

THE MAGAZINE OF THE CONCRETE SOCIETY

CONCRETE

Volume 58, Issue 2 March 2024

GAZEBO CONCRETO

Exploiting the sculptural
potential of concrete

DECARBONISING CONSTRUCTION

The role of the main contractor
in a lower-carbon industry

PHOENIX BRIDGE

3D-printed bridge built
with recycled materials



V&A MUSEUM EAST, QUEEN ELIZABETH OLYMPIC PARK, LONDON

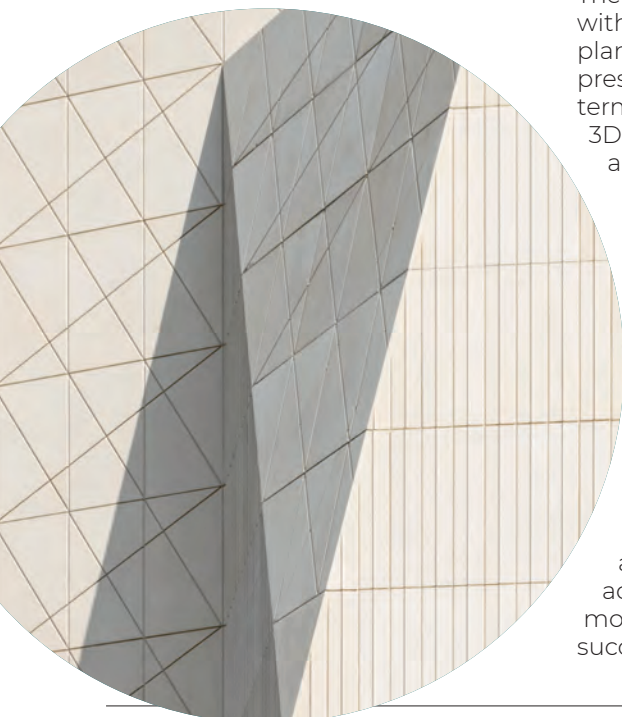
Opening in 2025, the V&A Museum East, Queen Elizabeth Olympic Park is rooted in east London's heritage and aims to explore what is shaping our world, with the voices leading contemporary culture. The V&A will house a major exhibition space plus two galleries, a restaurant and shops, and will serve as a venue for events. **John Tuomey of O'Donnell + Tuomey** describes the new museum space.

The Victoria and Albert Museum, East has a façade to resemble a three-dimensional tailored overcoat. The skin of the building acts as a three-dimensional folded form, a tailored overcoat, giving legible identity to the museum. It provides a protective outer layer for the environmentally controlled conditions within. The façade is crafted in precast concrete, pigmented with natural sand and with visible stone particles. It features individually tailored and interlocking pieces, stacked in 2m bandwidths, each panel being different and drawn all over with overlapping lines, with raised and recessed lines of low relief. All this intricate detail, lines overlaid in geometrical precision, is designed to decorate the faceted form with shadows and light.

Techrete's part in the overall project needed to be executed

INSET:

Close-up of the façade playing with shadows and light.



impeccably to achieve this striking identity and architectural intent. This is the second V&A Museum façade designed, manufactured and erected by Techrete, following its multi-award-winning façade for the V&A, Dundee. The unique nature of the V&A East for Techrete, as an architectural precast concrete

“The inclined nature of the façade... presented a challenging task in terms of the co-ordination of the 3D design, the mould-making and site preparation.”

specialist, is the complex geometry of the structure and façades. There were distinct challenges posed by the architectural intent – the obvious large, inclined faces of the façade and more subtle patterned peaks and troughs that ‘wrap’ around these faces.

INCLINED

The inclined nature of the façade, with its many different angles, planes and bespoke corners, presented a challenging task in terms of the co-ordination of the 3D design, the mould-making and site preparation. A three-dimensional ‘digital twin’ was created by Techrete's engineers to ensure clashes with other disciplines were minimised and scheduling and sequencing were optimised. This model was later used in manufacturing to assist the factory in setting out the moulds and stage casts.

The subtle features included within the panels, such as the peaks, troughs, recesses and scores, presented an added complexity to Techrete's mouldings and the key to their success in that regard was

threefold. First, it was dependent upon the modellers creating an accurate representation of the building. Second, from this digital information, bespoke moulds were produced by Techrete's in-house joiners. Third, the precision placement of the multi-stage casts within the moulds, ensured the very high level of accuracy required.

To achieve the complex shapes within the 2m-height modules, a ‘kit of parts/stage casting’ approach in the panel production was implemented and individual panels were cast in stages, some of which were made up of three or four parts. This approach enabled Techrete to produce multi-faceted panels, since most sides were formed against the mould surface.

MOCK-UP PANELS

The concrete was buff coloured and selected by the architects and clients. The surfaces of the panels subsequently received an acid-etched treatment finish, ensuring the consistent appearance of the panel. All the mix, panel geometry and surface features were trialled on a number of mock-up panels prior to production. This allowed both the client and design team to review the design and the production and factory teams to review and refine any manufacturing and installation issues.

Some 474 panels, covering 5878m² of the museum, were fixed to the structure between September 2021 and April 2022. The inclined façades proved particularly challenging, with underslung panels being lifted into position through the structural steel frame, requiring Techrete to ‘bend the law of gravity’ and very specific installation sequences were followed to achieve ‘top score’ in this large-scale game of Tetris. **Q**

OPPOSITE PAGE:

Alternating patterns on each elevation of the entrance area.

