

Design Assessment

Reviewing the floor system of a South Asian airport

When newly-laid screed in a new airport terminal began curling and cracking, BRE provided design advice

The problem

During the early phase of construction of one of the terminal's boarding gate wings, the airport found evidence of curling and cracking on the newly-laid screed. The engineering contractor had prepared a structural specification in order to solve the issues, which BRE was asked to assess by the airport's owner.

Our approach

Getting the briefs and specifications right at the beginning of any construction project is critical to its success. Drawing on 90 years' worth of experience of research, testing and consultancy, BRE is able to provide independent advice to ensure that construction teams agree on the best solutions.

In this case, the engineering contractor had identified that the 70 – 90 mm screeds had cracked and curled, despite the fibre reinforcement that had been used. They suggested that the cracks should be repaired and screeding works continued.

Carrying out an extensive desk-based analysis of the drawings and specifications, BRE concluded that the screed should be reinforced with steel mesh and the screed mix changed to fit the proposed

tiling layout. By changing the screed mix, it is possible to control shrinkage cracks that are unavoidable in the large screed bays when using a wet-concrete screed mix.

Our recommendation

BRE provided a specification for repairing the cracks that had already occurred in order that the stone floor tiles could be laid. BRE also gave a number of recommendations for the rest of the construction, primarily that semi-dry cement sand screeds should replace wet concrete screeds to minimise shrinkage. BRE also advised on the position of joints within the screeds and tiling and on specific technical details that arose during the construction.

Three causes of cracking and curling

- Failure to properly design movement joints
- Use of fibre reinforcement in place of steel mesh reinforcement
- Not allowing the screed to dry out fully before tiles are laid

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