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**Agrément Certificate**

**13/5077**

Product Sheet 2

### BRIGGS AMASCO ROOF AND STRUCTURAL WATERPROOFING SYSTEMS

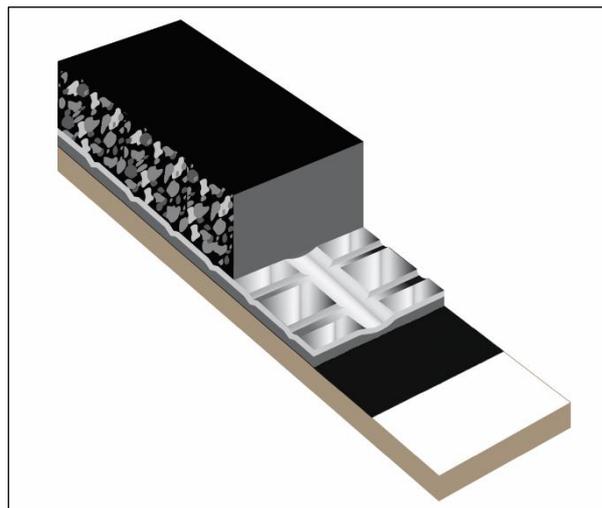
#### FLEXIPHALTE TRIPLE PROTECTION ROOFING AND STRUCTURAL WATERPROOFING SYSTEMS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems, comprising Flexiphalte Pommar, a polymer-modified mastic asphalt, and Flexiphalte Baryprene, a high-performance polymer-modified bitumen membrane, for use in inverted waterproofing specifications on flat roofs (including those with zero falls) with limited access, or as a structural waterproofing on green roofs, roof gardens, podiums and roadways.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Weathertightness** — the systems will resist the passage of moisture into a building (see section 6).

**Properties in relation to fire** — the use of the systems can enable a roof to be unrestricted under the current national Building Regulations (see section 7).

**Resistance to wind uplift** — the systems will resist the effects of any likely wind suction acting on a roof (see section 8).

**Resistance to mechanical damage** — the systems can accept the traffic loads and the effects of thermal or other minor movement likely to occur in service without damage (see section 9).

**Durability** — under normal service conditions, the systems will provide a durable waterproof surfacing with a service life in excess of that of conventional grades of mastic asphalt (see section 11).



The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 9 November 2017

John Albon – Head of Approvals  
Construction Products

Originally certificated on 23 December 2013

Claire Curtis-Thomas  
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)  
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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## Regulations

In the opinion of the BBA, Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



### The Building Regulations 2010 (England and Wales) (as amended)

**Requirement:** B4(2)

Comment:

**External fire spread**

On flat roofs, the systems, when used in inverted roof specifications, including a minimum surface finish of 50 mm of aggregate or concrete paving slabs, may be deemed to be designation B<sub>Roof</sub>(t4). See sections 7.1 to 7.5 of this Certificate.

**Requirement:** C2(b)

Comment:

**Resistance to moisture**

The systems will enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.

**Regulation:** 7

Comment:

**Materials and workmanship**

The systems are acceptable. See section 11 and the *Installation* part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

**Regulation:** 8(1)(2)

Comment:

**Durability, workmanship and fitness of materials**

The systems satisfy the requirements of this Regulation. See sections 10 and 11 and the *Installation* part of this Certificate.

**Regulation:** 9

Standard: 2.8

Comment:

**Building standards applicable to construction**

Spread from neighbouring buildings

When used in inverted roof specifications including a minimum surface finish of 50 mm of aggregate or concrete paving slabs, a roof incorporating the systems can be regarded as having low vulnerability with reference to clause 2.8.1<sup>(1)(2)</sup> of this Standard. See sections 7.1, 7.4, 7.5 and 7.6 of this Certificate.

Standard: 3.10

Comment:

Precipitation

The systems will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1<sup>(1)(2)</sup> and 3.10.7<sup>(1)(2)</sup>. See section 6.1 of this Certificate.

