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**Roads and Bridges
Agrément Certificate
No 01/R126**

Designated by Government
to issue
European Technical
Approvals

BRIDGEGUARD BRIDGEDECK WATERPROOFING SYSTEM

Système d'étanchéité pour tablier de pont
Wasserdichtungsmittel für Brückentafel

Product



- THIS CERTIFICATE RELATES TO THE BRIDGEGUARD BRIDGEDECK WATERPROOFING SYSTEM, COMPRISING A NON-WOVEN POLYESTER REINFORCED, SBS (STYRENE-BUTADENE-STYRENE) POLYMER-MODIFIED BITUMEN SHEET.
- The system is for use as a bridgedeck waterproofing system for concrete decks of highway bridges in accordance with the requirements of the Department for Transport, Local Government and the Regions (DTLR), Highways Agency and the Conditions as set out in this Certificate.
- The system is marketed by BDW (Services) Limited and is applied by BDW (Services) Limited's authorised contractors.

Department for Transport, Local Government and the Regions, Highways Agency Requirements

1 Requirements

The requirements for Bridgedeck Waterproofing are given in the following documents:

- (a) Manual of Contract Documents for Highway Works, Volume 1 (MCHW1) *Specification for Highway Works*, and
- (b) BD 47 *Waterproofing and Surfacing of Concrete Bridge Decks*.

Regulations

2 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections:

3 Description, 4 Delivery and site handling and 6 Precautions during installation.

Technical Specification

3 Description

The Bridgeguard Bridgedeck Waterproofing System comprises:

Ruberoid Bitumen Primer — a single-component, solvent-based bituminous primer

Bridgeguard Waterproofing Membrane — a non-woven, polyester fibre base (nominal weight 350 gm⁻²) saturated and coated on both sides with an SBS polymer-modified bitumen, incorporating stabilising fillers, sand finished on the underside and surfaced with white slate granules on the upper side. The sheet is manufactured to the nominal dimensions of:

thickness (mm)	3.8 ⁽¹⁾
roll length (m)	8
roll width (m)	1.0
roll weight (kg)	40

(1) Excluding slate granule surfacing.

Bonding bitumen — blown (oxidised) bitumen with the characteristics of:

commercial grade	95/25
penetration at 25°C (dmm)	20–30
softening point (R&B) (°C)	90–100

4 Delivery and site handling

4.1 The primer is supplied in 5 litre, 25 litre and 200 litre metal containers. When correctly stored, the unopened containers have a shelf-life of at least six months.

4.2 Ruberoid Bitumen Primer is classified under the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP2) as 'Harmful' and 'Flammable' and bears the appropriate hazard warnings.

4.3 The waterproofing membrane is supplied in rolls and delivered to site in paper wrappings, bearing product name, dimensions, manufacturer's name, product code and the BBA identification mark incorporating the number of this Certificate.

4.4 Rolls should be stored on end on a clean, level surface, under cover and away from excessive heat.

Design Data

5 General

5.1 The Bridgeguard Bridgedeck Waterproofing System is suitable for use on concrete decks of at least 28 days old and a Class U4 surface finish.

5.2 Installation of the system should only be carried out at minimum air temperature of 4°C and rising.

6 Precautions during installation

Health and Safety Data Sheets and a COSHH risk assessment for the works should be deposited with the Highway Authority and be maintained on site.

7 Durability

Results of tests indicate that the Bridgeguard Bridgedeck Waterproofing System will provide an effective waterproof layer to the concrete bridge deck, provided it is not damaged during subsequent resurfacing.

Installation

8 General

8.1 Installation of the Bridgeguard Bridgedeck Waterproofing System should be carried out only by contractors authorised and trained by BDW (Services) Limited.

8.2 BDW (Services) Limited is responsible for training and monitoring its authorised contractors to ensure that the system is installed in accordance with the BBA agreed Method Statement and this Certificate.

9 Preparation

9.1 Imperfections in the concrete deck should be reinstated by the Highway Authority with a material agreed in consultation with the authorised contractor.

9.2 The concrete deck should be clean, dry and free from ice, frost, laitance, loose aggregate, oil, grease, moss, algae growth, dust and other debris, and where the adhesion to the concrete would be impaired, free from curing liquids, compounds and membranes.

9.3 The air temperature and the relative humidity should be recorded. The installation should not proceed if the air temperature is not a minimum of 4°C and rising.

10 Application

Primer

10.1 Ruberoid Bitumen Primer can be applied by brush at a coverage rate of 4 m² per litre to 6 m² per litre dependent on the porosity of the concrete deck.

10.2 The primer shall be dry and solvent free before application of the waterproofing membrane commences.

Waterproofing membrane

10.3 Bridgeguard Waterproofing Membrane shall be bonded using the traditional pour and roll method using 95/25 grade bonding bitumen.

10.4 The waterproofing membrane, wherever possible, shall be laid in the direction that the additional protective layer (APL) of sand asphalt will be laid and compacted.

