

20 FENCHURCH STREET, LONDON

LONDON'S SKYLINE HAS BECOME AN EVER-EVOLVING PICTURE. WHEN THE NEW 'WALKIE TALKIE' BUILDING IN CENTRAL LONDON WAS CONSTRUCTED, ITS DESIGN CAUSED QUITE A STIR. KEY TO THE UNIQUE DESIGN IS ITS FLUTED SHAPE, WHERE THE UPPER FLOORS ARE WIDER THAN THE LOWER FLOORS, LEADING TO ITS UNUSUAL NICKNAME.

→ What you may not know is that the innovation centred on this project isn't all purely aesthetic...it goes right to the heart of the building, and CEMEX were there to be a part of it.

→ THE CHALLENGE

Constructing a 160m tall building in the heart of London's financial district raised more than a few challenges for contractors PC Harrington and Canary Wharf Contractors. Down in the basement of the building the contractor was having to cast slabs up to 4.7m deep in places, creating potential problems with thermal cracking due to high heat during curing. The slabs also required vast amounts of steel reinforcement which meant the mix had to be able to flow freely through the tight gaps. One of the main problems to overcome was how to get concrete for the internal floor slabs to the very top of the project, 38 floors above central London, without compromising its quality or workability.

→ THE SOLUTION

CEMEX were approached by the project team to help develop a range of mixes to be used on the reinforced concrete frame building. The contractor wanted to pump the concrete in a single lift, which had benefits in reduced time and cost savings. In response to this, CEMEX created a bespoke lightweight concrete mix. The use of Lytag aggregate and Pulverised Fuel Ash (PFA) - both recycled materials - assisted in pumping the concrete ultimately to the full height of the building. A special stabiliser and super-plasticiser were added to the mix ensure the quality of the concrete was maintained all the way to the top. The basement slab mixes were designed after careful thermal modelling exercises, which led CEMEX to suggest using up to 40% PFA as a cement replacement to reduce the heat and subsequent curing temperatures, along side a 10mm Limestone aggregate to ensure the mix flowed around the steel reinforcement.

→ THE OUTCOME

The mixes performed exceptionally well to the demanding conditions imposed by the design and size of the building. All works were successfully carried out on time and to budget, allowing the contractors to proceed at the pace they required and hit their own handover targets.

KEY FACTS

- » Contract - 20 Fenchurch Street, City of London
- » Customer - PC Harrington & Canary Wharf Contractors
- » Main Mix - Lytag LC30/33



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