REINFORCEMENT TO STRUCTURAL SCREEDS

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Introduction

This technical document provides additional guidance relating to how the Functional and Performance Requirements in the Technical Manual may be satisfied when selecting reinforcement in structural screeds (also referred to as structural concrete toppings).

Structural screed

A structural screed is a load-bearing structural element. Typically, they are used in conjunction with beam and block floor systems that have non-structural infill blocks (lightweight concrete, EPS insulation blocks). However, structural screeds can also be used as a final layer where insulation is placed on top of a cast in-situ concrete slab construction.

Reinforcement - whether through steel mesh, steel fibres, or macro synthetic fibres - is included to enhance the screed's structural capacity - improving its strength, durability, and ability to perform effectively within the floor build up.

What are the Warranty providers concerns?

Specifiers and designers are selecting synthetic fibres that are not of a type or class recognised by the Warranty provider as suitable for delivering structural reinforcement within a structural screed.

Warranty stance

Our stance is structural screeds should be designed and specified by an Engineer. Where reinforced, acceptable* materials are:

- Steel mesh reinforcement, **or**
- Steel fibres to BS EN 14889-1**, **or**
- Class II polypropylene macro fibres to BS EN 14889-2.**

Failure to provide the correct reinforcement within a structural screed is considered to compromise the ability of the floor construction and associated materials in meeting with both the Functional and Performance Requirements stipulated by the Technical Manual, notably those relating to structural performance and durability.

What Developers should action after reading this document?

Developers design teams should ensure that floor screeds are of an adequate specification for the intended use and location. As structural screeds are an essential load bearing part of a floor, they should have a service life of 60 years.

Developers must ensure that in all situations, structural screeds (inclusive of the type of reinforcement used) are designed and specified by an Engineer.

Engineers should be aware that, for the purpose of Warranty, acceptable* reinforcements for structural screeds are considered as:

- Steel mesh reinforcement, **or**
- Steel fibres to BS EN 14889-1 'Fibres for concrete - Part 1: Steel fibres — Definitions, specifications and conformity'**, **or**
- Class II polypropylene macro fibres to BS EN 14889-2 'Fibres for concrete — Part 2: Polymer fibres — Definitions, specifications and conformity'.**

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For clarity, specifiers and designers should be aware that the Warranty provider does not accept the use of micro-polymer fibres as structural reinforcement in structural screed applications.

Where designing Engineers specify a structural screed product which incorporates steel or polypropylene fibres, the fibre product must have an appropriate third-party product conformity certificate from a UKAS accredited organisation**.

The certification must explicitly state:

- The fibre reinforcement achieves a service life of 60 years, **and**
- Can be used as a structural alternative to traditional steel reinforcement for the specific application proposed.

Where a structural screed forms part of a floor system (e.g. beam and block using non-structural infill blocks such as lightweight concrete, EPS insulation blocks), and incorporates steel or polypropylene fibres, the floor system must have an appropriate third-party product conformity certificate from a UKAS accredited organisation. The certification must explicitly state that any fibre inclusion is for the purpose of structural reinforcement and can be used as an alternative to traditional steel reinforcement for the specific application proposed.

In either case, if this statement is omitted or the certificate states that fibres are only for shrinkage control or crack limitation, they cannot be considered an alternative to steel reinforcement and are therefore not acceptable to the Warranty provider.

Where micro-polymer fibres are specified in non-structural screeds to assist in controlling shrinkage or cracking, they should be Class I polypropylene micro fibres to BS EN 14889-2 'Fibres for concrete — Part 2: Polymer fibres — Definitions, specifications and conformity'.

Developers should ensure that site teams and installing contractors responsible for the execution of work are carefully controlling the dosage and on site mixing requirements in order to achieve the correct specification for the project. Any Quality Assurance (QA) procedures should be capable of demonstrating this to the satisfaction of the Warranty surveyor should this be requested.

*Note: Albeit that the Warranty provider accepts the above list of reinforcement types, the choice of reinforcement type used within a structural screed shall be determined by structural designs for the intended use of the floor structure and any specific loadings associated with its use. In certain situations (e.g. garages), an Engineer may limit reinforcement options to steel mesh to accommodate specific loadings.

**Note: All types of fibre reinforcement e.g. steel and polymer fibres must have an appropriate third-party product conformity certificate from a UKAS accredited organisation.