

# BauderPIR FA Tapered Installation Manual

## Introduction

Manufactured from Polyisocyanurate, foamed up to a black aluminium foil facing both sides. The top facing features the Bauder name, a grid pattern - which acts as a visual guide to site cutting, also numbering and arrows to show direction of fall across the board. Specially developed for use with self-adhesive membranes, the foil face provides an effective bonding surface. The boards are manufactured in 1200mm x 1200mm sizes and in varying thicknesses to suit the 'U' value requirement and falls on the roof. These boards are not suitable for use where a torch-applied underlayer is being used and cannot be bonded in hot bitumen.

## General

### Storage on site

The packaging of Bauder Insulation products, should not be considered adequate for outside protection. Ideally boards should be stored inside a building. If however, outside storage cannot be avoided the boards should be stacked clear of the ground and covered with an opaque polythene sheet or weatherproof tarpaulin. Boards that have been allowed to get wet should be allowed to dry naturally before being used.

### Cutting

Cutting should be carried out by using a fine toothed saw ensuring accurate trimming to achieve close-butting joints and continuity of insulation without any gaps.

### Off-loading of Tapered boards

FA Tapered boards will be supplied in packs of differing sizes, and the following guidelines for off-loading should be followed:

- Due to the bulk of the packs they will be subject to a 2 man lift when handled.
- The packs can also be off-loaded by forklift or vehicles with a pump truck and tail lift.

### Selecting the correct adhesive

Choosing the correct adhesive is key to ensuring the bond achieved between the Air & Vapour Control Layer (AVCL) and insulation, and also insulation to insulation is sufficient to prevent the effects of wind uplift. Please refer to the project specific specification for the correct adhesive to use. Below is a quick guide to help with this:

- Adhering to Mica faced AVCL e.g. KSD Mica, VB4-Expal or EVA 35 – **PU Tin Adhesive or Twin Cartridge Adhesive**
- Adhering foil faced insulation to foil faced AVCL e.g. FA Tapered Insulation to KSD Foil – **Twin Cartridge Adhesive or Foil Contact Adhesive (Canister)**
- Adhering foil faced insulation to foil faced insulation e.g. FA Tapered Insulation to FA-TE Insulation – **Twin Cartridge Adhesive or Foil Contact Adhesive (Canister)**
- Adhering Ridge Infills & Valley Infills to FA Tapered Insulation – **Foil Contact Adhesive (Canister)**

When overlaying existing substrates or laying onto rough substrates, we would recommend the use of **Twin Cartridge Adhesive**.



PU Insulation  
Adhesive  
(Tin)



New Foil Contact  
Adhesive  
(Spray)



PU Insulation  
Adhesive  
(Twin Cartridge)

## Design

Our technical team will design bespoke tapered insulation schemes for individual projects and provide advice for flat roof fall design. The project specific design provided by Bauder **must** be followed on site to ensure the correct design, falls and U-Value are achieved. The scheme will not allow for these adjustments if the scheme has been incorrectly set out and started from the wrong starting point.

## Designing Insulation Schemes

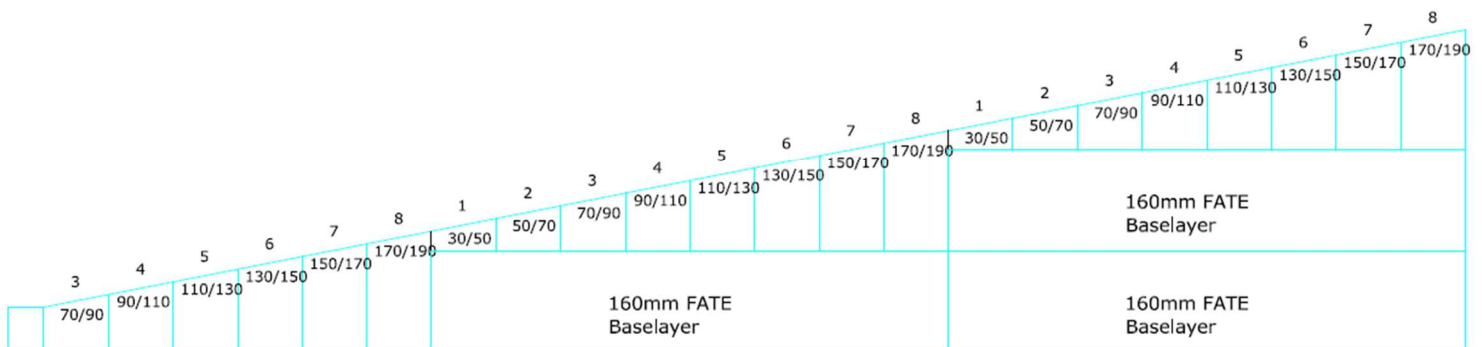
Effective and efficient use of insulation boards on a roof is a consideration so that resource efficiency is maximised and site waste minimised. At Bauder, it is our aim to design out waste arising from a scheme layout, though the success of this can depend more on the way the building is designed rather than the way the product is used. This is particularly important when tapered insulation schemes are required where boards are precisely positioned and less transposable.