Lapping

10.5 Joints between the sheet membranes shall be lapped with end laps of at least 150 mm and side laps of at least 100 mm. A bead of bitumen should exude from all lap joints during application.

10.6 The joints of the sheet membranes shall be arranged to ensure that at no point are there more than three layers of sheet.

Sealing into parapet chase

10.7 Bridgeguard Waterproofing Membrane shall be terminated into a primed chase.

10.8 Ruberoid Ruberflex Mastic or similar rubberised sealant shall be squeezed into the chase and smoothed off at an angle.

11 Repair of defects

11.1 Any damage shall be made good by cutting back to sound material, and the area dried, cleaned and covered with Bridgeguard Waterproofing Membrane, fully bonded using 95/25 grade bonding bitumen, ensuring a minimum peripheral lap of 150 mm around the repair.

11.2 Any blisters shall be 'star cut' and the area dried, cleaned and the cut edges fully bonded with 95/25 grade bonding bitumen. The repair shall then be covered with Bridgeguard Waterproofing Membrane, fully bonded as described in section 11.1 of this Certificate.

11.3 Where the damage is through to the concrete deck, the exposed concrete should first be cleaned and then re-primed.

12 Surfacing

Temperature of the APL surfacing when applied should be as specified in BS 594-1 : 1992 and BS 594-2 : 1992.

Technical Investigations

The following is a summary of the technical investigations carried out on the Bridgeguard Bridgedeck Waterproofing System.

13 Tests

Laboratory performance tests were carried out on the system and achieved the BD 47 requirements as detailed in Tables 1 and 2.

Table 1 Tests on waterproofing membrane

Test (units)	Method ⁽¹⁾	BD 47 requirements
Resistance to water penetration membrane joint	BD 47 B4.1(d)	satisfactory satisfactory

(1) Test documents are detailed in the *Bibliography*. Numbers/letters in the tables refer to the sections/parts of the document.

Table 2 Tests on waterproofing membrane/system bonded to concrete

Test (units)	Method ⁽¹⁾	BD 47 requirements
Tensile adhesion (Nmm ⁻²) at -10°C at 23°C at 40°C	BD 47 B4.2(d)	0.3 min 0.3 min 0.2 min
Resistance to chloride ion penetration (%)	BD 47 B4.2(e)	0.04 max
Resistance to freeze/thaw tensile adhesion (Nmm ⁻²) chloride ion penetration (%)	BD 47 B4.2(f)	satisfactory 0.3 min 0.04 max
Resistance to heat ageing tensile adhesion (Nmm ⁻²) chloride ion penetration (%)	BD 47 B4.2(g)	satisfactory 0.3 min 0.04 max
Resistance to chisel impact — chloride ion penetration (%) at -10°C at 23°C at 40°C	BD 47 B4.2(h)	satisfactory 0.04 max 0.04 max 0.04 max
Resistance to aggregate indentation — chloride ion penetration (%) at 40°C at 80°C	BD 47 B4.2(i)	satisfactory 0.04 max 0.04 max
Thermal shock, heat ageing and crack cycling — chloride ion penetration (%) at -10°C at 23°C at 40°C	BD 47 B4.2(j)	satisfactory 0.04 max 0.04 max 0.04 max
Surfacing to waterproofing system interface shear adhesion (Nmm ⁻²) sand asphalt at -10°C at 23°C at 40°C	BD 47 B4.2(k)	satisfactory 0.2 min 0.2 min 0.1 min
Surfacing to waterproofing system interface tensile bond (Nmm ⁻²) sand asphalt	BD 47 B4.2(l)	satisfactory 0.1 min

(1) Test documents are detailed in the *Bibliography*. Numbers/letters in the tables refer to the sections/parts of the document.

14 Other investigations

14.1 Satisfactory evidence was available on the practicability of the installation and quality control/assurance procedures.

14.2 Satisfactory evidence of the manufacturing process was available, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

Bibliography

BD 47 *Waterproofing and Surfacing of Concrete Bridge Decks, Appendix B Certification Test Requirements for Waterproofing Systems on Concrete Bridge Decks*

BS 594 *Hot rolled asphalt for roads and other paved areas*

BS 594-1 : 1992 *Specification for constituent materials and asphalt mixtures*

BS 594-2 : 1992 *Specification for the transport, laying and compaction of rolled asphalt*

Electronic Copy

Manual of Contract Documents for Highway works,
volume 1, (MCHW1) *Specification for Highway
Works*

Conditions of Certification

15 Conditions

15.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

15.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;
- (b) continue to be checked by the BBA or its agents;

(c) are reviewed by the BBA as and when it considers appropriate; and

(d) remain in accordance with the requirements of the Department for Transport, Local Government and the Regions, Highways Agency.

15.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

15.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, the Bridgeguard Bridgedeck Waterproofing System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 01/R126 is accordingly awarded to BDW (Services) Limited.

On behalf of the British Board of Agrément

Date of issue: 14th December 2001

Chief Executive