BAUDER

GREEN & BLUE ROOF

INSTALLATION GUIDE

Green Roof and BauderBLUE Installation Guide

This guide describes the correct installation of individual Bauder components which are combined to deliver a range of green roof systems, and a BauderBLUE SuDS.

PREREQUISITES

1. This guide must be read and used in conjunction with the Q37 Green Roof Specification to confirm products used and substrate depths required, and/or the Blue Roof Calculation for the particular roof being installed.
2. The Bauder waterproofing system **MUST** undergo a successful final inspection and be signed off prior to installation of any green roof component.
3. Section 1 of this guide **MUST** be read and fully understood before installation works commence.

CONDITIONS

The Bauder guarantee may not be issued if:

1. The waterproofing fails to meet final inspection standards.
2. Any component is incorrectly installed.

The illustrated instructions and information within this guide follow the standards and guidelines of the Green Roof Organisation (GRO) and the Forschungsgesellschaft Landschaftsentwicklung Landschaftbau (FLL). The blue coloured bullet points (■) in section 1 relate specifically to blue roof installations.

TECHNICAL SUPPORT

If you require support or advice on the system or products within the specification please contact:

■ Chris Roddick	Green Roof Product Manager	07525 991594
■ Head Office		0845 271 8800

ISSUE: Summer 2019

Contents

1 Principles

1.1 Preparing the roof

The waterproofing system must be signed off before the installation of any green roof component or product being laid. A compulsory final inspection is a mandatory requirement for guarantee eligibility.

Before installation begins, brush off the roof area to remove all debris and carry out a visual inspection of the roof to identify any physical damage. Bauder must be informed immediately if damage is found before starting any installation of the green roof components.

Test and ensure the water supply at roof level is sufficient, especially prior to the vegetation order and delivery being confirmed.

1.2 Delivery and storage of products

The green roof components can be delivered and stored on site. This is not the case for the vegetation which should be delivered on the day of installation with quantities matching those to be installed on that working day.

Delivery of vegetation blankets can only be made Tuesday to Friday. Living vegetation should not be stored overnight without the following considerations:

- **Vegetation blankets** - roll out and water.
- **Plug plants** - position in a sheltered location and water.
- **Seed mixes** - place in a dry store.
- Calculate the number of Attenuation Cell 100 boards prior to ordering by measuring the blue roof and taking into consideration the installation method (see section 10.1).
- Order Connectors to accompany delivery of the Attenuation Cell 100 as these are supplied separately.

Note: Blue bullet points (■) relate to specific instructions for installation of BauderBLUE components.

1.3 Lifting

The installation programme will require planning and adequate crane time for lifting products to the roof and placing so as to not overload the structure. Ideally the material should be lifted and loaded in sequence. This allows bulk items to be placed in the correct position.

If the roof is being loaded out for installation later, substrates should not be placed directly on to the waterproofing. Instead, lay the protection and drainage components on to the area used for storage. This will prevent damage to the waterproofing layer and double handling of the material.

1.4 Installation precautions

- **Cutting products** should only be carried out on a cutting board or scaffold plank to protect the waterproofing layer.
- **Hot works;** some components will require heat for application which may require a hot works permit. Installing FSM 600/1100 require laps to be heat joined using a hot air gun or running pilot flame of a gas torch is sufficient to melt the mat and create a join.
- **Outlets** must be kept clear at all times during installation.
- **Blue roof outlets** must be installed flush with the surface of the roof waterproof membrane. If the outlet is sumped this will change the level that the H-Max level on the flow restrictor will need to be cut to. Bauder should be contacted to confirm the revised level.
- **Vegetation barrier;** refer to Bauder specification regarding the width of barrier. Note - this is a fire break and must not be altered (see section 6.5). Ballast from builders merchants often contains sharp stone/flint and is not suitable.
- **Substrates and growing** mediums need to be installed and spread with a spazzle (a rake with no teeth) or shovel, a rake is best avoided as the prongs can damage the underlying green roof components.

1 Principles

1.5 Aftercare

Most green roof failures are due to lack of aftercare or damage caused by following trades. To prevent disputes, make sure the main contractor is aware of their responsibilities, preferably in a formal written document or email for future records. Post installation rules:

- No storage of any materials on the green roof.
- No trafficking by anyone across the roof.
- Regular, sufficient and appropriate watering for the first 4 weeks for sedum and 10-12 weeks for wildflower, seed and plugs. Intensive green roofs require an individual watering regime to meet the needs of the planting scheme.
- Providing nutrients to vegetation is a necessity for ongoing success and the application of fertiliser between March and September is recommended.
- Blue roofs require higher levels of maintenance in particular inspections after any significant rain event. Please refer to BauderBLUE Roof Maintenance Guide for further information.

1.6 Record keeping

Keeping full records and photographic verification of the installation are vital and could demonstrate all works were carried out appropriately should any issues be raised at a future date.

We recommend the following be included:

- Waterproofing completed, trims correctly fixed and inspection by the Bauder site technician completed.
- Drainage trims installed straight and true.
- Protection layer in place and continued up the upstands.
- Drainage board fitted correctly around details.
- Filter fleece installed.
- Depth of substrate is measured and correct.
- Vegetation laid and healthy.
- Fertiliser being applied.
- Watering taking place.
- Blue Roof installation.

1.7 Kit list

Documentation

- Q37 project specification
- CAD detail drawings of the green roof

General Items

- Buckets
- Good water supply, hose, rose sprayer, sprinklers (See 1.1 for testing before commencing installation of the green roof components)
- Scaffold planks
- Straight edge
- Tape measure
- Wheelbarrow

Cutting Tools - use suitable PPE

- Cutting or protection board (large and thick enough to ensure no damage to the waterproofing membrane)
- Disc cutter
- Handsaw
- Scissors and/or sharp knife

Hot Works - for fixing of trims, retention strips etc

- Gas torch (for bituminous systems)
- Heat gun (for single ply systems)
- Associated fixing tools

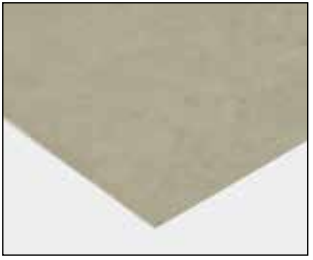
Additional Items for Substrate Installation

- Dibber or trowel
- Hard-toothed rake
- Shovels
- Spazzle (rake with no teeth - used for spreading substrate)

2 Separation and protection layers

2.1 PE Foil

Polyethylene foil plastic sheet which acts as a separation/slip layer between the waterproofing and the green roof build-up and is generally used on intensive roofs or under hard landscape up to 3°.



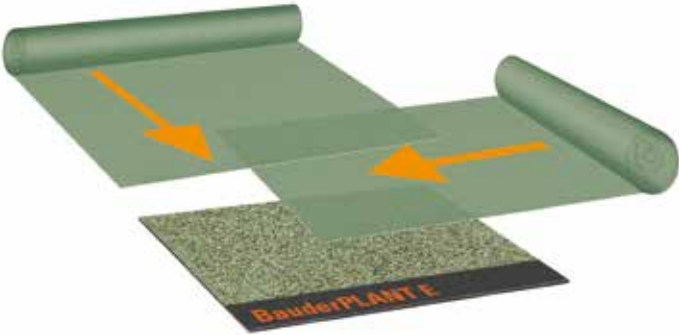
Cutting - refer to section 1.4, use a flat blade or scissors and a protection board.

Technical data	
Thickness	Ca. 0.2mm
Weight	190g/m²
Size	50m x 4m; folded on 1m roll
Coverage	200m²

INSTALLATION

- Unroll and unfold PE Foil into a single layer. Overlap by minimum 150mm at all joints.
- Lay out to cover entire roof area.
- Mark the location of outlets and ensure the PE Foil is removed from these positions to maintain drainage.
- Extend beyond the finished surface level at all upstands. Trim later as required upon completion of the landscaping.
  Extensive green roofs: if required, PE Foil must be cut well back from drainage outlets and inspection chambers.

Intensive green roofs: if two layers are required beneath soft landscaping, lay at 90° to each other.



2 Separation and protection layers

2.2 FSM 600 & FSM 1100

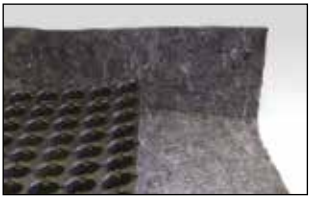
Heavy duty protection layer made from polyester and polypropylene fibres.