Included within our design service is the calculation of condensation risk in accordance with the latest version of BS 5250 (Code of practice for control of condensation in buildings). This ensures that any predicted dew point is above the Air & Vapour Control Layer (AVCL) at the point of minimum thickness of the BauderPIR FA Tapered Insulation, whilst also ensuring any condensation risk is within the limits given in the latest version of BS 5250. Also included within the design is the area weighted calculation in accordance with Annex C of BS 6946.

## Section through Tapered Design

Bauder will be supplying boards that are 1200mm x 1200mm with numbering 1-8, starting at 30mm through to 190mm. Boards are with a 20mm fall on each board. Once the scheme has reached the 190mm height, a base layer of 160mm FA-TE will be introduced with a 1 board on top for a continuous fall. Most schemes may start at a 3 board (70/90mm) to meet the design requirements of BS 5250, however, refurbishment projects that are being overlaid that have existing insulation within the build-up will start at the relevant board size to achieve the required U value. Please see section through of most common board design below:

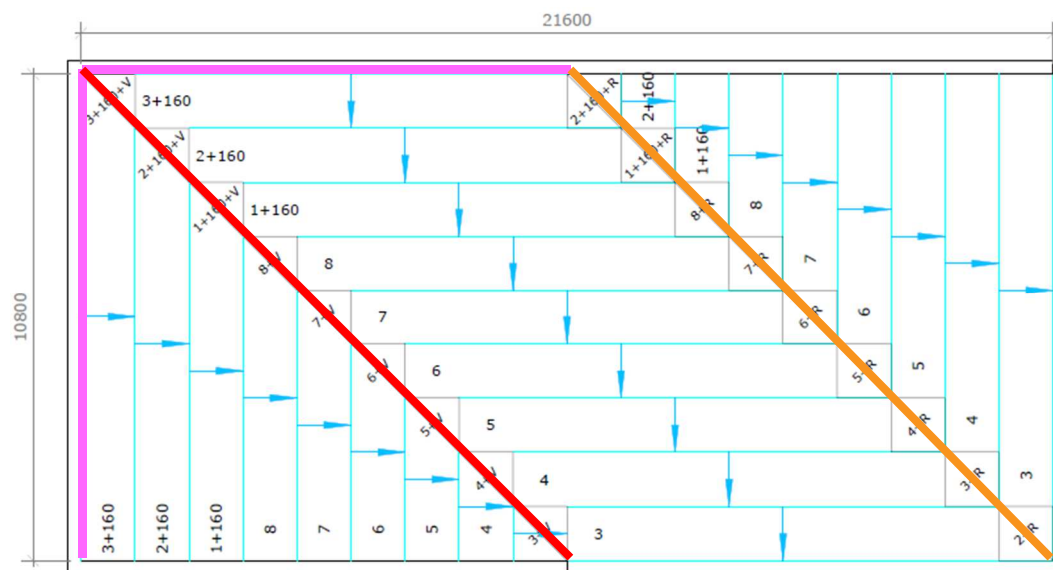
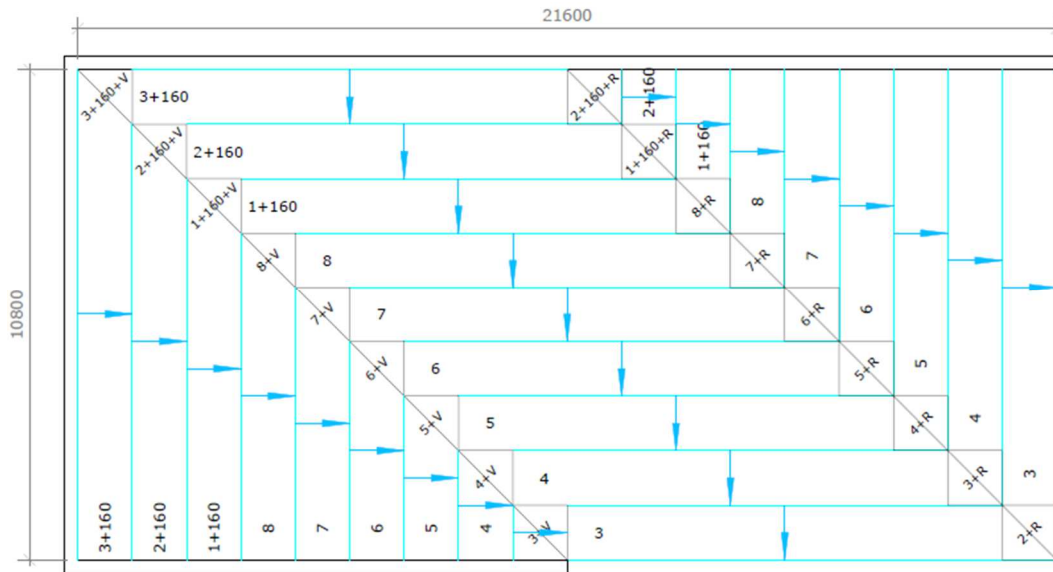
BOARDS 1-8 WITH 160mm BASE LAYERS



