



## Water Main Crane Base

One particularly interesting job that we have done was the crane bases for an 1100 tonne crane that had a lift of some 200 tonnes of a bridge span for a water main.

On establishment the crane company realised that the ground conditions were not suitable. A phone call to us very late one Thursday afternoon explained the problem and the urgency set the wheels in motion. Fortunately there was an extremely good geotechnical report available which indicated excellent founding material at 12 metres deep.

### Pile Design

We did an initial pile design and outlined the costs on the Friday. After approval late Friday afternoon from the client, our engineers spent the weekend refining and finalising the pile and the pile cap design, for four 6.5 x 6.5 metre pile caps for the outriggers of

the crane to sit on. Loadings for each pad were in excess of 3100 KN. As there was a requirement for minimal settlement we decided on 9 piles per pile cap.

Although the client wanted the structure for only one lift they also wanted it to be permanent so that it could be utilised at any time in the future if a parallel line had to be installed. We used bearers and joists over the piles which were designed to transfer the weight in total to the piles. The pile caps could have been used without the concrete if the client had wanted the piles removed.

### Great Result

The following Thursday the crane was in place to do the lift. The lift proceeded with a surveyor with 2 way radio contact with the crane driver. As the crane was to be working at 98% of its capacity there were concerns for the stability

of the crane. As the lift proceeded all four foundation pads were monitored and a maximum of 1 mm deflection was noted. This minimal deflection enabled the crane to complete the lift 6 hours quicker than was scheduled.



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