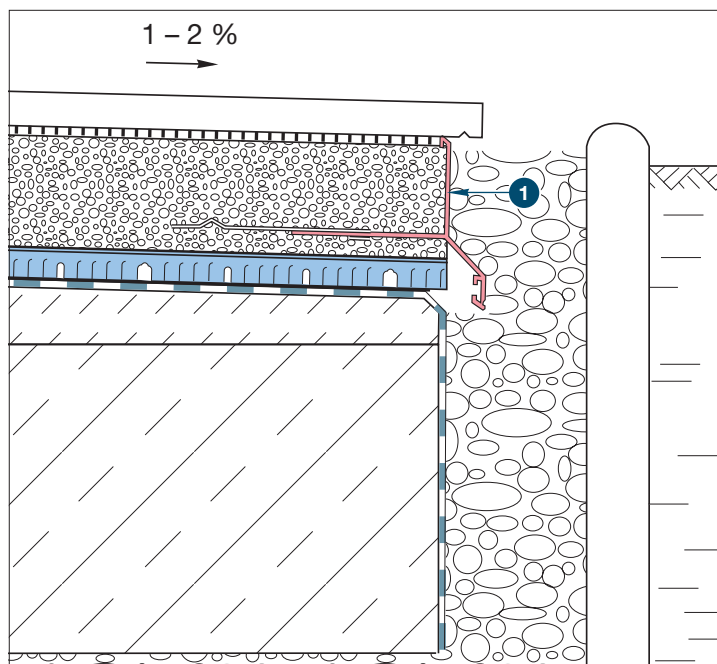
These should be confirmed as frost and water resistant prior to fixing. Porous tiles are not recommended for use externally. Tiles onto a bonded installation should be solidly bedded with tile adhesive.

**Important Note:** Resin/Quartz agglomerate tiles are not recommended for use externally. Tiles with a mesh backing should not be used in external locations.

### BAL Micromax2

Frost and water resistant grout for use with tiles.

## Terrace Edge Detail 1 – Overhanging Tile Edge



### 1 ProFin® V55 (55mm)

The V55 is a single profile – screed edge cover which accommodates the screed and the AquaDrain® membrane. This is inserted into the screed. Can be used in conjunction with a mortar anchor.

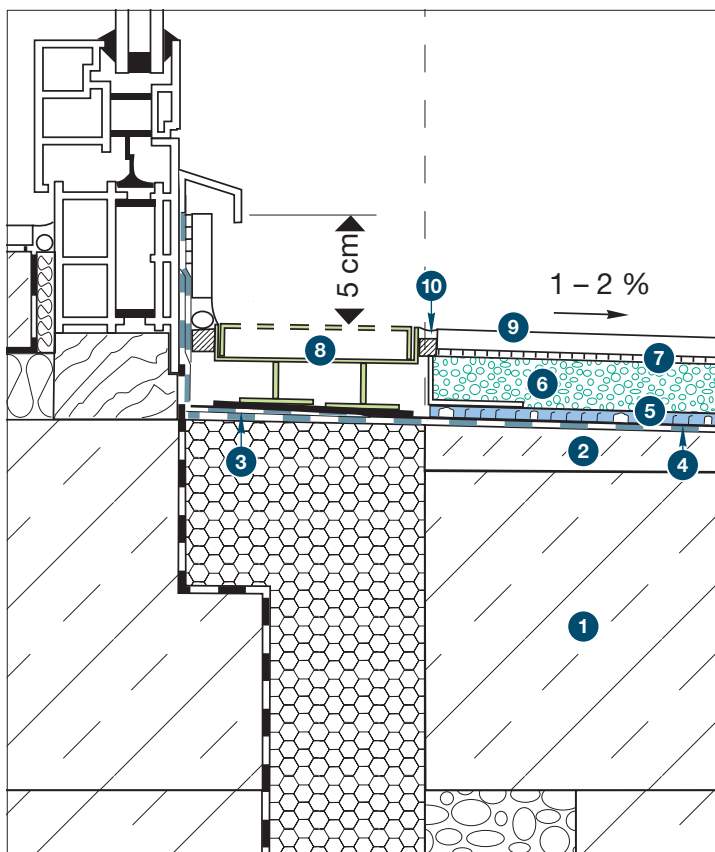
## Movement Joints

### MorTec® SOFT

MorTec® SOFT is a neutral curing sealant designed to cover the perimeters.