Standard: 7.1(a)(b)

Comment:

Statement of sustainability

The systems can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

**Regulation:** 12

Comment:

**Building standards applicable to conversions**

All comments given for the systems under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1<sup>(1)(2)</sup> and Schedule 6<sup>(1)(2)</sup>.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



### The Building Regulations (Northern Ireland) 2012 (as amended)

**Regulation:** 23(a)(b)(i)

Comment:

**Fitness of materials and workmanship**

The systems are acceptable. See section 11 and the *Installation* part of this Certificate.

<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
Comment:		The systems will enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
Comment:		On flat roofs, the systems when used in inverted roof specifications, including a minimum surface finish of 50 mm of aggregate or concrete paving slabs may be deemed to be designated B <sub>ROOF</sub> (t4). See sections 7.1 to 7.5 of this Certificate.

## Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* of this Certificate.

### Additional Information

#### NHBC Standards 2017

In the opinion of the BBA, Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1 *Flat roof and balconies*.

### Technical Specification

#### 1 Description

1.1 Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems consist of Flexiphalte Pommar and Flexiphalte Baryprene. The systems are fully bonded to the substrate, eliminating lateral tracking of moisture directly beneath the waterproofing layer.

1.2 Flexiphalte Pommar is a waterproofing grade polymer-modified mastic asphalt.

1.3 Flexiphalte Baryprene is a polymer-modified membrane reinforced with 50 g·m<sup>-2</sup> glassfibre mat, with talc on the upper surface and sanded finish on the underside. The membrane is for use as a higher-specification alternative to a traditional underlay, and is fully bonded using traditional pour and roll techniques. The membrane has the nominal dimensions of:

Thickness (mm)	2.5
Length (m)	10
Width (m)	1
Mass per unit area (kg·m <sup>-2</sup> )	3.1.

1.4 Flexiphalte Baryprene Plus (B3A) is a polymer-modified membrane with an embossed aluminium foil on the upper surface and sanded finish on the underside. The membrane is for use as an alternative to the Flexiphalte Baryprene membrane and as a higher-specification alternative to a traditional underlay. The membrane is fully bonded using traditional pour and roll methods. The membrane has the nominal dimensions of:

Thickness (mm)	3.0
Length (m)	10
Width (m)	1
Mass per unit area (kg·m <sup>-2</sup> )	3.2.

1.5 Also for use with the systems is High Bond Primer — a fast-drying bituminous primer for use prior to applying Flexiphalte Baryprene membranes.

1.6 Insulation for use with the systems in inverted roof specifications is outside the scope of this Certificate.

## 2 Manufacture

2.1 Flexiphalte Pommar is manufactured by mixing bitumen, styrene-bitumen-styrene (SBS) polymer and limestone with fine and coarse aggregates and other additives, using conventional techniques.

2.2 Flexiphalte Baryprene and Flexiphalte Baryprene Plus (B3A) membranes are manufactured using normal bitumen membrane manufacturing techniques.

2.3 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

## 3 Delivery and site handling

3.1 Flexiphalte Pommar is supplied in hot charge (molten) form, delivered to site in purpose-built transporters. The product information is supplied on the relevant delivery notes with each consignment.

3.2 Alternatively, Flexiphalte Pommar can be supplied in block form (similar to traditional grades of mastic asphalt) with labels bearing the product type and name, and the BBA logo incorporating the number of this Certificate. Each block can weigh up to 25 kg and must be stored in the same manner as traditional mastic asphalt.

3.3 Flexiphalte Baryprene and Flexiphalte Baryprene Plus (B3A) membranes are supplied in rolls with labels bearing the product name. These should be stored on end on a clean, level surface, away from excessive heat and under cover.

3.4 High Bond Primer is supplied in 5, 25 and 200 litre cans/drums.

3.5 The Certificate holder has the responsibility of classifying and labelling the system components under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems.

## Design Considerations

## 4 Use

4.1 Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems are satisfactory for use as inverted waterproofing systems on flat roofs (including those with zero falls) with limited access, green roofs, roof gardens, podiums and roadways.