Cutting - refer to section 1.4, use a sharp knife or scissors and a protection board.
Hot works - use the pilot running flame of a gas torch to gently melt the mats together, it is not necessary to use the trigger on the gas torch; alternatively use a hot air welding gun on a low setting, see section 1.4

Technical data		
	FSM 600	FSM 1100
Thickness	4mm	8mm
Size (w x l)	2m x 30m	2m x 15m
Coverage	60m²	30m²
Weight	600g/m²	1100g/m²

INSTALLATION

- Lay out to cover entire roof area, overlaps to be a minimum of 150mm or as determined in the specification.
- Adhere laps lightly through use of a heat gun or pilot running flame on the gas torch.
- Extend beyond the finished surface level at all upstands. This will later be trimmed upon completion of the landscaping.
  Extensive green roofs: do not extend FSM Mat up the perforated face of drainage trims.

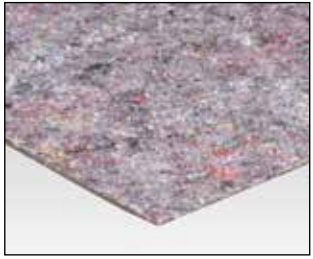


- Cut oversized hole above each outlet.
- Check outlets are clear of protection mat.
- On completion of the vegetation installation, trim the FSM protection mat level with the vegetation barrier. Use a cutting board against upstands etc. to cut against.

2 Separation and protection layers

2.3 Eco-Mat

Lightweight protection layer made from recycled man-made fibres that also provides some water retention.



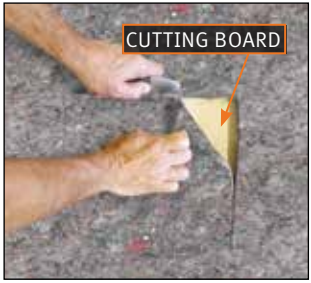
Cutting - refer to section 1.4, use a flat blade or scissors and a protection board.

Technical data	
Thickness	6mm
Size (w x l)	2m x 30m
Coverage	60m²
Weight	0.6kg/ m² dry 3.8kg/m² saturated

INSTALLATION

- Lay out to cover entire roof area. Overlaps to be a minimum of 150mm or as determined in the specification.
- Extend beyond the finished surface level at all abutment upstands. This will later be trimmed as required upon completion of the landscaping.
  Extensive green roofs: do not extend Eco-Mat up the perforated face of drainage trims.

- Cut oversized hole above each outlet.
- Check outlets are clear of Eco-Mat.
- On completion of the vegetation installation, trim the Eco-Mat level with the vegetation barrier. Use a cutting board against upstands etc. to cut against.



Note:

- Eco-Mat can be used as a moisture retention layer under XF301 Sedum Blanket in dry areas such as ridge lines on pitched roofs.

2 Separation and protection layers

2.4 Pro-Mat

Heavy duty protection layer for intensive green roofs made-from recycled rubber.

Cutting - refer to section 1.4, use a flat blade and a protection board.
Compatibility - Pro-Mat is not compatible with Thermofol PVC single ply and MUST NOT be laid directly onto this membrane. It is compatible with Thermoplan FPO.

Technical data	
Thickness	6mm
Size (w x l)	1.25m x 10m
Coverage	12.5m²
Weight	4.3kg/m² dry

INSTALLATION

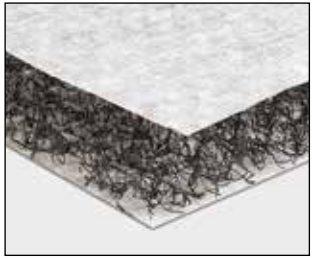
- Lay out to cover entire roof area.
- Overlaps to be a minimum of 150mm or as determined in the specification.
- Carefully cut Pro-Mat so it fits the full surface area of the roof. Intensive green roofs: do not extend Pro-Mat up the perforated face of drainage trims.
- Cut oversized hole above each outlet.

- If green roof installation is not imminent, loose laps can be taped with gaffer tape to eliminate the trip hazard.
- Check outlets are clear of Pro-Mat.

3 Drainage & water storage products

3.1 SDF Mat

UV resistant nylon loop mesh sandwiched between two sheets of geotextile fleece providing drainage, protection and filtration layer for an extensive green roof.



Cutting - refer to section 1.4, use a flat blade and a protection board.

Technical data	
Thickness	20mm
Size (w x l)	1m x 50m²
Coverage	50m²
Weight	0.6kg/m²

INSTALLATION

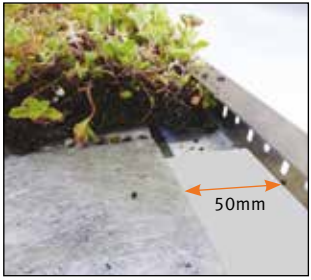
- Unroll SDF Mat to cover entire area across the roof, it can be laid either way up, and butt jointed. (see Photo A)
- Unfold the geotextile flaps and lay over the adjacent mat.
- Cut SDF Mat tightly around all upstands and penetrations.
- Cut oversized hole above each outlet and ensure they remain clear.
- SDF Mat should be installed at 90° to the direction in which the XF301 will be laid, (see Photo B).

Photo A

Photo B

Installation with AL40 edge trim

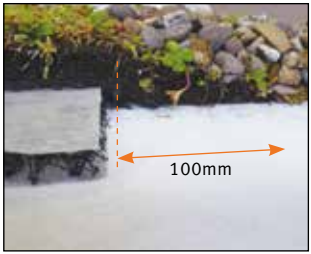
- Check AL40 is fitted correctly (see section 7.2).
- SDF Mat should be set back by 50mm from the face of the AL40. The sedum is tucked under the AL40 to hold the edge down.



Installation with AL40 edge trim

Installation with vegetation barrier

- Where 20-40mm pebble ballast is used to weigh down the XF301 the SDF Mat should be cut just short and pebbles installed according to the specification.



Installation with 20-40mm pebbles overlapping onto XF301.

Tips:

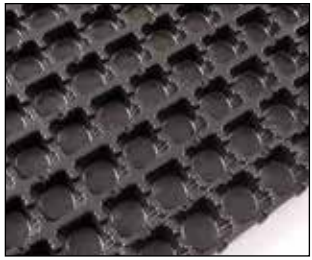
- SDF Mat will try to curl up during installation, 25kg bags of pebbles or substrate can be used to weigh down ends.

3 Drainage & water storage products

3.2 DSE20

High density polyethylene combined water storage and drainage layer.

Cutting - refer to section 1.4, use a flat bladed knife and protection board.



Technical data	
Thickness	20mm
Size (w x l)	1.06m x 2.36m
Weight	1.2kg/m² dry 8.6kg/m² water filled
Water storage	7.4Ltr/m²

INSTALLATION

- Normally installed over a protection layer.
- Lay each sheet (open cells up) over the entire area so they overlap by one full cell.
- Stagger the joints, brick pattern.
- Cut a hole in the drainage board over the outlet slightly smaller than the inspection chamber that is being placed above it (see section 7).

Installation with drainage trim

- Check drainage trim is installed correctly prior to fitting DSE20 (see section 7).
- DSE20 should be cut to about the edge of the drainage trim.

Installation with vegetation barrier

- Where possible DSE20 should run under the entire area of the green roof from upstand to upstand, including below the vegetation barrier.

Tips:

- DSE20 should not be fitted in gutters.
- Filling the DSE20 with water will help hold the sheets in place.
- Where a number of sheets of DSE20 come together at one point overlapping every cell on the sheets edge may not be possible.

3 Drainage & water storage products

3.3 DSE40

High density polyethylene combined water storage and drainage layer.

Cutting - refer to section 1.4, use a handsaw or hacksaw and a protection board.

Technical data	
Thickness	40mm
Size (w x l)	1.04m x 2.03m
Weight	1.8kg/m² dry
Water storage	13.5Ltr/m²

INSTALLATION

- Normally installed over a protection layer.
- Lay each sheet (open cells up) over entire area so they overlap by one full cell, as marked by 'X' on each sheet.
- Stagger the joints, brick pattern.
- Cut a hole in the drainage board above the outlet slightly larger than the inspection chamber.
- Fit the drainage board around the inspection chamber. (see section 7).

Installation with drainage trim

- Install and inspect drainage trim (see section 7) prior to fitting DSE40.
- DSE40 should be cut to about the edge of the drainage trim.

