

**Location:** Liverpool

**Client:** Merepark

**Frame Contractor:** McGee Group

**Main Contractor:** McGee Group

**Post-tensioning Design:** CCL

**Post-tensioning Installation:** CCL

**Year of Completion:** 2011



The £7.3 million car-park comprises a 10-storey, split level reinforced concrete frame bounded by 9-metre-high walls to the north and south, with existing properties directly behind and located directly above two railway tunnels, both of which had to remain in constant use throughout the project.

CCL installed three levels of suspended post-tensioned beam and slab car park decks, supplying its XM system in the ground floor beams and XF bonded system to all levels above.

A propped podium deck incorporating eight transfer beams was constructed to support the superstructure and span the two tunnels. The maximum span of the beams is 18 m and areas of the podium deck contain large cantilevers.

To achieve an incremental deflection of span/500, the beams were designed to be post-tensioned. The variation in span, transfer loads and slab level meant that the transfer beams range from 1800 to 2400 mm in width and from 2000 to 2150 mm in depth. The beams were cast in two pours to support the load during casting.

Walls limited access for the multistrand jack at the end of ground floor beams, where double live-end XM anchors were originally detailed, making it impossible to fix the anchor heads and wedges after pouring concrete. CCL proposed a basket dead end be used for locations where end of beam access would not be possible.

All beams were stressed during the night to ensure the crane hook remained free during the day.