4.2 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for such duties as maintenance of the roof covering and cleaning of gutters. Where traffic in excess of this is envisaged, additional protection to the system must be considered, eg tiling or paving.

4.3 For the purposes of this Certificate, flat roofs are defined as those having a minimum finished fall of 1:80, and pitched roofs as those having falls in excess of 1:6. For design purposes, twice the minimum fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection and direction of falls.

4.4 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall of less than 1:80. Reference should also be made to the appropriate clauses in *Liquid Waterproofing Roofing Alliance (LWRA) Note 7 – Specifier Guidance for Flat Roof Falls*, especially with regards to reducing the potential for slipping.

4.5 Roadways are defined for the purpose of this Certificate as carriageways or driveways that do not form part of the public highway but receive cars, light vans, occasional heavy goods vehicles and fire tenders.

4.6 Flexiphalte Pommar must be installed in accordance with the relevant clauses of BS 8218 : 1998, and, where appropriate, BS 8217 : 2005, and the manufacturer's instructions.

4.7 Flexiphalte Baryprene and Flexiphalte Baryprene Plus (B3A) membranes should be installed using traditional pour and roll techniques.

4.8 Decks to which the systems are to be applied must comply with the relevant requirements of BS 8218 : 1998, BS 6229 : 2003 and where appropriate, *NHBC Standards 2017*, Chapter 7.1.

4.9 Structural decks to which the systems are to be applied must be suitable to transmit the dead and imposed loads experienced in service without undue deflection. Dead loads, wind loading and imposed loads are calculated in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003, BS EN 1991-1-4 : 2005 and their UK National Annexes. The Certificate holder must be consulted for the weights of specific specifications.

4.10 The drainage system for roofs with zero falls, including green roofs or roof gardens must be correctly designed, and provision made for access for maintenance purposes. Dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

4.11 Insulation materials used in conjunction with the systems must be in accordance with the Certificate holder's instructions and be either:

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

4.12 Recommendations for the design of green roofs and roof garden specifications are available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK*.

4.13 Normal good practice in respect of vapour control layers and/or ventilation of cavities must be followed to reduce the risk of interstitial condensation.

## 5 Practicability of installation

The systems should only be installed by installers who have been trained and approved by the Certificate holder.

## 6 Weathertightness



6.1 The systems will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The systems are impervious to water, are flexible and can accommodate, without leakage, the movement due to cracking permitted by BS EN 1992-1-1 : 2004 and its UK National Annex.

## 7 Properties in relation to fire



7.1 In the opinion of the BBA, the systems will have similar properties in relation to fire as the traditional grades of mastic asphalt described in BS 8218 : 1998.



7.2 When fully supported on structures described in Approved document B, volumes 1 and 2, Appendix A, Table A5, Part iv and Technical Booklet E, Section 5, Table 5.6, Part III, exposed mastic asphalt has a 'notional' B<sub>ROOF</sub>(t4) classification to BS EN 13501-5 : 2016.

7.3 The designation of other specifications should be evaluated in accordance with the guidance given in:

**England and Wales** — Approved Document B, Volumes 1 and 2, paragraphs 10.4 and 14.4 respectively  
**Northern Ireland** — test or assessment by a UKAS-accredited laboratory, or an independent consultant with appropriate experience.



7.4 In the opinion of the BBA, a roof garden incorporating the systems, covered with a drainage layer of gravel 100 mm thick and a soil layer of minimum 300 mm thick, will be designated B<sub>ROOF</sub>(t4).

7.5 In the opinion of the BBA, when the systems are used in irrigated roof gardens their use will be unrestricted under the requirements of the national Building Regulations.



7.6 All specifications should be evaluated in accordance with Mandatory Standard 2.8, Annex 2.C<sup>(1)</sup> and Annex 2.F<sup>(2)</sup>.

- (1) Technical Handbook (Domestic).
- (2) Technical Handbook (Non-Domestic).

## 8 Resistance to wind uplift

When applied to an air-impermeable deck, the systems will resist the effects of wind suction likely to occur in practice.