Installation with vegetation barrier

- DSE40 should run under the entire area of the green roof from upstand to upstand, including below the vegetation barrier.

Installation with hard landscaping

- Where hard landscaping features such as paving and brick work are to be formed, install concrete and sub-base materials directly into the cells of the DSE40.

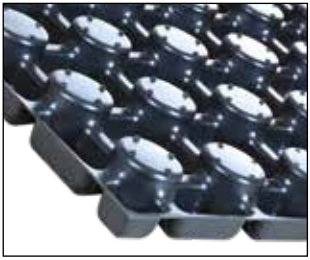
Tips:

- DSE40 should not be fitted in gutters.
- Filling the DSE40 with water will help hold the sheets in place.
- Where a number of sheets of DSE40 come together at one point overlapping every cup on the sheets edge may not be possible.

3 Drainage & water storage products

3.4 DSE60

High density polyethylene combined water storage and drainage layer for intensive green roofs. DSE60 is able to withstand vehicle traffic.

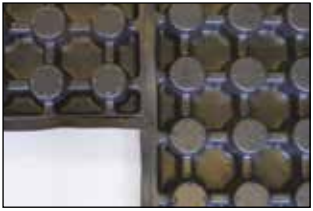


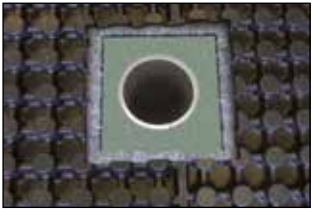
Cutting - refer to section 1.4, use a handsaw and protection board.

Technical data	
Thickness	60mm
Size (w x l)	1m x 2m
Weight	2kg/m² dry
Water storage with mineral drain fill	10-12Ltr/m²

INSTALLATION

- Normally installed over a protection layer.
- Lay each sheet (drainage holes upmost on the crowns) over entire area, butt together and overlap the edge lips.
- Stagger the joints, brick pattern.
- Cut a hole in the drainage board above the outlet slightly larger than the inspection chamber that is being fitted. (see section 7).





Installation with pebble barrier

- DSE60 should run under the entire area of the green roof from upstand to upstand, including below the pebble barrier.

Installation with mineral drain, concrete foundation or sub-base

- Fill the cells of the DSE60 board with mineral drain level with the top surface of the crowns after settlement.
- Where used with Type 1 subbase DSE60 should be over filled and then mechanically compacted.
- Where hard landscaping foundations are to be formed in concrete, install concrete directly into the cups of the DSE60.

Tips:

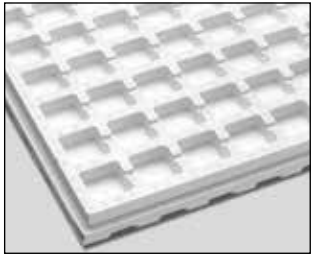
- DSE60 should not be fitted in gutters.
- Filling the DSE60 with water will help hold the sheets in place.

3 Drainage & water storage products

3.5 Reservoir Board 50mm or 75mm

Expanded polystyrene combined water storage and drainage board for flat or pitched green roofs.

Cutting - refer to section 1.4, use a handsaw and protection board.



Technical data		
Thickness	50mm	75mm
Size (w x l)	0.8m x 1.3m	
Weight	0.65kg/m² unfilled	0.95kg/m² unfilled
Water storage	10Ltr/m² when flat	21.5Ltr/m² when flat

GENERAL INSTALLATION

and for flat roofs 0-5°

- Lay out boards open cells upmost, interlocking the rebated edges.
- Stagger the boards tightly, brick pattern.
- Cut boards accurately around upstands and details.
- Cut a hole in the reservoir board larger than the outlet and slightly smaller than the inspection chamber that is being placed above it, (see section 7).

Between 5-15° pitched roof installation

- Lay the boards out horizontally to the slope of the roof.
- Start at the bottom kerb or batten.
- Lay filter fleece if detailed in the specification. (see section 4.1)
- Fill each board with either water or substrate as soon as it is fitted.

Greater than 15° pitched roof installation

- Follow instructions as above, filling each board to the crowns.
- Loose lay untreated wooden trellis (approx 150 x 150mm squares) over entire roof area.
- Complete substrate installation to required depth, as detailed in specification.

Tips:

- Boards are extremely light and so filling installed boards with water will help to prevent wind uplift.
- Keep trafficking of the boards to a minimum as they can be easily damaged. Use crawler board where required.

4 Filter Layer

4.1 Filter Fleece

Geotextile fleece to contain substrate fines, preventing them from entering the drainage layer.

Cutting - refer to section 1.4, use flat blade knife or scissors.

Technical data		
Thickness	1mm	
Size (w x l)	1m x 100m	2m x 100m
Weight	12.5kg/roll	25kg/roll

INSTALLATION

- Lay out over entire roof area that will be covered with substrate. Lap the Filter Fleece by 150mm on all joints.
- Extend beyond the finished surface level. This will be trimmed later, as required, upon completion of the landscaping.
- Where substrate is being installed next to drainage trim, dress Filter Fleece up the inside of drainage trims to prevent substrate from washing out.
- Ensure Filter Fleece completely encloses the substrate on the bottom and sides.

- Cut and remove Filter Fleece from above rainwater outlets.
- Where substrate is adjacent to vegetation barrier, the Filter Fleece should continue up between the pebbles and the substrate to separate the two materials.

- Cut and remove excess Filter Fleece upon completion of vegetation installation.
- Check outlets are clear of Filter Fleece.

Tips:

- Weigh or tape down Filter Fleece as soon as it is laid.

5 Growing mediums, substrate & fills

5.1 Extensive & Biodiverse Substrate

Lightweight, low nutrient, and free draining growing medium. Biodiverse substrate is generally used for wildflower, plugs, seeding and brown roofs. Extensive substrate is used with sedum.

Spreading - refer to section 1.4, spread with a wheelbarrow, spazzle or shovel.
Ordering and delivery - confirm quantities and prepare a loading out plan of the roof prior to calling off the order. Read and refer to section 1.2.

Technical data		
Supply form	Bulk bags 1.25m³	25kg bags (40 per pallet)
Weight	1200kg/m³ saturated	
Water storage	35% vol	
Coverage	At 80mm deep, 1m³ gives 10-12.5m² as there may be up to 20% settlement.	

INSTALLATION

- Ensure correct protection, drainage and Filter Fleece layers have been installed prior to spreading any loose substrate material.
- Mark the roof with the location for each bulk bag prior to loading out the roof.
- Use lengths of timber and a string line to help set the required finished depth of the substrate.

- If using bulk bags, care should be taken to maintain a controlled pour.
- Spread substrate to correct depth over entire area then add any remaining material required for settlement on top.
- Lightly rake to smooth the surface.
- Biodiverse substrate is normally installed with an undulating finish.

Tips:

- The back of a hard rake can be used instead of a spazzle to spread the substrate to correct depth.
- Substrate should not be worked when saturated or frozen.
- Damping the substrate can minimise airborne dust.

5 Growing mediums, substrate & fills

5.2 Intensive Substrate

Lightweight, low nutrient, and free draining growing medium.

Spreading - refer to section 1.4, spread with a wheelbarrow, rake or spazzle.
Ordering and delivery - confirm quantities and prepare a loading out plan of the roof prior to calling off the order. Read and refer to section 1.2.

Technical data		
Supply form	Bulk bags 1.25m³	25kg bags (40 per pallet)
Weight	1250kg/m³ saturated	
Water storage	45% vol	
Coverage	At 80mm deep, 1m³ gives 10-12.5m² as there may be up to 20% settlement.	

INSTALLATION

- Ensure correct protection, drainage and Filter Fleece layers have been installed prior to spreading any loose substrate material.
- Mark the roof with the location for each bulk bag prior to loading out the roof.
- Use lengths of timber and a string line to help set the required finished depth of the substrate.

- Substrate should be built up in layers no more than 200mm in depth.
- If using bulk bags, care should be taken to maintain a controlled pour.
- Substrate is best worked when dry.
- Continue spreading substrate in 200mm layers to correct depth over entire area, then add any remaining material required for settlement on top.
- Lightly rake to smooth the surface.
- Wet the substrate as soon as it is laid to reduce the dust.

Tips:

- The back of a hard rake can be used instead of a spazzle to spread the substrate to correct depth.
- Substrate should not be worked when saturated or frozen.

5 Growing mediums, substrate & fills

5.3 Seed Bed Substrate

Fine dressing to allow seeding of intensive and extensive substrates comprising crushed recycled brick and composted pine bark.

