CASE STUDY

Stair Core at Battersea Power Station

Phase One, Residential Block, Circus West, Battersea Power Station, London, SW8

Engineer:	Buro Happold
Contractor:	Byrne Bros
Architect:	SimpsonHaugh and Partners
Staircore Design:	CDC Ltd
Market Sector:	Patterns & Moulds for Precast Concrete & Glass Reinforced Composites
Product:	Epoxy Paste Pattern - GRP Mould

The familiar silhouette of Battersea Power Station on the London skyline has long awaited regeneration and revitalisation. Since its closure as a working power station in 1983, the riverside location has become an ideal setting for both a residential development and new community. Cordek were invited to tender for the design and supply of four multi-use concrete moulds for pre-casting two spiral staircases within Phase One's residential block, Circus West.

Project Scope

Cordek were tasked with designing a set of moulds which would produce 100 flights of stairs spanning 14 floors in each stair core. The design needed to be functional and efficient and the manufactured moulds capable of producing 50no casts as a minimum requirement, making it essential that the formers be durable and robust.

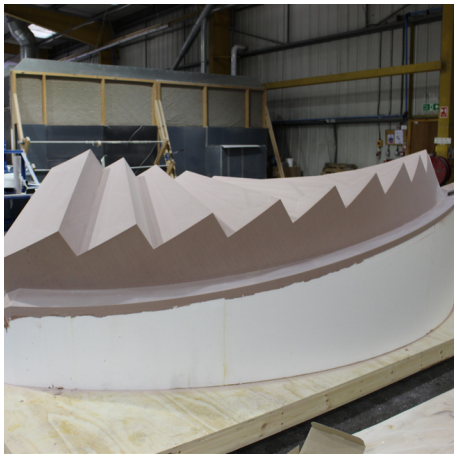
> ***"Cordek moulds offered a repeatedly high finish. The moulds were easy to assemble in our precast factory, helping to form elements that were easy to install on site."***
>
> Graham Ward, Byrne Bros's Senior Project Manager

The Solution

The Architect's design consisted of 30 helical staircases with four variations of riser heights. Cordek provided four Glass Fibre Reinforced Plastic (GFRP) Moulds so that the stairs could be precast upside down. This allowed for a quick, safe and simple installation of the stairs prior to landings being cast in-situ tying the spiralling risers into the core. The accuracy of the formers was essential to ensure the exacting dimensions of the staircase design was achieved. The fully integrated design included demountable sides to the moulds to allow easy striking of the concrete units and multiple reuses.

The Process

From the Architect's 3D design Cordek's Project Design Team created an inverted 3D model of the staircases orientated to

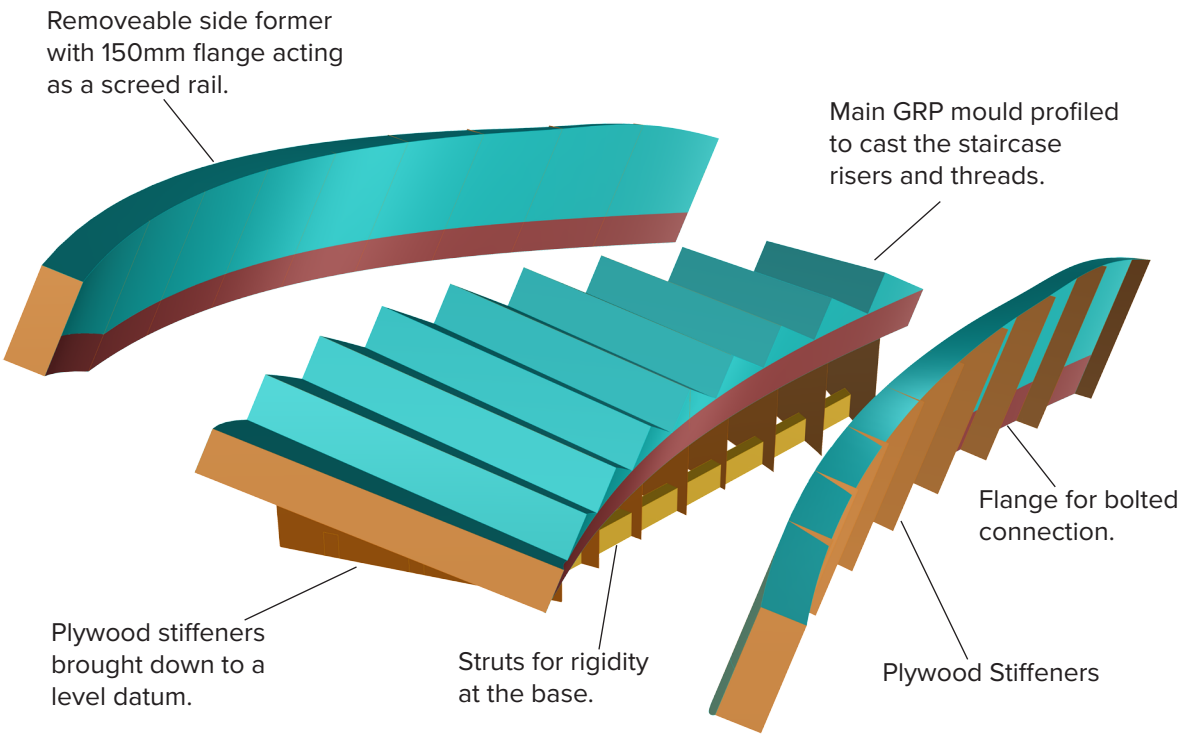


optimise the pre-casting process. This digital model was programmed into Cordek's five-axis CNC router to manufacture an accurate pattern for the staircase. The pattern, made from an expanded polystyrene core coated in an epoxy tooling paste, was painted in preparation for the manufacture of the GRP mould. The fibreglass mould could then be laminated onto the pattern and reinforced with plywood stiffeners to provide sufficient strength and rigidity to withstand the casting of the three tonne concrete units. The detachable side formers included alignment tabs and bolted connections.

After the moulds had been manufactured, the four patterns were shipped to Byrne Brothers to be used as templates for the fabrication of the reinforcement cages.

Summary

Detailed planning and design at the beginning of the process combined with modern digital methods of manufacture resulted in a cost effective solution which achieved the quality and multiple reuses required from this demanding project.



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