



**Member:** Cordek Ltd  
**Client:** The Royal College of Pathologists  
**Main contractor:** Gilbert-Ash  
**Sub-contractor:** Oliver Connell & Son Ltd  
**Architect:** Bennetts Associates  
**Product:** Trough moulds

# Breaking the mould for a fantastic finish

Cordek was tasked by specialist concrete frame contractor Oliver Connell & Son to devise a formwork system to allow the construction of ribbed concrete floors at the new headquarters of The Royal College of Pathologists

“  
**Cordek’s bespoke trough moulds helped us to achieve a high-quality consistent concrete finish in line with the architect’s specification and delivered to a tight programme**

Seamus McFerran, design manager, Gilbert-Ash



## Project scope

The project architects, Bennetts Associates, wanted to hail visual, exposed concrete as a feature of the building, showcasing the finish that can be achieved from a material often only considered for its structural capabilities.

The concept was to construct cast in-situ concrete floor slabs with exposed ceiling soffits, using the voids between the ribs to locate the strip lighting design on each floor in addition to reducing the overall depth and weight of the floors. As the exposed concrete soffits would remain ‘as struck’ it was essential that the finished surface was impeccable and that the formwork solution proposed by Cordek produced a finish that could be replicated on each floor.

## The solution

The ribbed slabs were formed using a bespoke trough mould solution, manufactured from glass reinforced plastic (GRP), the

robustness of which enabled re-use multiple times. To ensure consistency, every GRP mould was taken from the same original pattern. The design of the trough moulds incorporated rounded corners, creating the requirement to form a pattern and subsequent moulds with a double curvature, presenting a complex challenge to Cordek’s project design team.

The solution was created by 5-axis technology to route a pattern made from epoxy paste with an expanded polystyrene core to create the required finish and profile. Once completed and dimensional accuracy was confirmed using a Faro Arm digital scanner, the moulds were formed, creating an exact impression.

## The process

Bennetts Associates supplied the 2D drawing of their design proposal, from which the Cordek project design team created a 3D digital model. Following approval of

the 3D model, the relevant information was extracted as CAM data and used to create the tool paths for the 5-axis CNC router that was used to shape the epoxy paste pattern. After being routed, the pattern was coated with a highly durable primer to create a smooth matt surface finish. The moulds were then formed around the pattern using GRP, which was built up in several layers to a thickness of 18mm and strengthened with plywood stiffeners.

Prior to casting a floor, the trough moulds were positioned in accordance with the proposed design and secured in place by fixing to the elevated timber deck beneath. Once in position, a release agent was applied between the moulds and the exposed timber deck to aid striking once the concrete had cured sufficiently. Steel reinforcement was then placed both above and around the moulds, supported by spacers to achieve the required cover before the concrete was poured to the appropriate depth. After cleaning, the moulds were manoeuvred through the atrium of the building and into position to follow the same process for the floor above.

## Summary

The use of trough moulds meant that it was possible to reduce the overall weight of the slab, therefore allowing the intermediate ribs between the troughs to span considerable distances when compared to conventional designs.

Cordek’s cost-effective and practical formwork solution enabled this characteristic design to showcase the high-quality finish that can be achieved using concrete and thus realising the architect’s original vision.