Spreading - refer to section 1.4, use a wheelbarrow, shovel, spazzle or rake.
Ordering and delivery - confirm quantities and prepare a loading out plan of the roof prior to calling off the order. Read and refer to section 1.2.

Technical data		
Supply form	Bulk bags 1.25m³	25kg bags (40 per pallet)
Weight	1800kg/m³ saturated	
Water storage	35% vol	
Coverage	25kg = 0.56m² at depth of 20mm	

INSTALLATION

- Ensure correct depth of extensive/intensive substrate is installed and raked out to give a smooth finish.
- The 20-30mm depth of the seed bed substrate can be included in the total substrate depth.
- Seed bed substrate must be dry to allow it to be spread evenly.
- Mark the roof with the loading out locations for each bulk bag or pallet.

- When spreading the substrate use a spazzle or the back of a rake, this allows material to be dragged without digging into the granular substrate below.
- Seeding (according to supplier's instructions) must take place immediately after forming the seed bed.
- Water the seeded area thoroughly, (refer to section 8).

Establishment growth after 6 months

Tips:

- Do not seed area in mid-summer without appropriate irrigation being available.
- Seed bed substrate should not be worked when saturated or frozen.
- Seeding is best carried out during Spring and Autumn months, (see section 6.5).

5 Growing mediums, substrate & fills

5.4 Mineral Drain

Granular fill comprising single size stone aggregate.

Spreading - refer to section 1.4, spread with a wheelbarrow, shovel, rake or spazzle.
Ordering and delivery - confirm quantities and prepare a loading out plan of the roof prior to calling off the order. Read and refer to section 1.2.

Technical data		
Supply form	Bulk bags 1m³	25kg bags (40 per pallet)
Weight	1375kg/m³ saturated	
Water storage	8-10% vol	
Coverage	at 80mm deep = 12.5m²	
	1m³ in DSE60 gives 31m²	
	1m³ in DSE40 gives 47m²	

INSTALLATION

- Mark the roof with the location for each bulk bag prior to loading out the roof.
- If using bulk bags, care should be taken to maintain a controlled pour.

- Spread Mineral Drain to fill the DSE40 or DSE60 board so that it is level with the top of the profiles.
- The action of spreading the Mineral Drain should allow it to settle.
- Use water to reduce dust levels during spreading.
- Refer to section 3 for fill of DSE40 and DSE60.

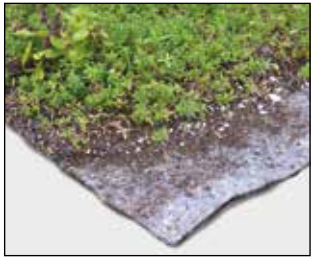
Tips:

- When spreading the Mineral Drain use a spazzle or the back of a rake to stop damage to the board.

6 Vegetation

6.1 XF301 Sedum Blanket

Pre-cultivated sedum vegetation blanket with integral geotextile filter fleece and 8mm moisture retention layer attached to the underside.



Storage - refer to section 1.2, correct quantities of XF301 should be delivered daily to meet installation requirements for that day. Any unused and still required blanket should be rolled out on a flat level surface and lightly watered. It is acceptable to keep XF301 for 2-3 days provided it is watered daily and not trafficked.

Manual Handling - 2m rolls of XF301 are too heavy to be handled by one person. Movement of rolls by hand should be kept to a minimum.

Cutting - Refer to section 1.4, use a sharp knife or angle grinder and a protection board to prevent damage to the waterproofing.

Technical data		
Supply form	1m x 2m rolls; 15 rolls / pallet	Long rolls up to 10m
Thickness	28mm	
Weight	44kg/m² saturated	

INSTALLATION

- Installation sequence must begin at the far end of the roof so that the XF301 is not walked on.
- Clean sedum and substrate from side and end lap to give a straight edge and enable a butt joint with no visible gaps.
- Any sedum and substrate removed from joints should be saved for patching.
- Lay sedum rolls on top of previous lap, in a staggered brick pattern, only full or half rolls around perimeter. Always cut on a protection board.
- Thoroughly water areas of XF301 as they are installed.
- On completion of the day's installation fill open joints or bare areas with salvaged sedum and substrate, utilising any unused mats and further substrate as an additional source, and water in (see section 8).

6 Vegetation

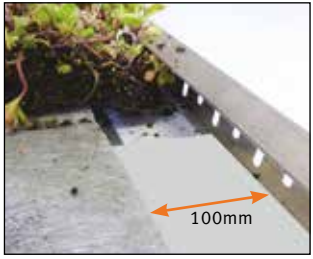
6.1 XF301 Sedum Blanket

Installation with SDF Mat

- XF301 will be laid at 90° to the SDF Mat laps.

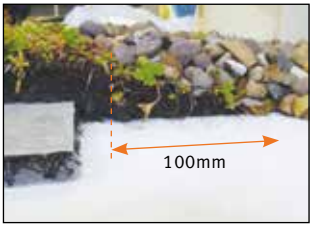
Installation with AL40

- If SDF Mat is specified, finish the mat 100mm short of the vertical face of the AL40.
- Trim blanket to length required and tuck under the AL40 lip to secure the end and prevent wind uplift.



Installation with pebble barrier

- Extend blanket 100mm beneath the pebbles to anchor the blanket against wind uplift.



Pitched Roofs

- Retention strips should be installed prior to the XF301 sedum blankets. Normally >10° for bitumen membrane waterproofing and >5° for single ply (see section 7.5).

  XF301 should be installed on long rolls, via a crane, on barrel shaped and steep-pitched roofs.

AFTERCARE

- Water the XF301 Sedum Blanket to establish the vegetation (see section 8).

Tips:

- Take photos of roof following completion to record condition.
- Record that aftercare advice has been given to main contractor regarding watering, trafficking and storage on the roof.

6 Vegetation
6.2 SB and WB Blankets

Both products are pre-cultivated vegetation mats grown on 100% biodegradable coir carrier installed on top of Bauder FLL and GRO compliant substrate.

Storage - refer to section 1.2, correct quantities should be delivered daily to meet installation requirements for that day. Any unused and still required vegetation mats should be rolled out in the shade on a flat level surface and lightly watered. The vegetation will keep for 2-3 days provided it is watered daily and not trafficked.

Manual Handling - 2m rolls of SB or WB are too heavy to be handled by one person. Movement of rolls should be kept to a minimum.

Cutting - Refer to section 1.4, use a sharp knife or angle grinder and a protection board to prevent damage to the waterproofing.


SB


WB

Technical data		
	SB	WB
Supply form	1m x 2m rolls; 20 rolls /pallet	
Thickness	25mm	30mm
Weight	≤ 24kg/m² saturated	≤ 28kg/m² saturated

INSTALLATION

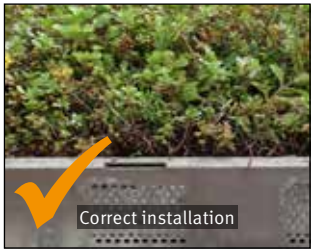
- Ensure substrate and any required drainage trim is fitted prior to installing SB/WB blankets.
- Start at the far end of the roof to prevent walking on the vegetation.
- Clean off loose vegetation and substrate from the edge of the blanket to give a straight edge. Save these for patching.
- Lay SB/WB blanket tight butted, in a staggered brick pattern, only full or half rolls around perimeter.
- Thoroughly water areas of vegetation mats as they are completed.
- On completion of the day's installation fill open joints or bare areas with salvaged vegetation and substrate,utilising any unused mats and further substrate as an additional source, and water in (see section 8).

Lines indicate staggered brick pattern

6 Vegetation
6.3 SB and WB Blankets

Installation with drainage trim AL80/100, AL150 or AL100

- Ensure that filter fleece is dressed up the inside of the drainage trim and held in place by substrate.
- Install vegetation mats so that top of the blanket is finished level with the top of the trim.
- Trim blanket to required length.
- Only install lengths of over 500mm adjacent to the edge of the system.



Installation with vegetation barrier

- Where vegetation mat is laid with pebble vegetation barrier the blanket should stop along the line of the filter fleece separation sheet.
- Ensure vegetation mat and pebbles are level, i.e. at the same height.

Pitched Roofs

- Avoid trafficking of the finished system as it will cause the substrate to slip down the roof.

AFTERCARE

- Water the blankets to establish the vegetation (see section 8).