## 9 Resistance to mechanical damage

9.1 The systems can accept, without damage, the thermal movement likely to occur in practice, foot and vehicular traffic as defined in this Certificate and light concentrated loads associated with installation and maintenance operations. Where access exceeding this is envisaged, this should be taken into account when determining the application thickness and surface protection.

9.2 Reasonable care is required, however, to avoid prolonged point loading by heavy and/or sharp objects.

9.3 The systems can be detailed to accommodate the movement of designed expansion joints. The Certificate holder should be consulted for approved details.

## 10 Maintenance



10.1 Roofs must be the subject of regular inspections, particularly in autumn after leaf fall and in spring, to ensure that unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 4.10). Guidance is available within the latest edition of *Guidelines to Green Roofing*, published by The Green Roof Organisation (GRO).

10.2 Annual inspections should report on the general integrity of the paving, paying particular attention to paving joints, expansion joints, mortar pointing, cover flashings, crash barrier supports, upstands and solar reflective or decorative finishes. Deep cracks, blisters and deep indentations should be repaired as soon as possible to ensure that the waterproofing integrity of the systems is maintained.

10.3 Maintenance of the systems must be carried out in accordance with the Certificate holder's maintenance procedures.

## 11 Durability



11.1 Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems will have a life expectancy in excess of that of conventional grades of mastic asphalt used in roofing applications.

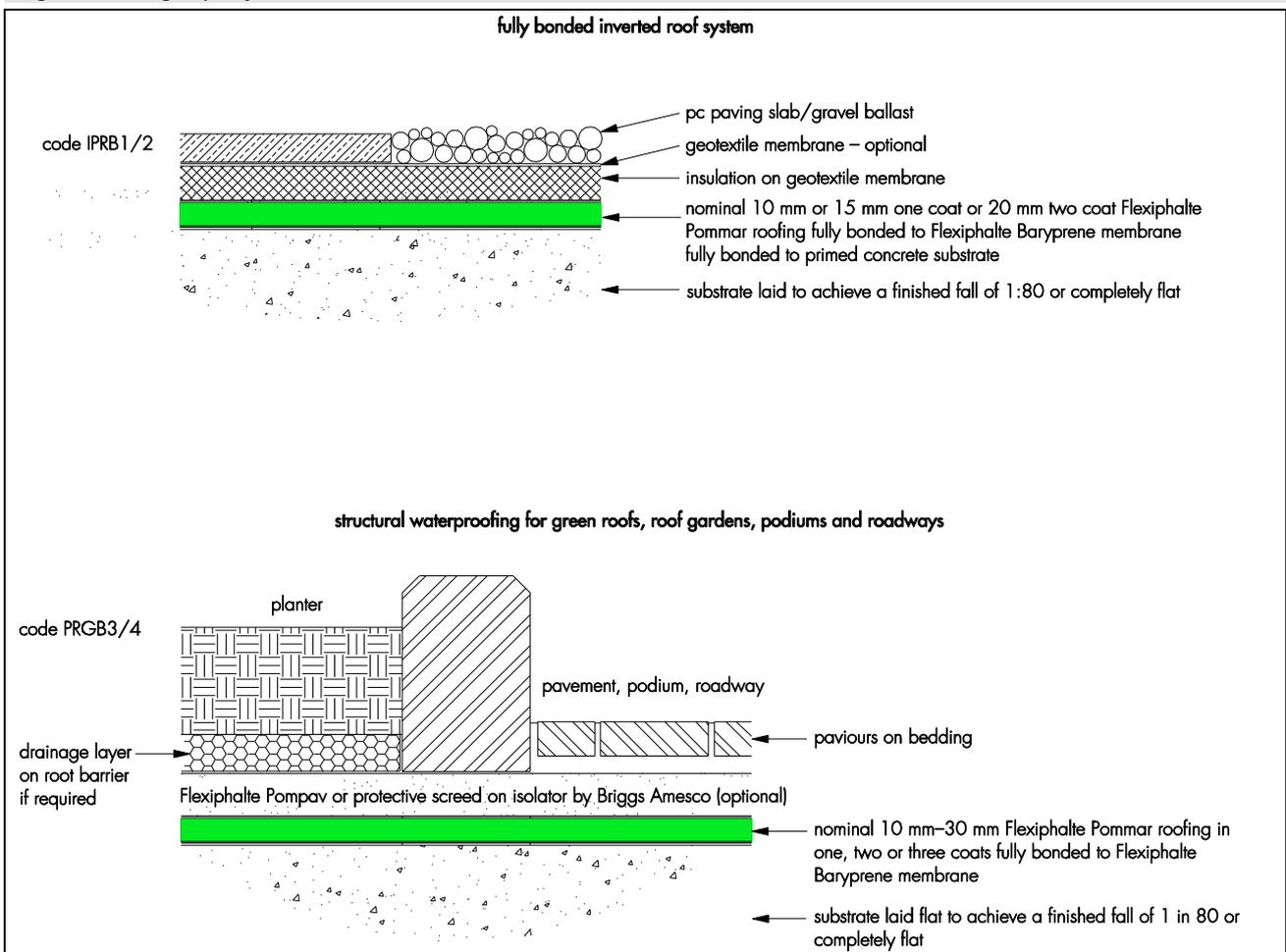
11.2 When fully protected and subject to normal service conditions, the systems will provide an effective barrier to the transmission of liquid water vapour for the design life of the roof/substrate on which it is incorporated.