## Setting Out

At the outset of any tapered installation process, the membrane to which the boards are being bonded (usually the air & vapour control layer - AVCL) should be accurately marked out with the high points and valley and ridge lines to clearly identify the locations of the boards critical to replicating the designs on the actual roof area. Tapered insulation should always be laid starting with the thickest boards first on the marked line of the high point of the fall. This improves the accuracy of the installation and ensures water can always find its way to an outlet or gutter should it begin to rain during the works.

Importantly this also means that the designed 'U' value will be maintained as cutting the thick part of the roof could affect the average thickness of the scheme and in turn reduce the overall 'U' value. Starting at the high point also reduces the level of waste, as the thinner boards are cut at the low point of the scheme. Example layout below and one further below with high points marked in pink, ridges in orange and valleys in red:



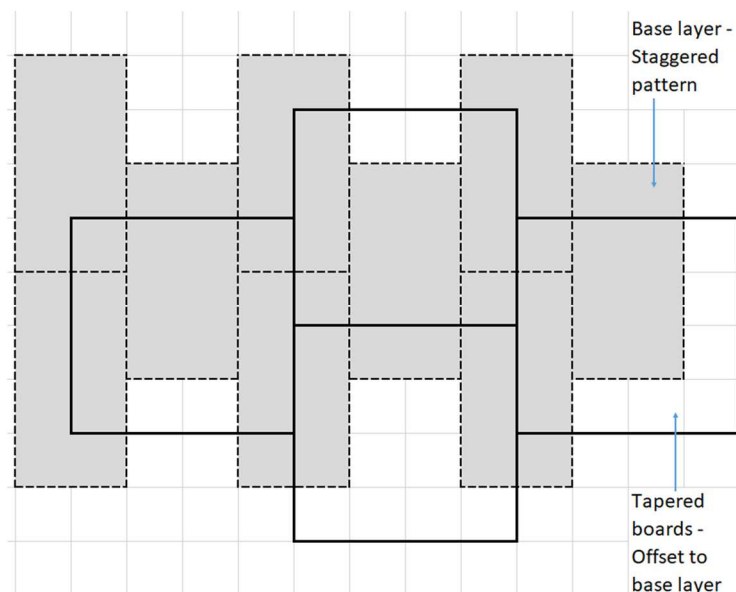
## Insulation Laying Pattern

The working drawings supplied by the Bauder Technical Department will indicate the area of the roof to be covered, the minimum insulation level, fall direction and U Value the scheme achieves.

The location of each board type will be indicated clearly on the drawing and each insulation pack will contain one board type/size only.

Ridges and valleys will be marked on the drawings, together with the setting out commencement points for laying of the boards.

