



St. David's Multi-Storey Car Park

As part of the re-generation of Cardiff town centre, the new St. David's shopping Development provided additional parking by the construction of a five level (50,275m²) multi storey car park.

The elliptical ramp access to the car park provides a particularly striking effect.

Each level was typically poured as seven pours.



The contractor elected to utilise a slab and beam configuration. Structural Systems UK 503 post tensioning system was used for the reinforced deck slabs and a 506 system for the 525mm x 16m span beams.

The car park sits on a transfer slab at level three and is tied to stair core in the centre of the building. By introducing post-tensioning techniques, the slab depth for the car park was reduced to typically 150mm (permissibly the thinnest depth for a car park slab), with some areas at 175mm and nominally 300mm thick. The beam tendons were typically 36m long although in some instances, 56m long double end stressed tendons were used.

The construction phase went smoothly, even though there were areas of complexity requiring close interface between the post tensioned designers and the services engineer, who required multiple penetrations through the post tensioned beams. Clear and detailed communication was maintained with the contractor throughout the project, from design to completion on site.



The quick erection of the formwork system in conjunction with the efficient pour sequence offered by the Structural Systems, enabled the contractor to complete the frame in 27 weeks.

Using post tensioning has massive environment benefits over traditional reinforced concrete and steel structures. Post-tensioned slabs contain less about 25% less concrete and around 65% less steel than RC slabs.

In addition, it is ideal where storage space for materials is limited. At the end of the buildings life cycle, it can be easily demolished due to the tendons being bonded. Recycling is also easier as the concrete is won from the steel more easily.

Project Data Sheet

Location: Cardiff

Division: Structural Systems UK Ltd

Scope: Design and Install

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