Tips:

- Take photos of roof following completion to record condition.
- Record that aftercare advice has been given to main contractors regarding watering, trafficking and storage on the roof.

6 Vegetation
6.4 Bauder Plug Plants

Pre-grown plants grown in plug format for individual planting on a substrate-based green roof.

Storage - refer to section 1.2 Inspect the plants on delivery, check for damage and quality. Keep moist and water regularly to prevent plugs drying out. Plugs will survive for 4-5 days if they are kept moist and out of direct sun.
Planting - Use a dibber or trowel to plant. Only plant 10m² areas at a time (work out plant numbers and species mix for each area). Only remove a small number of plugs from the trays at any one time as they dry out very quickly. **Best establishment will be achieved in spring and autumn.** If planted in summer extensive and prolonged watering will be required.

Technical data	
Supply form	4cm plugs – 104 per tray
	5-6cm plugs – 54 per tray
	Native plugs – 104 per tray
Pallet	60 trays/pallet
Planting rate	As per project specification
Weight	≈ 5kg/tray

INSTALLATION

- Plug Planting should be the last construction activity on the roof and should take place in the Spring or Autumn months.
- Do not plant the plugs if there is no means to water them during establishment.
- Ensure the substrate is at the correct level and is raked out to give a smooth finish.

- Begin at the far end of the roof so the vegetation is not walked upon.
- Work 10m² area at a time, lay out the plugs in a random pattern with no more than 3-4 species / m² and do not position any within 100mm of the edge.
- Plant density as per specification.
- Make a hole in the substrate, place plug into hole so that the soil in the plug is level with the substrate.
- Firm up substrate around the plug.
- Thoroughly water each 10m² area as soon as completed using a soft spray.
- Continue with the next 10m².
- Do not traffic or disturb the planted area as growth of the plants will be affected.

AFTERCARE

- Follow instructions in (see section 8).

Tips:

- Take photos of roof following completion to record condition.
- Record that aftercare advice has been given to main contractor regarding watering, trafficking and storage on the roof.
- Roofs may require netting to prevent birds from pulling up the plug plants.
- Do not plant if there is a risk of frost.

6 Vegetation

6.5 Bauder Flora Seed Mixes 3,5,7,9 & 11

A balanced mix of British native seed and growing material including organic nutrients and mycorrhizas to assist with installation and establishment process.

Storage - refer to section 1.2, store in dry conditions, maximum of 1 year. If the seed mix becomes damp prior to installation it must be discarded. **Seeding - ideally sow in spring or autumn.** Do not seed in midsummer unless there is adequate surface watering, do not sow in strong winds, or frosty conditions.

Technical data			
Supply form	2kg bag	5kg bag	20kg
Sow rate	100g/m²		
Coverage	20m²	50m²	200m²

INSTALLATION

- Ensure the substrate is at the correct level and is raked out to give a smooth finish.
- Water the substrate thoroughly prior to spreading the Seed Mix.
- Seed in two passes at 90° to each other, sow 50% of the mix in each direction to achieve sow rate of 100g/m².
- **Do not water or rake afterwards.**
- **Do not traffic or disturb the seeded area otherwise germination of the seed will be affected**.

AFTERCARE

- Follow instructions in section 8

Tips:

- Take photos of roof following completion to record condition.
- Record that aftercare advice has been given to main contractors regarding watering, trafficking and storage on the roof.

Vegetation
Vegetation Barrier

20-40mm washed, rounded pebbles used as a fire break around the perimeter of the green roof, at upstands, rooflights, and penetrations.

Spreading - refer to sections 1.4, spread by hand, with a small shovel and wheelbarrow using plywood or scaffold planks as walkways to prevent damage to the vegetation.
Delivery - do not land the bags directly onto the vegetation blanket.

Technical data	
Supply form	As per supplier specification. Typically 25kg bags or bulk bags
Coverage	Typically 50kg required per lm x 500mm of border

INSTALLATION

- Ensure correct protection layer is installed prior.
- Ensure leaf guards or inspection chambers are fitted to outlets before arranging pebbles around them.
- Spread pebbles evenly to a depth of 50mm, or as per specification.
- Discard any sharp pebbles that may cause damage.

Installation with XF301

- XF301 has a BBA Fire Certificate and as such does not always require a vegetation barrier to act as a fire break.
- Distribute pebbles to overlap the XF301 by 100mm thereby providing anchorage.
- Use a scaffold plank to give pebbles a straight line on top of the XF301.
- Please check the specification for its inclusion.

Tips:

- Pebbles can be ramped up or down to meet the top edge of vegetation trim.
- Although bulk bags can be more cost effective, moving the pebbles around the roof will be much slower.

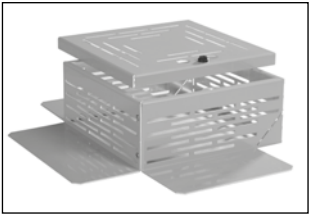
7 Accessories

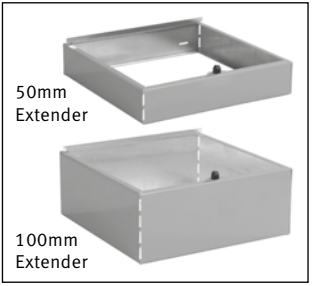
7.1 Inspection Chamber and Extension

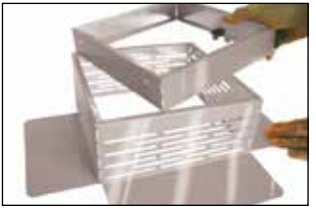
Boxed access compartment for drainage outlet, fabricated from powder coated aluminium with lockable lid opening.

Outlets - ensure each outlet having an inspection chamber fitted is not obstructed by PE Foil, protection mat, drainage layer or filter fleece. The inspection chamber should be fitted flush with the top of the vegetation. On deeper green and blue roof build ups, extender sections will be required.

Cutting - in narrow gutters or tight locations the chamber may need cutting to fit. Modify with tin-snips, or hacksaw along perforated slots and file smooth. Use a protection board to avoid damage to the waterproofing or landscaping components, (see section 1.4).







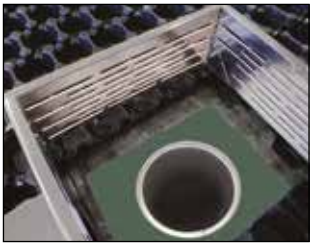
Technical data	
Size w x l x h	250mm x 250mm x 100mm
Weight	950g
Height extenders	50mm or 100mm high
Support flanges	100mm on three sides

INSTALLATION

- Cut back any PE Foil, Protection Mat, drainage layer or Filter Fleece from the outlet opening.
- Place the chamber on top of the protection layer, positioned centrally over the outlet.
- On installations without a protection layer, place a small area of protection mat or fleece for the chamber to rest on.
- Do not allow any material to lap up the side of the chamber as this will block the drainage slots.
- Surround the Inspection Chamber with 20-40 grade rounded pebbles.

Extension sections

- Remove chamber lid to fit and secure the extension section(s) required.
- Ensure sufficient extension sections have been fitted so that the top of the chamber is flush with the vegetation.
- Replace the lid.



Blue roofs

- When used over a blue roof outlet, ensure sufficient extension sections are used to allow 50mm clearance above the H-max overflow pipe (see section 10.2).

Tips:

- The lock on the chamber cover can be undone with a flat bladed screw driver.

7 Accessories

7.2 AL40

1.5mm aluminium drainage trim and edge restraint for XF301 sedum blanket.

Cutting - refer to section 1.4, with tin-snips, hacksaw or grinder and use a protection board to avoid damage to the waterproofing or landscaping components.
Handling - drainage trim has sharp edges. Gloves should be worn.

Technical data	
Size w x h x l	70mm x 40mm x 2m
Supply form	10 lengths per box (20m) External corners available individually

INSTALLATION

- Lay out pre-formed 90° corner sections and lengths of AL40 around perimeter to determine cutting/sizes required.
- Measure and cut AL40 straight, removing any burrs with a hand file.
- Use connector pieces at joints so AL40 trim runs straight and true.
- Fix each length to the waterproofing using strips of 200mm x 500mm cap sheet at 400mm intervals.

Plant E for bituminous systems:
Make sure there is a secure bond through the foot plate holes in the AL40 before completing the bonding to the length of the membrane strip.

Thermofol or Thermoplan membrane on its matching single ply waterproofing:
Make sure there is a secure bond through the foot plate holes in the AL40 before completing the bonding to the length of the membrane strip.