In situations where two or more layers of insulation are required, all layers should be installed horizontally offset relative to each other so that, as far as possible, the board joints in any two adjacent layers do not coincide with each other - Please see example below:



## Installation

The boards are simply bonded onto the AVCL in the specified Bauder Insulation Adhesive ensuring an adequate bonding of the insulation boards. The type and amount of adhesive used is critical to achieve the required bond – any doubts on which product to use, please contact Bauder Ltd. Boards can also be mechanically fastened using the correct type and number of fixings. The number of mechanical fixings required to fix the insulation will vary with the geographical location of the building, the local topography, and the height and width of the roof concerned along with the deck type.

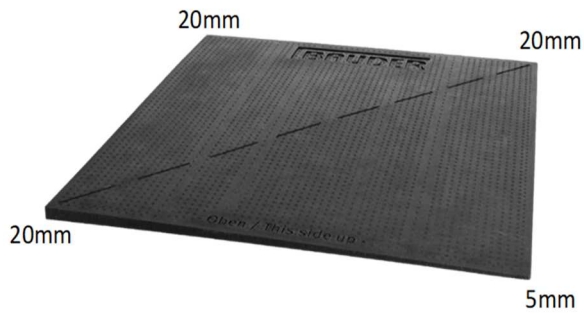
The boards must be close butted and staggered when being installed. Where a base layer is incorporated, the tapered layer will also need to be offset and staggered from the base layer and a foil to foil adhesive must be used to bond these layers.

## Valleys & Ridges

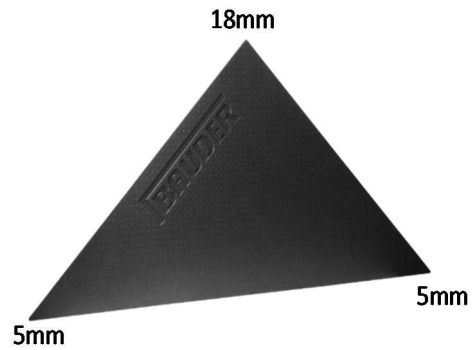
Bauder has revolutionised tapered design with a unique valley and ridge system to be used in conjunction with our PIR FA Tapered insulation. This will mean only one size of valley and one size of ridge will be needed to complete the tapered scheme layout. This will save time and any confusion on site as with previous designs using up to 32 ridge and valley sizes within the scheme layout. Not only will this aid installation, it will mean little waste compared to cutting mitres on site.

The Valley & Ridge Infills will be incorporated into the design and will be attached by adhering both the face of the tapered board and the bottom of the infill using Bauder Foil Contact Adhesive (yellow in colour). Once the adhesive is tacky these two components will then be placed together to form a contact to contact bond between the two.

