

In-situ Concrete Decks to Receive Permateg

Concrete Specification

In-situ Concrete for roof decks shall be specified and produced in accordance with BS EN 2006:2015 and installed in accordance with BS13670:2009 and the National Structural Concrete Specification.

Normal Weight and Lightweight concretes are suitable substrates for Permateg. As defined in BS EN 2006:2015, Normal Weight and Lightweight concrete shall have a density of 2000kg/m³ - 2600kg/m³ and 800kg/m³ - 2000kg/m³ respectively.

Concrete Finish

The concrete roof deck shall be finished with either a Basic or Ordinary Finish which are achieved with a Skip Float (Easy Float) or Power Float as appropriate. Decks suitable to receive Permateg should be free from raised float marks or protruding aggregate which will cause thinning of the Permateg system. Such blemishes will need to be ground flat prior to installing Permateg.

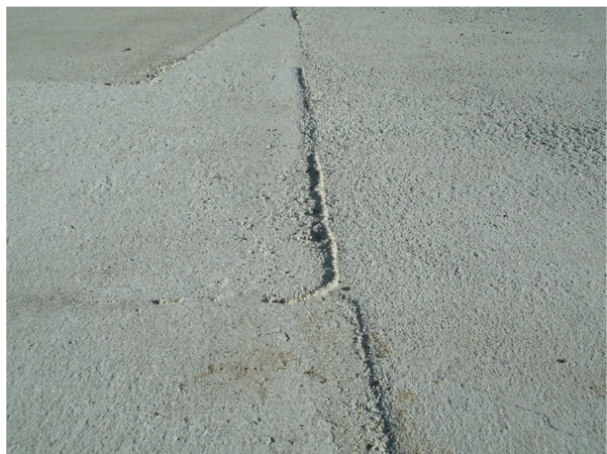


Figure 1 – typical raised float ridge

A phenomenon termed 'reinforcement ripple' can occur where the skip-float action over the surface moves the mortar and coarse aggregate away from above the reinforcing bar. This can fail to return fully causing a slight depression to form over the reinforcing bar position and a slightly raised profile between the bars. Reinforcement ripple, will not normally have a detrimental effect on the installation of Permateg but additional thickness of material will be required to fill the depressions.



Figure 2 – example of 'reinforcement ripple'

Drainage Falls

Permateg is British Board of Agreement Certified for use on zero falls decks. In order to ensure a finished zero fall and to comply with the requirements of BS 6229 (Code of practice for Flat roofs with continuously supported flexible waterproof coverings), allowance must be made in the design and construction of the structural deck for deflection, and construction tolerances.

Curing

The rate at which concrete dries will depend on a number of factors but is mainly affected by climatic conditions and the water/cement ratio of the mix. Normal weight concrete typically retains 5% moisture when fully cured and because lightweight concrete aggregates are pre-wetted prior to manufacture, their retained moisture content will tend to be higher. This will not have a detrimental effect on the installation of Permateg, but may result in an extended drying time.

It is recommended an in-situ concrete deck is allowed to cure to ensure the concrete has achieved its structural design strength, usually 28 days, prior to installing the Permateg. However, with the agreement of the Principle Contractor, the installation of the Permateg system can commence earlier subject to a visual inspection and successful Peel Tests witnessed by IKO.

Surface Defects

The main causes of a failed Permaseal Peel test is the presence of surface laitance (a thin layer of residue left after water evaporation) or dusting of the concrete surface



Figure 3 – example of surface laitance



Figure 4 – surface dusting

There are a number of potential causes:-

- Premature surface moisture loss - this can occur particularly in summer months if the surface is allowed to dry out before sufficient hydration of the cement has taken place.
- Excessive Bleed Water affecting the Water/Cement ratio at the surface
- Frost shortly following placement which will affect the surface paste integrity
- Rain shortly after placement – similar affect to excessive bleed water affecting the water/cement ratio at the surface. Usually noticeable within the finished surface as dimples.
- Curing techniques can also affect the Permaseal bond and procedures involving spray- on waxes should be avoided or if used will need to be removed prior to application.

Laitance, dusting and curing materials are usually restricted to the surface only but will need to be removed in order for the Permaseal to achieve a suitable bond. Light mechanical brushing will normally be sufficient to prepare the surface. However, in more severe cases, shot blasting or scabbling will be required.



Figure 5 – removal of surface laitance

Disclaimer

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