Tips:

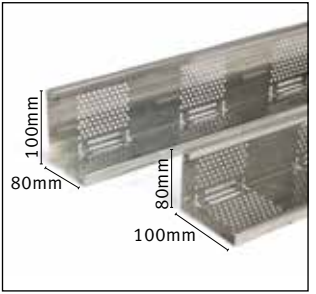
- Where possible avoid running on top of waterproof lap or joints when positioning the AL40.
- To work out the best fix position, assemble the sections of AL40 with connectors and corners prior to fixing.
- Make sure there is a secure bond through the holes in the AL40.
- Where there are intricate details (corners or tight returns) fixing flashings can be cut wider or shorter to suit.
- See section 6.1 for XF301 sedum blanket installation.

7 Accessories

7.3 AL80/100

1.5mm aluminium drainage trim, open edge restraint or gutter detail which can be used to provide either a 80mm or 100mm face.

Cutting - refer to section 1.4, with tin-snips, hacksaw or grinder and use a protection board to avoid damage to the waterproofing or landscaping components.
Handling - drainage trim has sharp edges. Gloves should be worn.



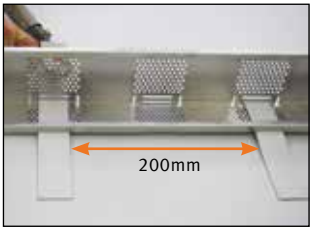
Technical data	
Size w x h x l	80mm x 100mm x 2.5m (width and height interchangeable)
Supply form	nominated quantity

INSTALLATION

- Lay out lengths of AL80/100 around perimeter to determine cutting/sizes required.
- Measure and cut AL80/100 straight, removing any burrs with a hand file.
- Ensure AL80/100 trim runs straight and true.

Bituminous systems:
Fix each length to the waterproofing using strips of 200mm x 500mm of Plant E cap sheet torch-bonded at 400mm intervals.

Single ply systems:
Feed a thin strip of single ply through the pre-cut horizontal slots positioned along the base of the vertical face of the trim and hot air weld to the main waterproofing. Fixing strips should be at 200mm intervals.



Tips:
- Where possible avoid running on top of the waterproof lap or joints when positioning the AL80/100.
- To work out the best fix position, assemble the sections of AL80/100 prior to fixing.
- where there is intricate detailing (corners or tight returns) fixing strips can be cut wider or shorter to suit.

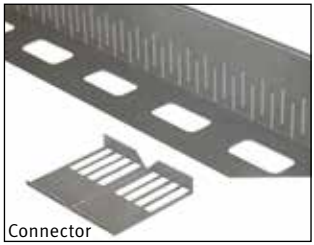
Note:
- AL80/100 cannot be used as a mechanical restraint on pitched roofs.

7 Accessories

7.4 AL150 & AL100

1.5mm aluminium drainage/ containment trim, open edge restraint or gutter detail.

Cutting - refer to section 1.4, with tin-snips, hacksaw or grinder and use a protection board to avoid damage to the waterproofing or landscaping components.
Handling - drainage trim has sharp edges. Gloves should be worn.

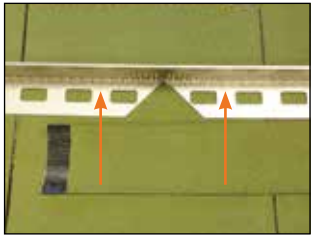


Connector

Technical data	
Size w x h x l	**AL150 -** 146mm x 150mm x 2.5m **AL100 -** 126mm x 100mm x 2.5m
Supply form	nominated quantity with 1 x multi-purpose connection piece supplied per 2.5m length
	SUBSTRATE DEPTHS
AL150	130mm - 200mm
AL100	80mm - 120mm

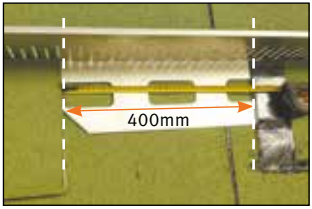
INSTALLATION

- Lay out lengths of drainage trim around perimeter to determine cutting/sizes required.
- Measure and cut drainage trim straight, removing any burrs with a hand file.
- Ensure drainage trim runs straight and true.
- Fit connection pieces so that the drainage slots are aligned.
- Connection pieces can be bent to form internal/ external corners.

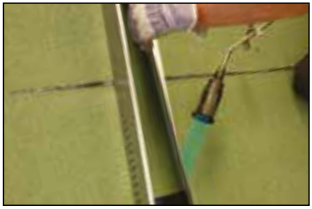


AL150 butted together with membrane strip positioned ready for welding.

- Fix each length to the waterproofing using strips of 250mm x 500mm cap sheet bonded at 400mm intervals through the foot plate fixing holes.



Plant E strips torch-bonded for bituminous systems:
Ensure secure bond is made through the holes of the foot plate before completing.



Thermofol or Thermoplan membrane:
Hot air welded on its matching single ply waterproofing.

Tips:
- When positioning the drainage trim, avoid fixing where multiple laps converge. Set back the trim at abutments to avoid angle fillets and detail flashings.
- Connection pieces can only be bent once to form corners as rebending will cause them to snap.
- Additional connection pieces should be ordered where required i.e. detailing around outlets etc.
- Where there is intricate detailing (corners or tight returns) the foot plate can be trimmed to suit.

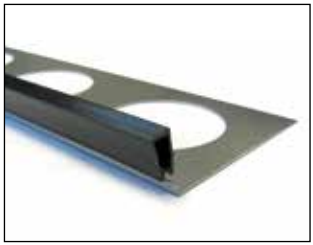
Note:
- Drainage trim cannot be used as a mechanical restraint on pitched roofs.

7 Accessories

7.5 Sedum Blanket Retention Strip

1.2mm stainless steel mechanical retention strip supplied with protective plastic cover. Used to prevent XF301 slipping on pitched roofs typically >10° for bituminous systems and >5° for single ply.

Safety - the spikes on the Retention Strip are very sharp. Do not remove plastic safety guard until the XF301 blanket is being installed.
Handling - drainage trim has sharp edges. Gloves should be worn.
Quantities - as a rough guide, allow one retention strip per 2m length of XF301.



Retention Strip supplied with spikes covered

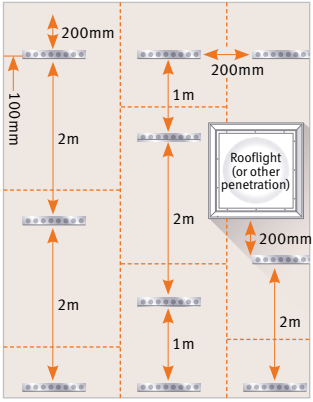
Retention Strip with covering removed

INSTALLATION

- If specified, ensure AL40 has been installed prior to commencing installation of Retention Strip (see section 7.2).
- Measure roof area and confirm exact layout of each XF301 roll (standard and long rolls).
- Each 800mm wide Retention Strip is designed to sit centrally across the width, beneath the 2m long roll of XF301.
- Create a laying plan for the Retention Strips that matches that for the XF301.

Technical data	
Size w x h x l	100mm x 22mm x 800mm
Supply form	24 lengths per box

- Layout the first Retention Strips 200mm from the top edge and 100mm from the side edge of the roof.
- Position the Retention Strip with the fixing plate above (uphill) the row of spikes.
- Place at 2m intervals down the roof.
- Fix each Retention Strip to the waterproofing using strips of 200mm x 800mm membrane securely bonded through the foot plate holes.



Positioning of 2m mats

Tips:

- Minor adjustments (50-100mm) to the position of the Retention Strip can be made to avoid a build up of laps.
- Where there are rooflights and other penetrations, the bottom edge of the penetration should be treated as the top edge of the system (i.e. Retention Strip fitted 200m below).
- Do not rest irrigation pipework on the Retention Strip spikes.

Plant E strips torch-bonded for bituminous systems

Thermofol or Thermoplan membrane

7 Accessories

7.6 KH60 Linear Drain

Galvanised steel drainage product used around door thresholds and changes in landscape finish. Adjustable support legs accommodate height variations. Installed with Connector Clips and Stop-Ends.

Cutting - refer to section 1.4, use a hacksaw or disc cutter to modify length of linear drain as required.