- Placed at perimeters and upstands where tile meets a restraining surface. Especially abutments to different materials i.e. metallic elements/drains.
- Intermediate movement joints placed at 3m intervals or less as per **BS 5385 Part 3**.
- Neutral Curing Sealants for natural stone products.

## Ground Terrace 2 – Thin, Lighter Weight Drainage Screed Assembly



The thin, lightweight assembly with AquaDrain® EK drainage sheets and MorTec® DRAIN epoxy drainage mortar can be used for various tile types and thicknesses. Very strong and lightweight, the build-up can be achieved from only 43mm for low height constructions.

Rainproof after only three hours (approximately), the MorTec® DRAIN screed saves time and prevents mixing errors – with no weighing of individual screed components required. Thanks to the unique capillary-breaking element of the matting, surface water is quickly drained away from the tiles avoiding discolouration of the surface, efflorescence or freeze/thaw damage.

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### 1 Ground bearing reinforced Concrete Slab with Damp Proof Membrane installed

The concrete should be constructed as per the recommendations in BS 8204 and BS 5385. Should be structurally sound and capable of carrying all expected static and dynamic loads i.e. strong enough for its intended purpose. A minimum of 6 weeks drying time should be afforded new concrete prior to covering. Minimum Thickness = 100mm. A DPM should be incorporated in the assembly.

### 2 Bonded Screed

Cement:Sand Screed bonded to the slab. The slope should be at between 1 – 2 %. Screed should achieve SR1 finish. Should be allowed to fully cure, dry and be suitably protected.

Please note: A bonded screed should never be less than 25mm thick at any point according to BS 8204-1

### 3 BAL Tank-it

Should be applied to protect the screed from water ingress – this should not be penetrated by fixings etc. Balustrades should be fixed to the side or underneath and should never penetrate the primary waterproofing layer.

### 4 PE Foil

Normally recycled polyethylene (PE) is used to separate the assembly and protect the primary or roof waterproofing.

### 5 AquaDrain® EK 8mm sheets

AquaDrain® EK sheet is a high-performance, capillary drainage system for covering structures, used with MorTec® drainage screeds in outdoor areas. The assembly provides dynamic drainage through to a water management system out and away from the assembly. Also prevents trapped water from rising back through and facilitating efflorescence and staining.

### 6 MorTec® DRAIN drainage mortar and AquaDrain® Lochwinkel screed angle (30x40mm stainless steel)

MorTec® DRAIN is a thin-layer epoxy resin drainage mortar system for use in combination with AquaDrain® EK surface drainage solid laid natural stone and ceramic coverings on balconies, patios and (roof) terraces.

Overall thickness of screed is 25mm (minimum).

AquaDrain® Lochwinkel is an L shaped screed angle to be used as a screed edge support. This prevents screed from falling back and blocking the channels or adversely affecting the drainage. Specify stainless steel version only for epoxy screed.

### 7 BAL Rapidset Flexible Fibre\*

Frost and water resistant tile adhesive for use with tiles.

\*It may be suitable to use other BAL adhesives dependent upon the selected tile. The BAL specification team can advise.

### 8 AquaDrain® TM

AquaDrain® TM drain grates guide surface water directly into the attached drainage. This helps solve connection problems even for low door/wall connections.

The possibility of thermal bridging (cold bridges) exists where a construction connects to a building and extends outside, which can cause the temperature to be lost from a building via an uninsulated point.