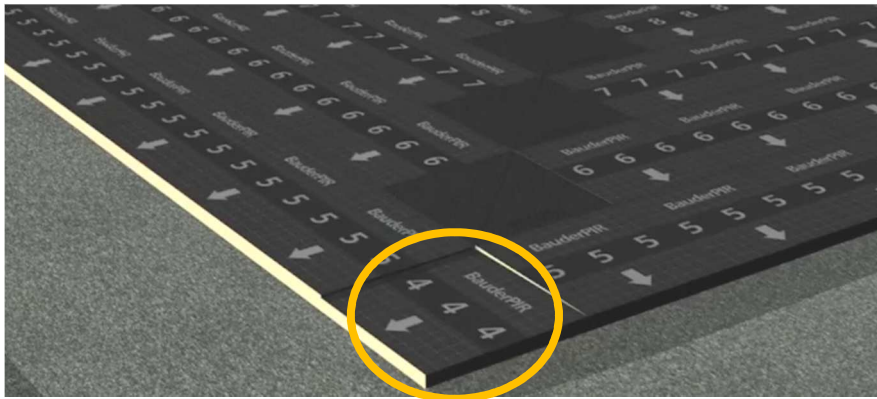
## BauderPIR Ridge Infill



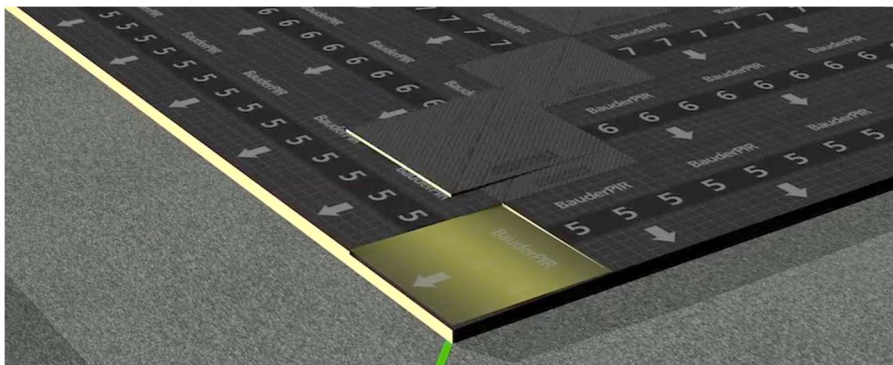
## BauderPIR Valley Infill



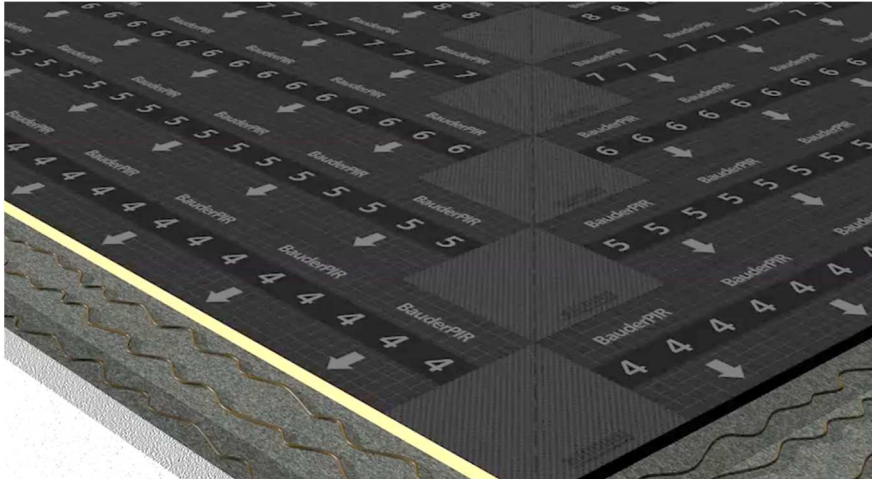
## Ridge Infill Installation



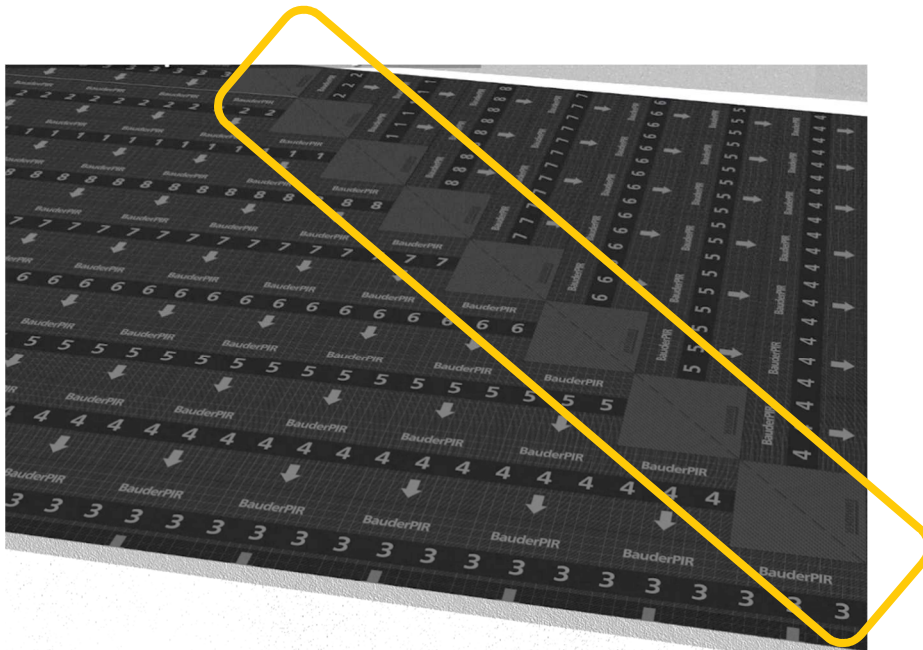
The purpose of the Ridge Infill is to divert water in two directions at the point of two boards meeting and directing water in two differing directions. This can be seen in the above image where a ridge infill piece is used. To achieve this a tapered board one size smaller than its adjoining predecessors is incorporated in the same row. Then the Bauder Ridge Infill piece is incorporated on top bonded in Foil Contact Adhesive and creates the fall in two directions. As can be seen in the two images below:



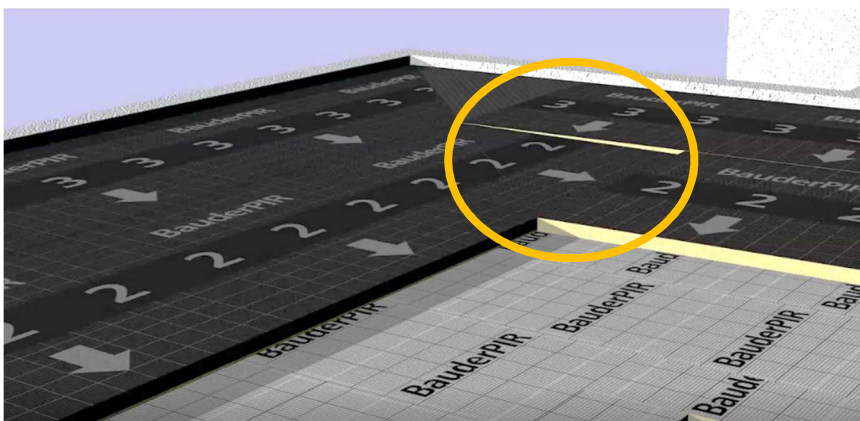




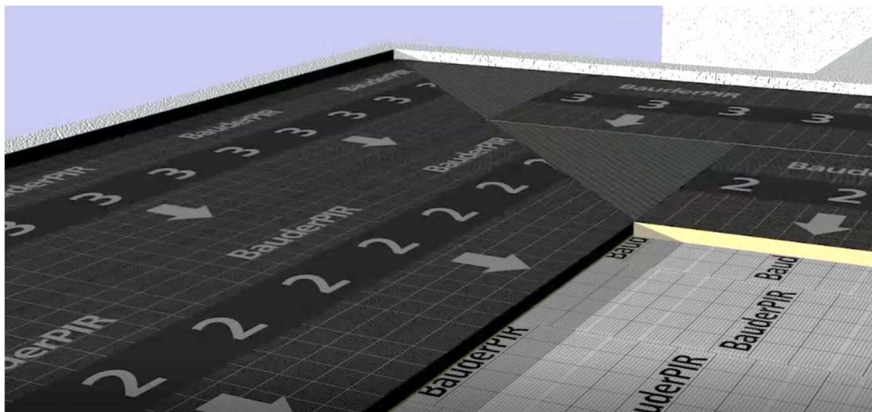
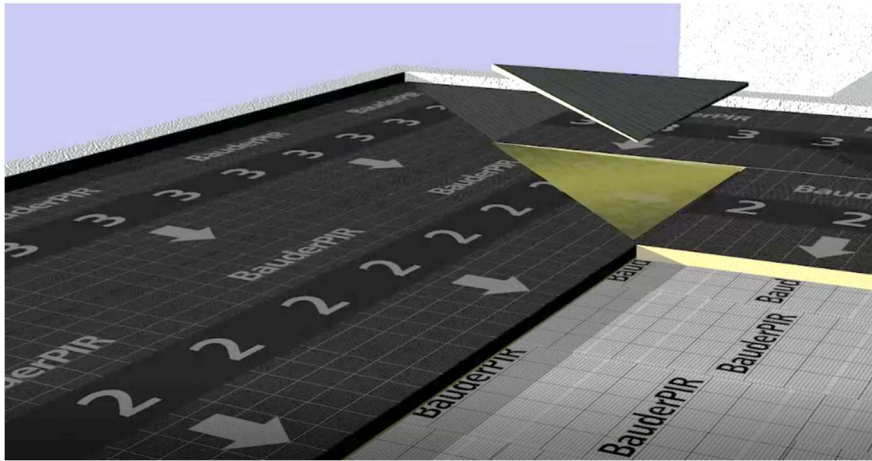
The ridge line can be clearly seen below creating a diagonal high line and directing the water in two directions.



