

Manchester Engineering Campus Development (MECD), Manchester

Project-specific formwork ascends on MECD's irregular-shaped cores

Key Benefits:

Formwork design reduced concrete pours

Fully operating climbing solution during winded-off periods

Trailing platforms facilitated multiple construction tasks

The project at a glance

Manchester University has invested over £300 million to build a world-leading engineering campus, helping to reinforce the UK's strength in engineering capabilities. The project, which will house the university's four engineering schools, is expected to be complete by 2021.



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Customer: Explore

Main contractor: Balfour Beatty

Developer: The University of Manchester

Project type: Non-residential

Products and Services: TRIO panel formwork
Rail Climbing System (RCS) PERI UP, CB 240
Climbing Formwork SB Brace Frames

What did the customer need?

The design of the building comprises four cores, two geometrically challenging cores featuring nib and return walls and two typical cores featuring a simpler design.

We were selected to provide a formwork solution for the two irregular-shaped cores; each core was eight levels high with the option of a roof overrun.

To facilitate jumpform construction, we were also required to implement an efficient climbing solution as the pours grew in height.

What was the challenge?

To accommodate the irregular shape of the core, we initially designed formwork panels 3.3 metres high with compatible platforms to assist cast in-situ concrete and access to formwork. As the project evolved, the required panel height increased to 4.5 m. This requirement was vital for our customer as it meant that fewer concrete pours were required. The main challenge for our designers was to understand how RCS would maintain its climbing speed with the revised formwork load. Additionally, platforms were only designed to bear the load of the 3.3 m-high panels.

How did we help?

Formwork design

We designed 4.5 m high TRIO panels as per our customer's request. TRIO was selected due to its capacity to cover large areas, helping to reduce repositioning of formwork and the number of pours. It was the ideal formwork solution to accommodate the alternating wall geometry around the core and at the same time realised the exposed concrete finish required.

Climbing solution

Our RCS was employed as a safe and economic means of climbing the core. Rail-guided operation accelerated the ascent of formwork and working platforms, enabling the crane to be used elsewhere on the project. The project itself had around 28 working days of crane downtime due to winded-off periods. The hydraulics on the RCS enabled the system to jump throughout these periods, allowing construction to progress even when the crane was down.

Access

We integrated three trailing platforms with our RCS system in order to provide the required safety measures as the cores grew in height. The platforms enabled safe concrete placement, access to formwork and finishing works alongside retrieval of anchors. PERI UP scaffolding was suspended inside the core to provide a safe fire escape for personnel and an alternative access to three floors below working level. The system's modular arrangement made it possible for workers to assemble the tower inside the core.

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