In areas exposed to a marine environment consideration should be given to using stainless steel of the correct grade – consult BAL TAS regarding suitability.

### 9 Tile/Natural Stone/Concrete Slab

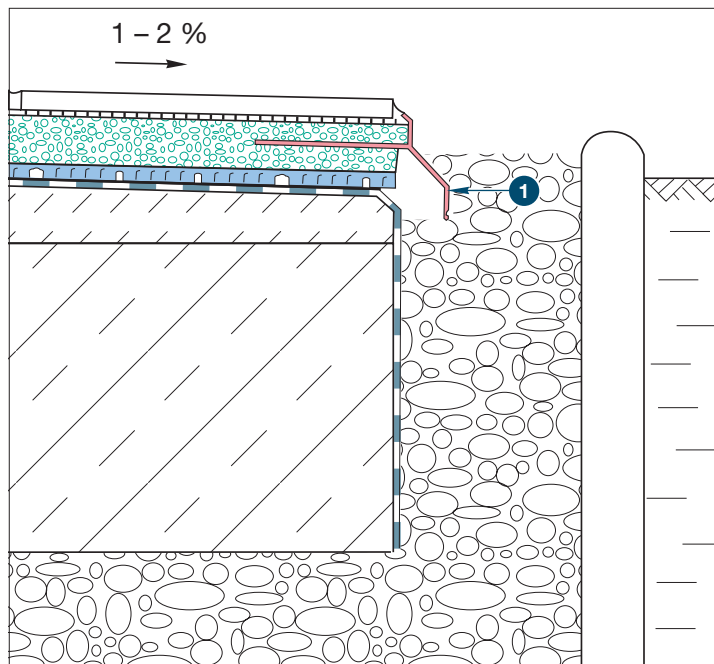
These should be confirmed as frost and water resistant prior to fixing. Porous tiles are not recommended for use externally. Tiles onto a bonded installation should be solidly bedded with tile adhesive.

**Important Note:** Resin/Quartz agglomerate tiles are not recommended for use externally. Tiles with a mesh backing should not be used in external locations.

### 10 MorTec® SOFT or BAL Micromax Sealant

MorTec® SOFT is a neutral curing sealant designed to cover the perimeters. BAL Micromax Sealant is an acetoxy silicone. BAL Micromax Sealant is colour-matched with BAL Micromax2 grout.

## Terrace Edge Detail 1 – Flush Tile Edge



### 1 ProFin® V22

The V22 is a single profile – screed edge cover which accommodates the screed and the AquaDrain® membrane and some of the tile.

This is inserted into the screed. Can be used in conjunction with a mortar anchor.