## Installation

## 12 Procedure

12.1 Installation of Flexiphalte Triple Protection Roofing and Structural Waterproofing Systems must be carried out using the traditional techniques for laying mastic asphalt described in the relevant clauses of BS 8218 : 1998 and in accordance with the Certificate holder's instructions. Typical specifications are shown in Figure 1.

Figure 1 Design specifications



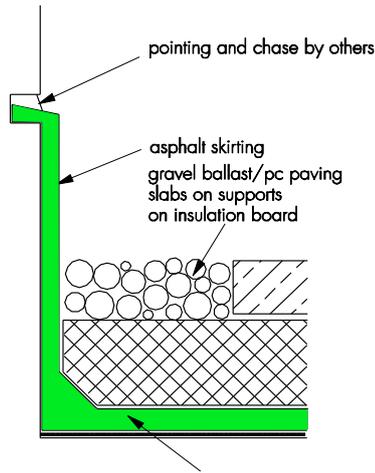
12.2 Flexiphalte Baryprene membrane must be fully bonded using the traditional pour and roll methods in accordance with BS 8217 : 2005.

12.3 Flexiphalte Pommar must be fully bonded to Flexiphalte Baryprene membrane using traditional techniques for laying mastic asphalt in accordance with the relevant clauses of BS 8218 : 1998.

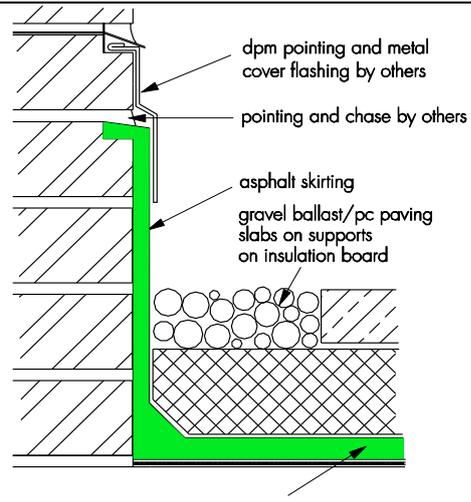
12.4 Deck surfaces must be dry, clean, and free from sharp projections such as nail heads and concrete nibs. Lightweight screeds may require increased drying times.

12.5 Where applicable, details are to be worked in accordance with traditional methods. Typical installation details are shown in Figures 2 and 3.

