

Scottish cliffs inspire the Dundee V&A

Techrete



Techrete is supplying the precast sections which make up the façade of the stunning V&A Museum of Design in Dundee.

The new Victoria & Albert Museum of Design in Dundee will be one of the most spectacular buildings to open in 2018, and precast concrete has been key to creating the unusual geometric angles and curves of the façade.

Situated on the banks of the River Tay, the museum's design by architect Kengo Kuma drew inspiration from the Scottish cliffs and is also a nod to the shape and appearance of the nearby RRS Discovery, the last traditional three-masted wooden ship built in Britain, now a Dundee tourist attraction.

Work on the V&A Dundee began in 2015. The 8,000 sq m museum protrudes out into the river on reclaimed land, created using a vast cofferdam built by main contractor Bam. The three-storey building, which stands 18.4m high, uses a concrete frame to create the external walls, which are faced with nearly 2,500 horizontal precast 'fins' to achieve Kuma's desired 'cliff face' appearance.

"Due to the complex geometric slopes and curvatures, coupled with its exposure to the Scottish weather and its proximity to the North Sea marine environment, concrete was the preferred material for this project," says Archie Fotheringham, northern region contracts manager for Techrete, which supplied the precast panels for the Dundee V&A.

Techrete started design work on the £5.6m package of precast planks in June 2015. BIM was used both for the design of the planks, and to accurately locate where the halfen channels needed to be placed in the structural walls for the precast fixings.

"A GPS system of precise co-ordinates was developed to ensure total accuracy of the interface between the halfen channels and the fixings on the panels during the installation process," explains Fotheringham. "The bespoke fixings were engineered by Techrete's senior designer Vivian Hand, and contributed to the overall speed of installation. The fixings were specially designed with marine grade materials to ensure there would be no corrosion, given the museum's marine location."

The manufacturing period, commenced in August 2016 and lasted for a year. The precast specialist also carried out two months of preparatory works on site, to ensure the 8,787m of planks could be installed smoothly.

"The programme was initially intended to install all planks in a 36-week period, but because of the GPS system of placing fixings, along with the preparatory site works, we were able to reduce this to 28 weeks," explains Fotheringham. "On occasions we were installing up to 22 planks per day."

The planks range in weight from 0.9 tonnes up to 2.8 tonnes, and are up to 4m long.

"The higher level planks were fitted using mobile cranes, but the lower level sections, which are underslung, were installed with bespoke lifting equipment, which we designed with one of our specialist suppliers," explains Fotheringham.

The onsite installation of the panels commenced in March 2017 and was complete by the end of October.

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