## Movement Joints

### MorTec® SOFT or BAL Micromax Sealant

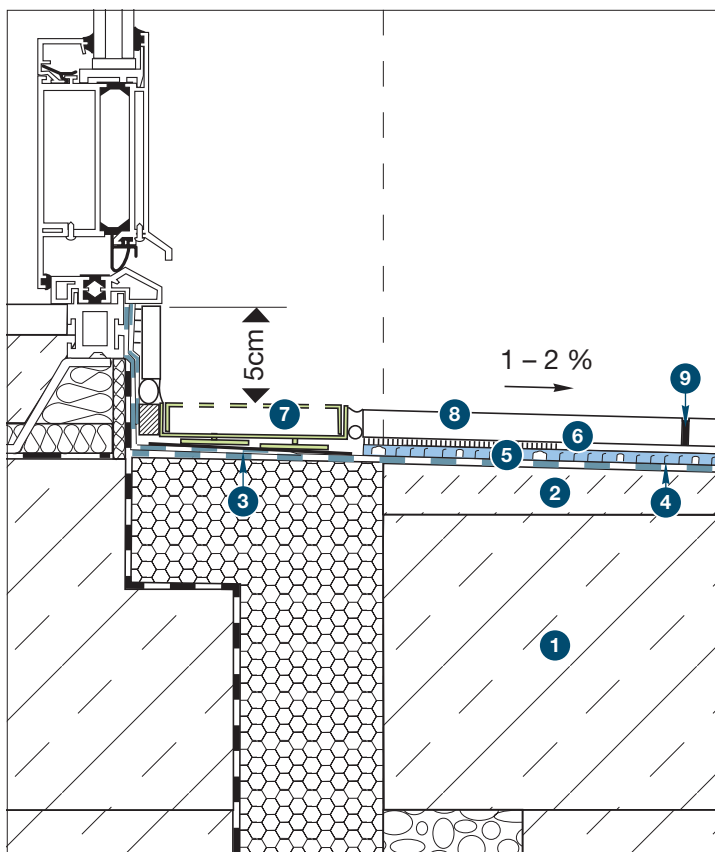
In combination with Gutjahr surface drainage systems, "the joint filler that comes in a tube" enables stress-free and therefore reliable laying of large formats outdoors. The elastic, silicone-based joint filler reduces tension and can be used for covering joints, connection joints or expansion joints. Thanks to the fine grain structure of the material, the joints have a cement-like appearance. designed to cover the perimeters.

BAL Micromax Sealant is a unique high performance ready to use acetoxysilicone sealant with built in Microban® antimicrobial protection. BAL Micromax Sealant is colour-matched with BAL Micromax2 grout.

Note: BAL Micromax Sealant is not suitable with natural stone

- Placed at perimeters and upstands where tile meets a restraining surface. Especially abutments to different materials i.e. metallic elements/drains.
- Intermediate movement joints placed at 3m intervals or less as per **BS 5385 Part 3**.
- Neutral Curing Sealants for natural stone products.

## Ground Terrace 3 – Thin Drainage Assembly



Primarily used for low construction heights and external areas with reduced clearances, this assembly utilises a direct point adhesion method for self-supported breakproof tiles and stone. Recommended for use in areas with limited height, complete construction height can be achieved from 29mm (when using a 20mm slab and 8mm drainage mat).

Suitable for all applications, the assembly ensures rapid drainage for barrier-free/low door connections in a system using AquaDrain® drain grates. This assembly is particularly cost-effective and provides time savings as there is no need to mix and lay a drainage screed.

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### 1 Ground bearing reinforced Concrete Slab with Damp Proof Membrane

The concrete should be constructed as per the recommendations in BS 8204 and BS 5385. Should be structurally sound and capable of carrying all expected static and dynamic loads i.e. strong enough for its intended purpose.

A minimum of 6 weeks drying time should be afforded to new concrete prior to covering.

Minimum Thickness = 100mm.

A DPM should be incorporated in the assembly.

### 2 Bonded Screed

Cement:Sand Screed bonded to the slab. The slope should be at between 1 – 2 %. Screed should achieve SR1 finish. Should be allowed to fully cure, dry and be suitably protected.

Please note: A bonded screed should never be less than 25mm thick at any point according to BS 8204-1

### 3 BAL Tank-it

Should be applied to protect the screed from water ingress – this should not be penetrated by fixings etc.

Balustrades should be fixed to the side or underneath and should never penetrate the primary waterproofing layer.

### 4 PE Foil

Normally recycled polyethylene (PE) is used to separate the assembly and protect the primary or roof waterproofing.

### 5 AquaDrain® T+

AquaDrain® T+ ensures rapid and permanent drainage of the covering structure. Available in 8mm and 16mm membranes for variations in moisture exposure and for use with the specialist thin layer system.

### 6 BAL Stone & Tile PTB\*

Frost and water resistant tile adhesive for use with tiles. Use direct point adhesion method. See Ground Terraces Part B: Installation Guide.

\*It may be suitable to use other BAL adhesives dependent upon the selected tile. The BAL specification team can advise.

