



# QUEEN STREET APARTMENTS

Sleek, stylish and with award winning architecture is the vision for Queen Street to make a positive contribution to the skyline of Portsmouth. To provide unsurpassed value-for-money homes that complement the surrounding area and are sympathetic to historic landmarks, whilst being central to the regeneration of the city and harbour.



Queen Street Portsmouth is part of a new wave of very large projects currently being constructed by Ardmore Construction. The project comprises the construction of 569 apartments in 17 buildings up to seven storeys high, arranged around the perimeter of the site, plus a landmark tower 22 storeys high. A two level car park covers most of the site area with upper floor private gardens within the centre of the development. Retail units occupy the ground floor of some of the buildings.

The two storey car park is formed from 225mm thick post-tensioned concrete slabs. It will be entered at ground level. The roof of the car park in the centre of the development is used to support landscaped gardens and the PT slabs are 350mm thick.

This superb development, being constructed in two phases, is Ardmore's first using post-tensioning. They were persuaded to go with PT by Cameron Taylor who had used it on the earlier Montrose Place project in London – another Structural Systems job.

The post-tensioning system adopted is the Structural Systems 505 bonded tendon system, comprising up to five 12.9mm diameter, high yield strands inside a flat galvanised steel duct. After stressing, the ducts are injected with cement grout to provide bond and corrosion protection.

The uplift forces generated from the parabolic tendon profiles balance much of the dead loadings. This means long term creep deflections are virtually eliminated allowing the stringent deflection criteria of the curtain walling to be achieved without edge beams. Eliminating edge beams is important to allow the table forms to be used at their optimum efficiency.

The post-tensioned flat slab thicknesses are typically 225mm for a 7.5m by 7.8m grid, 300mm thick for plant areas. Occasional spans up to 10.2m are handled by locally thickening the slabs to 275mm. The strength of concrete used in the design of post-tensioned floor slabs is 40N/mm<sup>2</sup>.

The vast 200m by 100m development is divided into 17 separate buildings by movement joints. Ancon shear connectors are being used to transfer shear across many of these movement joints back to supports.

SSUK's in house design team in Southall has designed all of the post-tensioned slabs and as the project nears completion on site, the tall ships in the adjacent historic dockyard will soon be complimented by this elegant and modern addition to the Portsmouth Skyline.



## Project Data Sheet

**Year:**  
2006-2008

**Location:**  
Portsmouth, UK

**Client:**  
Crest Nicholson

**Division:**  
Structural Systems (UK) Limited

**Scope:**  
Design & Installation of SSL Slab Post-Tensioning System

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