

# A quick formwork fix

Cordek devised a design solution that enabled main contractor O'Shea to meet a tight build programme and helped to realise the architectural vision for a residential development in London

## MEMBER PROJECTS

Cordek, working closely with main contractor O'Shea, has supplied a rapid and cost-effective formwork solution for the construction of the radial and elliptical beams that cantilever from the circular floor plate of Baltimore Tower, a £300m residential development by Baltimore Wharf SLP, designed by Skidmore Owings & Merrill.

The building, a 45-storey luxury development in Canary Wharf, is due for completion in 2016. The distinctive building incorporates a cylindrical core, with additional expression achieved through glass balconies that appear as a floating, reflective ribbon.

One of the building's key distinguishing design features is that it gives the impression it twists as it rises 151 m above its riverfront location. This effect is created by the elliptical ring of the balconies, which are offset by 2.5 degrees on each level, thereby creating a gentle spiral.

Structural engineer WSP Group designed the balconies as a series of tapering cantilevered radial beams linked by inner and outer elliptical beams (Fig 1). Structural and programme limitations required that the post-tensioned floor plate and the balcony beams were poured simultaneously.

### On good form

This complex grillage of beams required a formwork system that could be quickly fixed and struck to achieve the construction programme of a floor every ten days. Cordek proposed a system of fibreglass formers which, when placed on a flat timber deck, accurately created the beam geometry (Fig 2).



**45**  
Number of storeys  
at Baltimore Tower

Cordek also produced a 3D CAD model of the structure and designed a layout for the individual formers, which was optimised for striking and handling.

Using 5-axis digital machining and the 3D model, a male pattern of the formers was produced in epoxy tooling paste. From the epoxy-coated male patterns, GRP moulds were produced to facilitate the manufacture of the six sets of formers needed to complete three complete floors (each floor having one degree of symmetry). A floor requires 50 formers, each of which is split into either two or four sections to minimise weight for manual handling and to enable the units to strike more easily.

Each set of formers was moulded in a different colour gel coat and an individual reference code was embossed into the top surface to aid recognition and installation of the 456 sections on site (Fig 3 and Fig 4).

Cordek devised a design solution that not only enabled O'Shea to meet a very tight programme but also provided the quality of finish needed to realise the architect's vision.

O'Shea's project director says: "To attempt a traditional formwork solution would have incurred significantly increased time and cost implications. The use of Cordek's fibreglass moulds has allowed us to keep to our programme".

The tower is due for completion in June 2016 and progress is currently on schedule.