### 7 AquaDrain® TM

AquaDrain® TM drain grates guide surface water directly into the attached drainage. This helps solve connection problems even for low door/wall connections.

The possibility of thermal bridging (cold bridges) exists where a construction connects to a building and extends outside, which can cause the temperature to be lost from a building via an uninsulated point.

In areas exposed to a marine environment consideration should be given to using stainless steel of the correct grade – consult BAL TAS regarding suitability.

### 8 Porcelain Tile/Natural Stone

(Dimensions should not be less than 300 x 300mm)

These should be confirmed as break-proof and frost and water resistant prior to fixing. Porous tiles are not recommended for use externally.

**Minimum Porcelain Tile Thickness = 20mm**

**Minimum Natural Stone Thickness = 30mm**

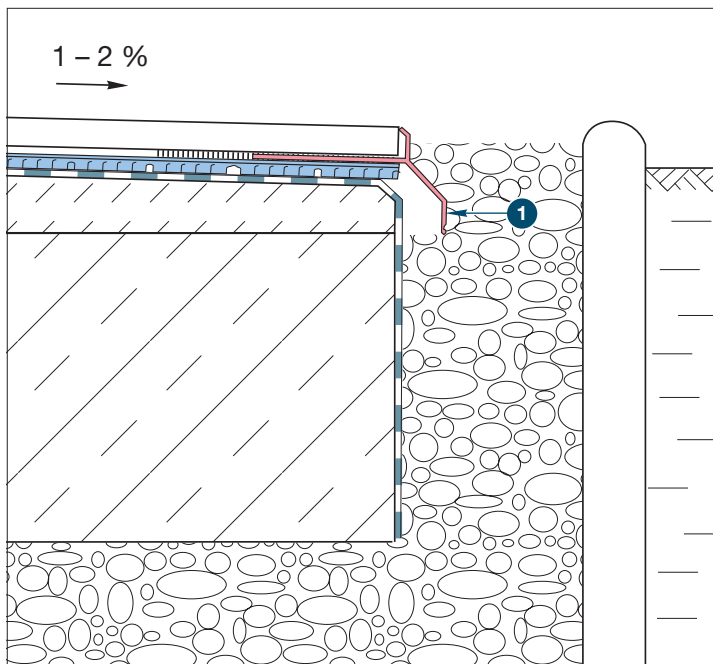
**Important Note:** Resin/Quartz agglomerate tiles are not recommended for use externally. Tiles with a mesh backing should not be used in external locations.

### 9 MorTec® SOFT

The elastic, silicone-based joint filler reduces tension and can be used for covering joints, connection joints or expansion joints. Thanks to the fine grain structure of the material, the joints have a cement-like appearance designed to cover the perimeters.



## Terrace Edge Detail 1 – Flush Tile Edge



### 1 ProFin® V22

The V22 is a single profile – screed edge cover which accommodates the screed and the AquaDrain® membrane and some of the tile.

This is inserted into the screed. Can be used in conjunction with a mortar anchor.