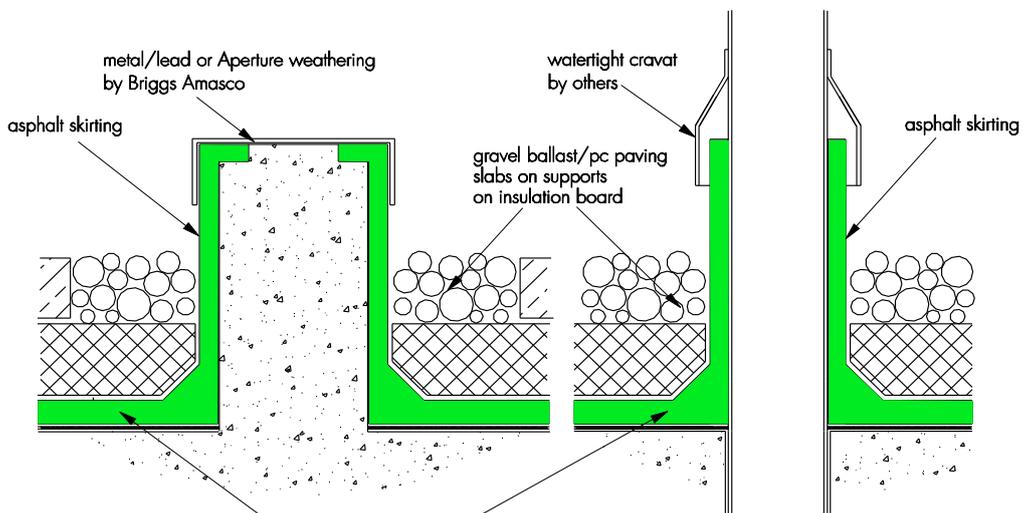
Figure 2 Typical installation details using mastic asphalt



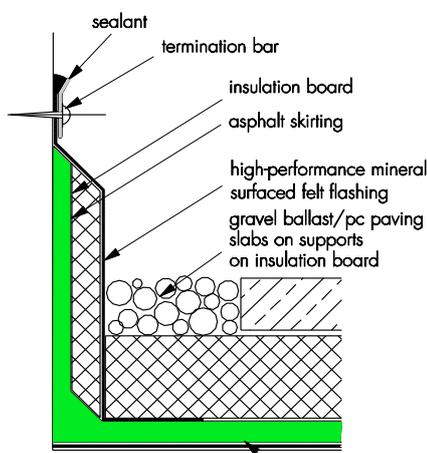
Flexiphalte Pommar roofing on Flexiphalte Baryprene membrane fully bonded to substrate  
**concrete**



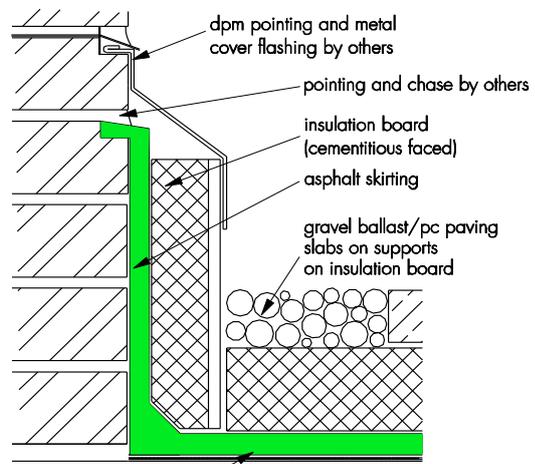
**brickwork**



Flexiphalte Pommar roofing on Flexiphalte Baryprene membrane fully bonded to substrate  
**plinths (such as cradle track plant bases)**      **pipes (such as handrails)**

