

MARINE AGGREGATES IN CONSTRUCTION

SPINNAKER TOWER



CONSTRUCTION NOTES

The tower's base was constructed first by driving 84 reinforced concrete piles into the sea bed, then building what was described by engineers as a concrete 'cake tin' on top.

More concrete was pumped into this to form its solid base above the water level. These foundations support the weight of the tower and provide a buffer against accidental impact from a ship. The tower's 'legs' were also constructed from concrete but using 'slip forming'.

This involved pouring 11,000 cubic metres into two shafts, one for each leg. Every 12 – 14 hours, the shaft was moved upwards. 75 metres were completed in just 4 weeks with the entire height of the legs taking 3 months.

BACKGROUND

Spinnaker Tower is a 170-metre (560 ft) landmark tower in Portsmouth, England. It is the centrepiece of the redevelopment of Portsmouth Harbour, which was supported by a National Lottery grant.

The tower, designed by local firm HGP Architects and the engineering consultants Scott Wilson and built by Mowlem, reflects Portsmouth's maritime history by its being modelled after a sail. It was opened on 18 October 2005.

The Spinnaker Tower is the tallest publicly accessible building in the UK outside London.

It is certainly one of the most exciting structures in Britain and is set to become a world-famous icon for structural engineering.

It is believed that the Spinnaker Tower construction was the first time slip forming was used on hexagonal legs not at right angles to the base – the tower's legs are constructed at an angle of approximately 2 degrees, eventually merging at View Deck 1 level.

Marine aggregates were used in both piling concrete and slipformed concrete, concrete for the slipforming was site batched using coarse and fine aggregates supplied locally from a marine wharf in Bedhampton.

CONSTRUCTION CATEGORY

Structural concrete, slip formed concrete

END USE CATEGORY

Built environment, leisure

CASE STUDY 1