Drain Channel, Grille Plate & support legs

Technical data	
Dimensions (h x w x l)	60mm x 150mm x 1000mm
Support legs (2 pairs)	Height adjusts 95mm - 130mm

INSTALLATION

- Ensure the roof surface is clean and level and the protection layer is fitted.
- Avoid sitting adjustable feet over welded membrane laps.
- Measure the length of the drainage run required.
- Position Linear Drain, linking the units with Connector Clips.
- Cut Linear Drain if required.
- Fit Stop-Ends to each end of the drainage run.
- Fit and adjust legs to ensure the drain sits flush with the paving/threshold etc.
- Ensure two pairs of legs are fitted per 1m length of Linear Drain.

Adjustable Support Legs (supplied separately)

Linear Drain Channel Stop-End (supplied separately)

Accessories

Outlet Access Cover

Channel and grille plate made from galvanised steel giving access to rain water outlets in paved finishes. Can be used in conjunction with Bauder KH60 Linear Drain.

INSTALLATION

- Ensure the roof surface is clean and level.
- Position the access grille directly over the rainwater outlet.
- Grille should be mounted using Bauder Pedestal Support System.
- Ensure a protection layer is fitted beneath the Bauder Pedestals.

Technical data		
Size:	Small	Large
	250 x 250mm	400 x 400mm
Weight	3.5kg	4.0kg
Height Adjustment	80 - 100mm	

Tips:

- Never fit outlet access cover on unstable surfaces such as green roof drainage layers or water retention products.

8 Watering Vegetation

8.1

Watering is a necessity for successful establishment. The following is a guide to expected requirements of each system or vegetation type, however the weather is unpredictable and adjustments should be made depending on the exact conditions at the time of installation.

Summer - April to October
Winter - November to March

Watering is best carried out using a soft spray or sprinkler system.

XF301 AND SB SEDUM VEGETATION BLANKETS

Establishing the vegetation

- Saturate blanket immediately after installation - All year round
- Summer months - 4-6 weeks of regular watering every 2-3 days enough to keep the blanket damp to the touch.
- Winter months - Once a week if no significant rainfall, enough to keep the blanket damp to the touch.

WB WILDFLOWER BLANKET

Establishing the vegetation

- Saturate blanket immediately after installation - all year round.
- Summer months: 10-12 weeks of regular watering; every other day for the first six weeks and then frequency as required keeping the blanket and substrate damp to the touch.
- Winter months: Once a week if no significant rainfall,enough to keep the blanket and substrate damp to the touch.

Maintenance watering (once established)

- Summer months: Water only in times of hot dry weather where no rainfall has taken place for two weeks. Frequency of twice a week in evening or early morning.

BAUDER PLUG PLANTS

Planting of plugs should only be carried out in spring or autumn.

Always use a soft spray when watering.

- Saturate plugs before planting.
- Water plugs immediately after installation using a soft spray to avoid erosion of the substrate.

Establishing the vegetation

- Summer months: 10-12 weeks of regular watering with a soft spray every day keeping the plugs damp to the touch.
- Winter months: Once a week with a soft spray if no significant rainfall, enough to keep the plugs damp to the touch.

Maintenance watering (once established)

- Summer months: Water only in times of hot dry weather where no rainfall has taken place for two weeks. Twice a week in evening or early morning.

8 Watering Vegetation

SEED ON SEED BED SUBSTRATE

Do not sow seeds in mid-summer.

Always use a soft spray before watering.

Establishing the vegetation

- The substrate will have been watered immediately prior to seeding and no further watering is required at installation so that seeds can germinate naturally in undisturbed conditions.
- Once seeds have started to germinate and grow, seed bed substrate should be kept damp through regular watering with a soft spray for the first 10-12 weeks.

Maintenance watering (once established)

- Summer months: Water only in times of hot dry weather where no rainfall has taken place for two weeks. Twice a week in evening or early morning.

BAUDER FLORA SEED MIXES (3,5,7,9 & 11)

Do not sow seed mixes in mid-summer.

Always use a soft spray when watering.

Establishing the vegetation

- Once seeds have started to germinate and grow, the substrate should be kept damp through regular watering with a soft spray for the first 10-12 weeks, particularly if no significant rainfall has occurred.

Maintenance watering (once established)

- Summer months: Water in times of hot dry weather where no significant rainfall has taken place for two weeks. Twice a week in evening or early morning.

Fertilising

Bauder Organic Slow Release Fertiliser

This granular slow release feed can be spread by hand on small roof areas or roofs with a steep pitch, otherwise application is most efficient through using a spreader trolley.

Health and Safety - fertiliser is an irritant and can affect the skin and eyes. It should be handled with care. Avoid handling fertiliser with bare hands, use gloves. Prevent dust from fertiliser entering eyes or mouth. Always read the Safety Data Sheet prior to application.
Storage - keep fertiliser dry at all times and reseal bag between applications.

Technical data		
Supply form	10kg	20kg
Coverage	125m²	250m²
Typical application rate	80g/m²	

APPLICATION

- Fertiliser should only be applied between March and October.
- Ensure the green roof installation is finished and/or all weeding, patching and filling of joints is completed prior to application of fertiliser.
- Distribute using a spreader trolley or by hand on small or sloped roofs.
- Water thoroughly after application with surface watering (not drip line irrigation).

9 Fertilising

9.2 Spreader Trolley Application

The spreader trolley enables the distribution of granular fertiliser to be accurate and uniform.

- Position the spreader trolley away from any area of green roof and place a plastic sheet under the trolley to catch any spilt fertiliser. This prevents damage to the vegetation.
- Check the fertiliser spreader instructions to adjust the spread to the correct rate.
- Set the level on the arm of the unit to 'off'.
- Set the dial at the base of hopper to correct position (normally 2 for 80g/m²).
- Fill the hopper sufficiently, do not overfill.
- Set the level on the arm to 'on' and begin to distribute at walking pace.

Tips:

- Typically XF301 and SB Sedum Blanket should be fed at 80g/m² annually; ideally in spring.
- Rates for WB Wildflower Blanket will vary.
- Following the lines of the vegetation blanket joints helps ensure even coverage of whole roof.
- Seed mixes and plug plants levels of fertiliser are incorporated and fertilisation may only be necessary after 12 months, depending on plant growth.

BLUE ROOF

COMPONENTS INSTALLATION

BAUDERBLUE COMPONENTS
This section describes the correct installation of each specific component for the BauderBLUE roof system.

PREREQUISITES
Section one, at the front of this guide, MUST be read and fully understood before installation works commence. Elements particular to the BauderBLUE components are identified with a blue bullet point, however the entire section should be comprehended before any installation commences.

The Bauder waterproofing system MUST undergo a successful final inspection and be signed off prior to installation of any blue roof component.

BAUDERBLUE CONDITIONS
The blue roof capacity may be reduced and therefore its performance compromised if the roof structure has significant deflections or back falls from outlets. The roofing contractor is recommended to forward an 'as build' deflection survey to Bauder for comment should there be any concerns.

The illustrations and information within this guide follow the NFRC guidelines and relevant British Standards.

TECHNICAL SUPPORT
If you require support or advice on the system or products within the specification please contact:

■ Chris Roddick	Green Roof Product Manager	07525 991594
■ Head Office		0845 2718800

10 Blue Roof Components

10.1 Attenuation Cell 100

Multi-directional drainage layer used to create the void space in a blue roof. Installed on a protection layer above the completed waterproofing to provide continuous drainage.

Delivery – confirm quantities required (see section 1.2)
Cutting – refer to section 1.4, use a grinder and protection board to avoid damage to the waterproofing or other components.

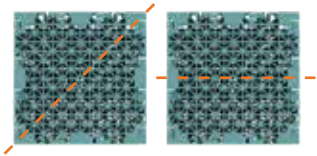
Technical data	
Size (l x w x h)	0.6m x 0.6m x 0.1m
Coverage	Per tile: 0.36m^2 Per m^2: 2.78 tiles
Supply form	96 boards/ per pallet
Connectors	Cross connectors – 500/bag Shear connectors – individually ordered according to requirement

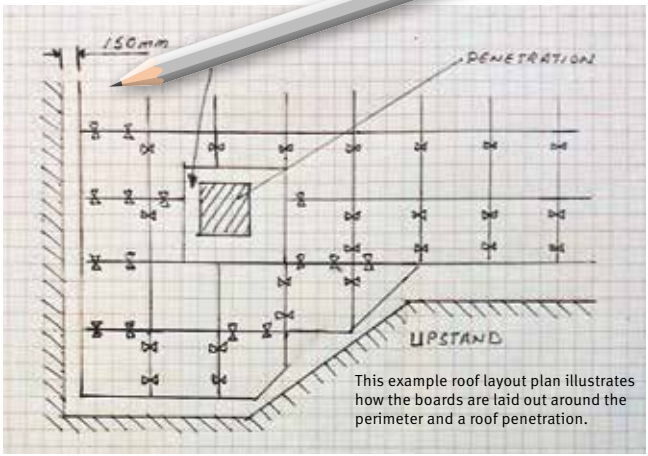
Shear Connector

Cross Connector

CREATING A ROOF LAYOUT PLAN

- Measure out the blue roof and create a layout plan to accommodate penetrations. (see facing page)
- Allow for a 150mm gap around the perimeter or penetrations to take into accountant any thermal expansions.
- Plan the layout so that cut boards are greater than 50% of the full board size (as shown).