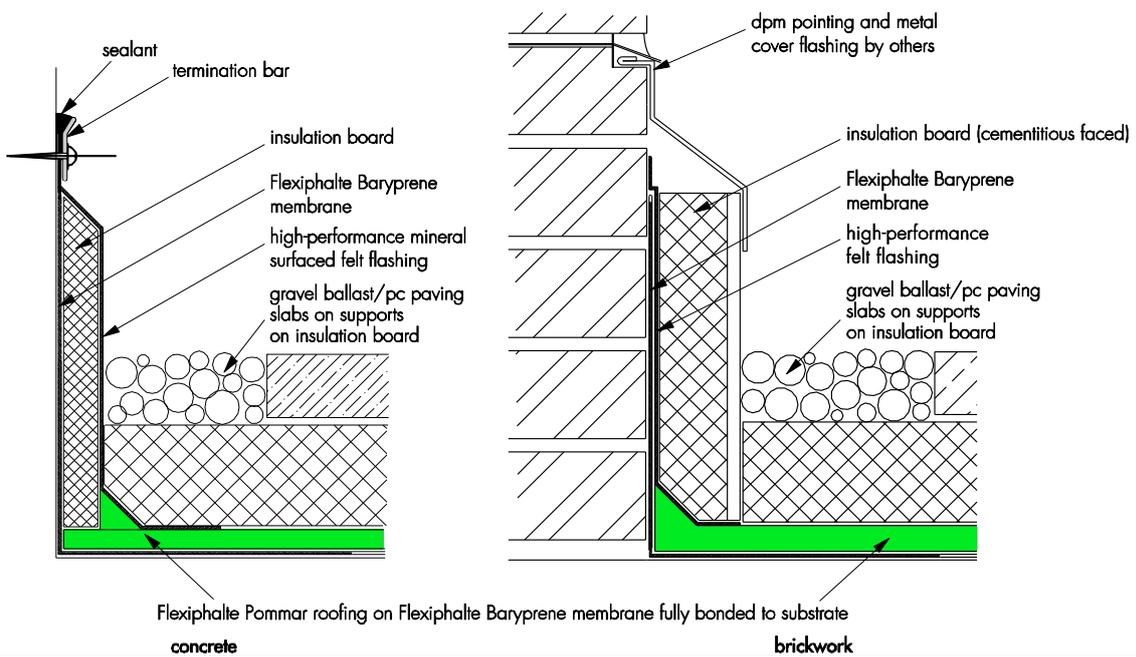
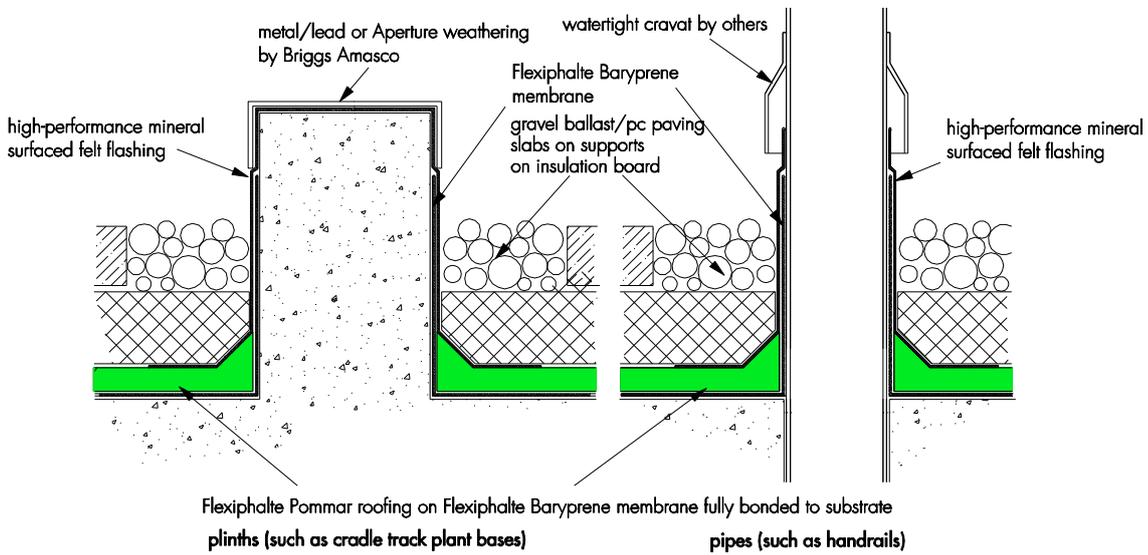
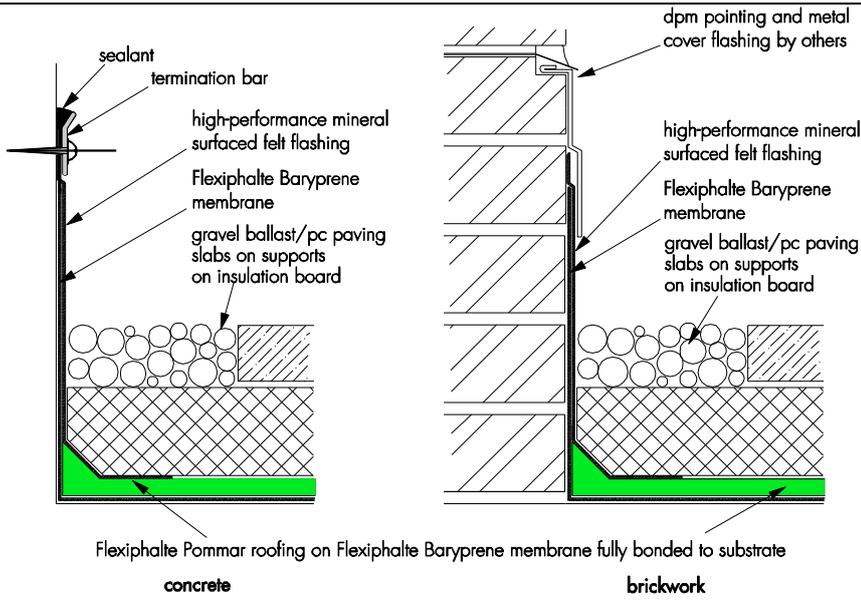


