

The Shard

Case study

Focus products: Intercrete® 4801, Intercrete 4800, Intercrete 4872

Location: London, UK

Client: Sellar Property Group on behalf of LBQ Ltd

Architect: Renzo Piano Building Workshop

Structural engineer: Renzo Piano Building Workshop

Contractors: Mace & Byrne Brothers

Summary: Construction of slipformed core



Background

The Shard, at 310 metres high, is Europe's first vertical town. Its 72 floors comprise a 26-floor office complex, three world-class restaurants, a 19-floor five-star Shangri-La Hotel, 13 floors of exclusive residential apartments and the UK's highest viewing galleries. It has become one of London's most sought after events venues and a top visitor attraction.

Architect Renzo Piano designed the Shard as a spire-like sculpture emerging from the River Thames. To deliver this unique project a number of challenging technical and practical innovations had to be developed, heralding new levels of expertise in concrete construction. These innovations included a 259m-high slipformed core and a single basement concrete pour of 5,500m³. The building was designed with a three level concrete basement and structural core combined with a steel-framed structure to Level 40, topped with 30 floors of in-situ concrete frame.

The solution

The slipform construction of the core was a huge project in itself, containing almost 2,000 tonnes of reinforcement bar and 12,000m³ of concrete materials. Intercrete 4801, an advanced class R4 structural mortar, was specified and contributed to rapid construction of the high quality slipformed core. Incorporating the latest proven cement chemistry, microsilica, fibre and styrene acrylic copolymer technology, Intercrete 4801 is pre-packaged, only requiring the addition of clean water on-site, to give an easily trowellable mortar with application thicknesses up to 80mm. It develops exceptional bond strength, excellent tensile and abrasion resistance, high diffusion resistance to acid gases and chloride ions and low permeability to water, even at 10 bar pressure. Intercrete 4801 is CE marked in accordance with BS EN 1504 Part 3. In addition, Intercrete 4800 waterproof mortar and Intercrete 4872 waterproof reinforced tape were used on the concourse providing a solid base for the finished granite pavers.