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Compliance date	6 th June 2009

MODEL CLAUSES FOR CIVIL ENGINEERING WORKS

SECTION 113

WATERPROOFING FOR ROAD CARRYING BRIDGES

NOTES TO SPECIFIER:

These notes do not form part of the Specification.

Road carrying overline bridges

113.1

For road carrying overline bridges with concrete decks, waterproofing systems that are registered for use on Highways Agency bridges should normally be specified. Such systems have satisfied the requirements of Highways Agency Departmental Standard BD 47.

Systems applied to concrete and metal bridge decks of overline bridges must be resistant to the high temperatures encountered when they are overlaid with hot bituminous surfacing materials.

BA 47 gives further guidance on the waterproofing of concrete road bridges. Application requirements for each registered waterproofing system are included in the manufacturer's Application Guidelines, method statement, or similar document.

Waterproofing systems registered for use on Highways Agency bridges are (tightly) bonded systems. Dependent on the type, the system may comprise;

- (i) a primer for the substrate (some systems),*
- (ii) an adhesive to bond the membrane to the substrate (some systems),*
- (iii) a waterproofing membrane that is impermeable to water,*
- (iv) a protective layer to prevent damage to the membrane (some systems),*
- (v) a tack coat to increase the bond of the additional protective layer or surfacing to the membrane (some systems),*
- (vi) an additional protective layer to prevent damage to the membrane by hot surfacing containing coarse aggregates (this is usually provided by the surfacing contractor).*

See BD 47 for definitions of additional protective layer, surfacing etc.

Further information on the waterproofing of road carrying bridges is given in Sections 1.3, 1.8, 3.3 and 3.8 of Application Guide 33 (Water management for durable bridges, TRL Application Guide 33).

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Whenever possible, the minimum total thickness of asphalt overlaying the waterproofing system should be 120 mm.

In 2007, the Highways Agency issued Interim Advice Note IAN 96/07 Revision 01. Because sand asphalt forms a weak layer, this document recommended that the additional protective layer is omitted on heavily trafficked bridges unless it is required to prevent damage to the waterproofing system by aggregate indentation. Furthermore, the additional protective layer should not be used on heavily trafficked bridges unless it can be overlaid with other asphalt layers of minimum thickness 100 mm.

When the additional protective layer is omitted it is recommended that the asphalt layer directly overlaying the waterproofing system is 45 mm thick. A waterproofing system with a 'thick' tack coat must be used when required so that the void content at the interface between the waterproofing membrane and any asphalt layer with coarse aggregates directly overlaying the waterproofing system is low and there are no interconnecting voids (see Clause 113.033).

Further requirements to safeguard the durability of the surfacing overlaying the waterproofing system are included in IAN 96/07 Revision 1. They are repeated and explained in more detail in Road Note 41 (Best Practice Guide for overlaying concrete) published by TRL.

When it is not possible to apply a bonded system, for example to some masonry arch bridges, a loose-laid system may be applied provided it is placed well below the level of the carriageway.

Application **113.2** *The effectiveness of a waterproofing system is dependent upon its design and detailing, the skill and care taken during the preparation of the substrate, the quality of the application and site activities following its application. There must be sufficient time to complete the application of the chosen system in accordance with the manufacturer's Method Statement.*

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