
SERIES 2000
WATERPROOFING FOR CONCRETE
STRUCTURES

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WATERPROOFING FOR CONCRETE STRUCTURES

2001 (05/01) General

- 1 The surface finish for new bridge decks between parapet upstands and to top of buried structures to be waterproofed shall be Class U4 finish in accordance with sub-Clause 1708.4.
- 2 Existing waterproofing systems to bridge decks between parapet upstands are to be repaired or replaced in accordance with Clause 2008.

2002 Protection of Bridge Deck Waterproofing During Construction

- 1 (05/01) On any structure, providing no damage results, plant and equipment all fitted only with rubber tyres may stand or travel on permitted waterproofing systems solely for the purposes of laying an additional protective layer or surfacing course on that structure.
Rollers shall not be permitted to stand or travel directly on the waterproofing system.
Where it is necessary for plant, equipment or traffic to stand or travel on a bridge deck that has been waterproofed with a permitted system before the laying of an additional protective layer, suitable temporary protection shall be provided. All such plant and equipment shall have its tyre treads regularly inspected and any embedded hard objects removed.

- 2 Temporary protection shall be provided where damage to the waterproofing, protective layer or additional protective layer could result from particular site traffic.

- 3 (05/01) The protective layer of a permitted two layer waterproofing system, or any protective layer additional to that included as part of a permitted waterproofing system, shall be laid immediately after the waterproofing layer's bonding agent has set or cured.

Where a waterproofing membrane also serves as an adhesive for the protective layer, any additional protective layer shall not be laid until the liquid waterproofing membrane/adhesive has set or cured.

2003 (05/01) Materials for Waterproofing Concrete Bridge Decks

Permitted Waterproofing Systems

- 1 Permitted waterproofing systems incorporated in the Permanent Works shall have a current BBA (British Board of Agrément) Roads and Bridges Agrément Certificate which shall be registered with the Overseeing Organisation.

Prior to commencement of the Works the Contractor shall provide to the Overseeing Organisation a copy of the BBA Roads and Bridges Agrément Certificate appropriate to the work to be undertaken. The procedure shall be repeated for each subsequent operation either for a different system or a different location.

Additional Bituminous Protection

- 2 (11/04) Bituminous protection where required as an additional protective layer, shall comply with BS 594-1 recipe type F surface course mixture designation 0/2 except that $5\% \pm 0.5\%$ of the total mix shall be inorganic red oxide and regarded as part of the filler content, where the additional protective layer is required to be tinted.

2004 Materials for Waterproofing Below Ground Concrete Surfaces

Primer for Tar and Bitumen

- 1 Primer for sealing concrete surfaces prior to waterproofing shall be compatible with the selected tar or bitumen waterproofing material. The viscosity of the primer shall be such that it penetrates the concrete without forming a skin.

Tar

- 2 Tar shall comply with BS 76 of viscosity grade within the range 30-38°C equi-viscous temperature.

Cut Back Bitumen

- 3 Cut back bitumen shall comply with BS 3690 : Part 1 of viscosity grade 50 seconds.

Proprietary Materials

4 (05/01) Subject to any restrictions specified in Appendix 20/1, proprietary materials may be used.

2005 (05/01) Workmanship for Waterproofing Concrete Bridge Decks

Permitted Waterproofing Systems

1 Permitted waterproofing systems shall be supplied and installed in accordance with the BBA Roads and Bridges Agrément Certificate.

The formation of defects affecting the integrity of the membrane including pin/blow holes (continuous or non-continuous) and blisters in the waterproofing shall:

- (i) be made good by repair in accordance with the BBA Roads and Bridges Agrément Certificate before any subsequent layers are applied; or
- (ii) require the system to be replaced.

For sheet membranes bonded with oxidized bitumen the heating and temperature of the bitumen shall comply with the manufacturer's requirements within the limits stated in BS 8000 : Part 4.

A means of checking the bitumen temperature shall be provided.

Sheet membranes shall wherever possible be laid in the direction that the additional protective layer or surfacing will be laid and compacted by roller.

2 Unless otherwise specified in the BBA Roads and Bridges Agrément Certificate, joints between sheets shall be lapped with end laps of at least 150 mm and side laps of at least 100 mm. The joints shall be arranged so that:

- (i) at no point are there more than three thicknesses of sheeting and,
- (ii) water will drain away from the exposed edge.

3 Permitted waterproofing systems shall be laid to follow the contours of the concrete surface. Laps, ridges and ripples in waterproofing sheeting, and peaks and steps at butt joints in waterproofing boards, shall not be greater than 10 mm in height.

Additional Bituminous Protection

4 Bituminous protection complying with sub-Clause 2003.2 shall be laid on the clean and dry substrate, and compacted in accordance with Clause 901 to the areas and thickness shown on the Drawings.

Bond Between Additional Protective Layer or Surfacing and the Waterproofing System

5 The additional protective layer or surfacing laid on the waterproofing system shall be fully bonded to the system for the life of the system. The bond shall be achieved by either:

- (i) the binder within the directly applied additional protective layer or surfacing; or
- (ii) a separate tack coat which has been assessed by the BBA as part of the registration procedure and details of which are given on the BBA Roads and Bridges Agrément Certificate.

Where the tack coat is of the type activated by the heat of the succeeding bituminous layer the rolling temperature of this layer shall be sufficient to ensure adhesion.

2006 Workmanship for Waterproofing Below Ground Concrete Surfaces

Priming for Tar and Bitumen

1 (05/01) Unless otherwise described in Appendix 20/1 and prior to the application of the selected tar or bitumen waterproofing, concrete surfaces shall be thoroughly sealed with an evenly applied primer. The primer shall be well brushed in and not allowed to pond in any depressions.

Tar

2 For tar waterproofing two coats of tar shall be hot applied at a rate of spread per coat of 1 litre/m². The first coat shall be allowed to dry before the second coat is applied.

Cut Back Bitumen

3 For bitumen waterproofing two coats of cut back bitumen shall be hot applied at a rate of spread per coat of 0.6 litre/m². The first coat shall be allowed to dry before the second coat is applied.

Proprietary Materials

4 (05/01) For proprietary materials the method of application, rate of spread, number of coats and other requirements for each system shall be as described in the product literature supplied by the manufacturer.

2007 (05/01) Integrity Testing of Concrete Bridge Deck Waterproofing

1 Waterproofing systems to concrete bridge decks shall be tested where required in Appendix 20/1 in accordance with the requirements therein to verify the integrity of the waterproofing.

2008 (05/01) Repair and Replacement of Bridge Deck Waterproofing

1 The repair and replacement of existing bridge deck waterproofing systems shall comply with the requirements of Clauses 2002, 2003, 2005 and 2007 and any additional requirements described in Appendix 20/1.