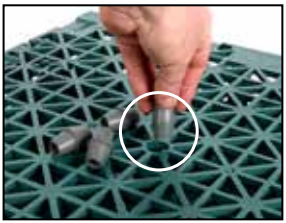
This example roof layout plan illustrates how the boards are laid out around the perimeter and a roof penetration.

SINGLE-LAYER INSTALLATION

- Any boards requiring to be cut should be done either diagonally or horizontally and only reduced by a maximum of 50%.
- Secure adjacent boards using the cross connectors.
- All perimeter boards must be connected together to form a fixed external edge.
- Each internally positioned board should have at least one cross connector fitted.

MULTI-LAYER INSTALLATION

- Each layer of Attenuation Cell 100 must be completed fully before starting the next layer.
- Each layer is connected vertically using the Shear Connectors fitted to the centre of each Attenuation Cell 100 board.



10 Blue Roof Components

10.2 Flow Restrictor

The specifically engineered flow restrictor fits into the Bauder outlet to reduce the discharge of stormwater in to the drainage system at a calculated and predesigned flow rate.

The flow restrictor comprises 4 parts: Baseplate, Overflow Pipe, Inner Seal and Outer Seal

Blue roofs restrict the flow of water from a roof, it is important that the Flow Restrictor is not installed until the roof is 100% completed and all activity by other trades has ceased.

COMPONENTS

Each flow restrictor comprises four parts that are assembled, measured and the overflow pipe cut to meet the specification requirements before finally installing into the outlet.

Technical data		
	Base plate	**Overflow pipe**
Material	Polyamide	HDPE
Height	30mm	250mm max (cut down to HMax)
Diameter	176mm (excluding outer seal)	75mm
Overflow aperture	85mm	85mm
Supply form	As part of a 4 part set	

SETTING UP THE FLOW RESTRICTOR

- Check each flow restrictor is correct and meets specification and blue roof calculations for the particular roof area it is to be fitted on. Every flow restrictor is manufactured with a specific number of restrictor holes to meet the roof area SuDS requirements.

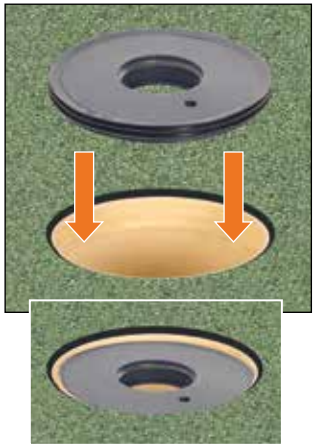
- Fit the inner and outer seals on the base plate ensuring a tight fit (no snags or lips).

10 Blue Roof Components

10.2 Flow Restrictor

POSITIONING THE OVERFLOW PIPE AND CUTTING TO THE H-MAX HEIGHT

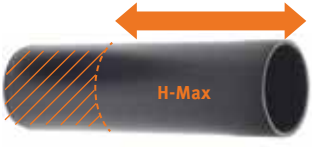
- Insert the base plate into the outlet, this should sit 10mm below the surface when correctly installed.



- Lubricate the chamfered end of the overflow pipe and push into the central of the baseplate, there is a stop within the baseplate at 27mm. Ensure the overflow pipe is inserted in to this point.

- From the blue roof calculations provided for the project, measure the H-Max from the top of the waterproofing and mark on the overflow at four separate points.

- Remove the overflow and carefully cut the pipe. Care should be taken not to cut the overflow at an angle. Remove any burrs.



- Replace the overflow, and confirm measurement. Check no debris is blocking any of the restrictor flow holes and install the inspection chamber.

10 Blue Roof Components

10.3 Parapet Emergency Overflow Outlet DN70

COMPONENTS

Provides a visible overflow for water build up at roof level. It is used in conjunction with other roof drainage outlets to ensure that there is no water ingress into the building and that the structural load of the roof is not exceeded.

GENERAL ADVICE

With the installation of any flat roof rainwater drainage outlets BS EN 12056-3:2000 should be observed.

Some key points of these regulations are listed below:

- The rainwater outlet must be fixed to the construction by mechanical fastening.
- Rainwater outlets have to be kept clear for maintenance.
- In general, rainwater outlets have to be checked at least twice a year.

Technical data	
Material	Stainless steel
Colour	silver
Neck length	800mm
Angle of spigot	3 degrees
Nominal width DN OD	75mm

The Parapet Emergency Overflow Outlet DN70 is recommended on blue roofs and is **not** exclusively a blue roof product.

1. Overflow Pipe and Face Plate (chamfered on one end)
2. Face Plate Seal
3. Base Plate Seal
4. Base Plate (for insulated upstands only)

INSTALLATION

- Cut an opening of the correct size (approx. 80mm) to accommodate the outlet, allowing for the 3° angle of the pipe.

- For insulated upstands fix the base plate to the wall at the appropriate height (determined by the finished height of the landscaping/ waterproofing).

  For Blue Roofs fix at the H-Max level.

  For uninsulated upstands, no base plate is required.

- Screw the enclosed grub screws as a guide into the four threaded holes in the base plate.

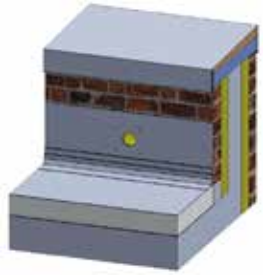
  Ensuring the base plate seal is against the wall. Fix the waterproofing around the drainage hole in the base plate.

- Prime the base plate and attach the vapour control layer to the base plate, ensuring a good seal is achieved.

10

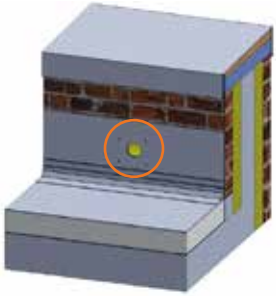
- Determine the position of the overflow pipe by fitting the face plate seal onto the grub screws.

  This will enable the hole to be marked and cut out of the vapour control layer to enable fitting of the overflow pipe.

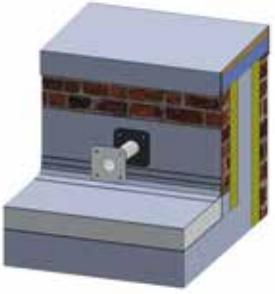


- A 10mm hollow punch should be used to mark the holes, then clear the membrane from the screw holes.

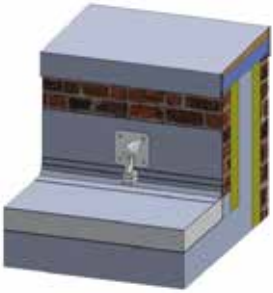
  In the case of an insulated upstand, fit the required insulation board, cutting the appropriate holes to accommodate the overflow pipe and the grub screws.



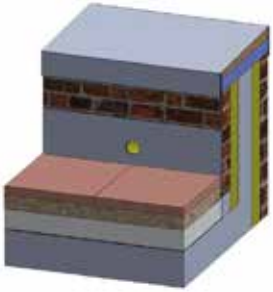
- Install the underlayer as per specification. Cut out the underlayer to enable fitting of the overflow pipe.



- Remove and replace the grub screws with the large countersunk fixing screws. Tighten in turn to a torque of 25Nm.



- Prime the face plate and install the cap sheet as per specification and cut an appropriate hole to allow for overflow drainage.



BAUDER

UNITED KINGDOM
Bauder Limited
70 Landseer Road, Ipswich,
Suffolk IP3 0DH, England
T: +44 (0)1473 257671
E: info@bauder.co.uk
bauder.co.uk

IRELAND
Bauder Limited
O'Duffy Centre, Carrickmacross,
Co. Monaghan, Ireland
T: +353 (0)42 9692 333
E: info@bauder.ie
bauder.ie