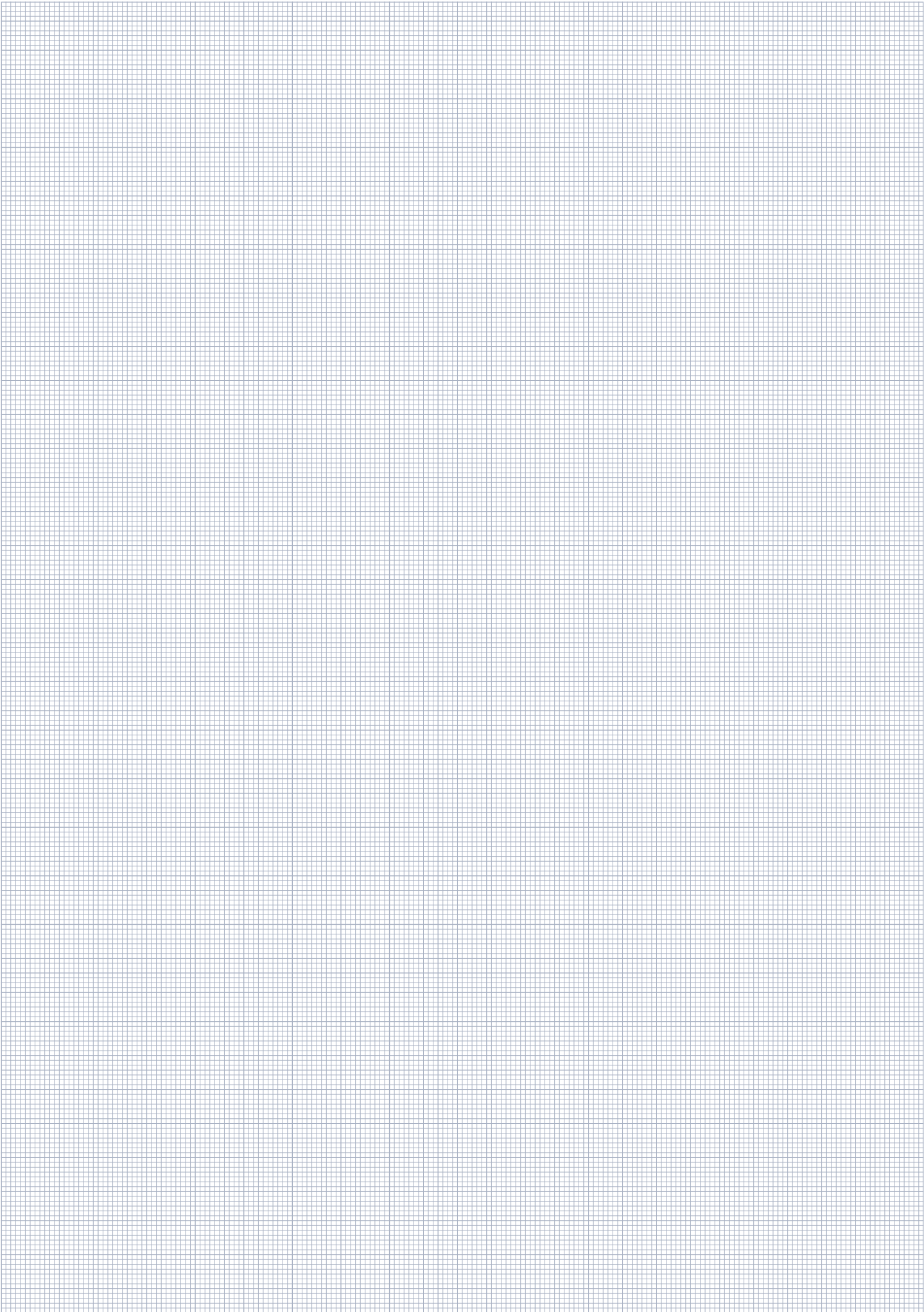
## Movement Joints

### MorTec® SOFT

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- Placed at perimeters and upstands where tile meets a restraining surface. Especially abutments to different materials i.e. metallic elements/drains.
- Intermediate movement joints placed at 3m intervals or less as per **BS 5385 Part 3**.
- Neutral Curing Sealants for natural stone products.

## Notes



Note: The customer must verify the suitability of any information, opinion, recommendation or advice ("Information") provided by the Company for the particular application for which any goods are intended to be used and the Company accepts no liability (whether in contract, tort or otherwise) whatsoever for any loss, damage or expense arising from the misuse of any Information it supplies nor for the use of any Information in or for applications which are unsuitable or inappropriate. Building Adhesives Limited operates a continuous research and development programme and reserves the right to alter or to update Information from time to time.  
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- Free online specification builder; Powerspec
- National Specification Support Team for advice or on-site consultancy
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- Leading product guarantee

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