Flexiphalte Pommar roofing on Flexiphalte Baryprene membrane fully bonded to substrate  
**concrete**



**brickwork**

Figure 3 Typical installation details using high-performance membranes



12.6 On completion of the roof, the final coat is rubbed with coarse sharp sand using a wooden float.

12.7 Insulation is installed, using the normal inverted roof method, over a geotextile membrane in accordance with Clause 8.5.2 of BS 8218 : 1998. The insulation must be approved by Briggs Amasco.

12.8 Paving slabs or ballast are laid on the insulation.

12.9 Other applications, such as green roofs or roof gardens, can have a layer of Flexiphalte Pompav<sup>(1)</sup> or a protective screed laid on the asphalt or an isolating membrane, depending on the circumstances and in accordance with the Certificate holder's instructions.

(1) Subject of BBA Certificate 13/5078 Product Sheet 1.

## 13 Repair

Should damage occur, or alterations to the roof structure be required, the recommendations of BS 8218 : 1998 and Section 10 of this Certificate, should be followed. The systems should be reinstated to the original specification.

## Technical Investigations

## 14 Tests

Tests were carried out on samples of Flexiphalte Pommar to determine:

- fines content
- mass per unit area
- tensile strength and elongation on unaged and heat aged samples
- water vapour permeability
- resistance to water pressure
- static loading
- dynamic impact at -10°C and at 21°C
- resistance to chloride ion penetration
- hardness on unaged and heat aged samples.

## 15 Investigations

15.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

15.2 A user survey was carried out to assess the systems' performance in service.

15.3 Test data on low temperature flexibility and dimensional stability for Flexiphalte Baryprene was evaluated.

15.4 Data on the suitability of Flexiphalte Baryprene and Flexiphalte Baryprene Plus (B3A) was evaluated.

## Bibliography

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 — Actions on structures — General actions — Snow loads*

NA + A1 : 15 to BS EN 1991-1-3 : 2003 + A1 : 2015 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Snow loads*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005+ A1 : 2010 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Wind actions*

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*

NA + A2 : 14 to BS EN 1992-1-1 : 2004 + A1 : 2014 UK National Annex to *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*

BS EN 13501-5 : 2016 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

### 16 Conditions

#### 16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

16.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

16.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

16.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

16.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.