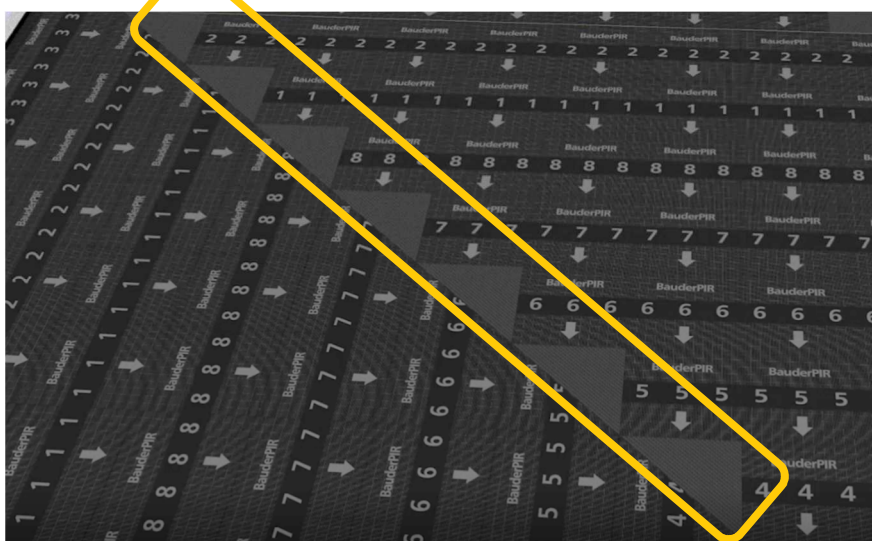
## Valley Installation



The purpose of the Valley Infill is to divert water in from two directions into one direction at the point of two boards meeting. This can be seen in the above image where a valley infill piece is used. To achieve this a tapered board is placed next to another tapered board with the fall against the adjacent board. This creates a water check, then the valley infill piece is incorporated on top bonded in Foil Contact Adhesive to create the valley fall in one direction. As can be seen in the two images below:



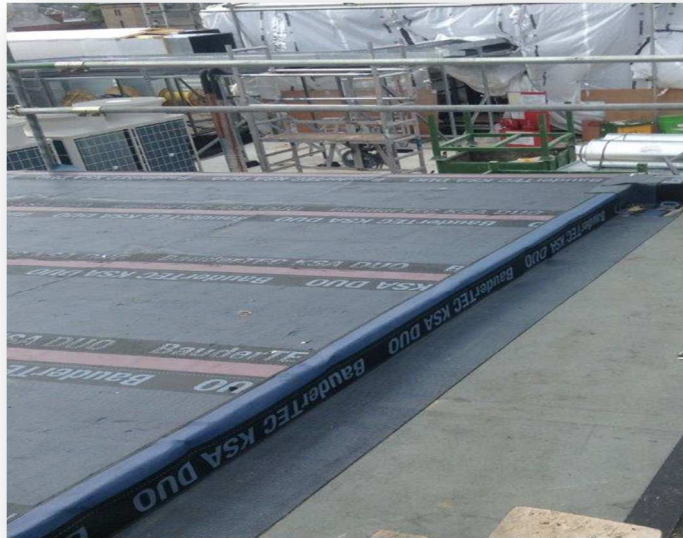
The valley line can be clearly seen below creating a diagonal low line and directing the water from two directions into one direction:



## Formation of night seals

At the end of each working day, the new waterproofing should be terminated with a secure and waterproof temporary seal, which can be left in-situ, utilising self-adhesive underlayer material to create the seal. The self-adhesive underlayer should be extended on to the flat AVCL by a minimum of 200mm from the exposed edge of the Insulation and heat activate to ensure a satisfactory seal.

To ensure that no moisture contamination of the system can occur between each working period, it is essential that the night seal is properly and securely bonded. The image below shows an example of a suitable night seal:



## Following Trades

The roof must be adequately protected when building works are being carried out on or over the roof surface. This is best achieved by close boarding. The completed roof must not be used for storage of heavy building components such as bricks or air conditioning equipment.

## Technical Support

For technical guidance please contact the Bauder Technical Department.