

Scarborough Coastal Protection Scheme Piling

Client :
Scarborough Borough Council

Engineer :
High-Point Rendel

Main Contractor :
BAM Nuttall Ltd

Location :
Scarborough, N Yorkshire

Date :
2002 - 2004



The Scarborough Coastal Protection Scheme, was undertaken by BAM Ritchies' parent company BAM Nuttall Ltd. The works carried out by BAM Ritchies included approximately 620 piles to secure the toe of the new rock fill and Acropode revetment placed in front of the old Victorian seawall.

The toe piles consisted of drilled sockets 864mm diameter formed in the (bedrock) seabed to depths between 2.5m and 5m. Concrete encased, universal column toe piles were placed and grouted into the sockets. Ground conditions were typically moderately strong siltstones but varied from stiff clays to strong sandstones.

Prior to award of the contract, BAM Ritchies investigated a number of drilling systems suitable to the anticipated rock types. Owing to the varying beach levels, part of the work was carried out using a modified Casagrande B125 crawler-mounted rig, and part, in areas covered by water for most tides, was carried out using a jack-up mounted rig specially developed and built in house by the BAM Ritchies plant department.

This marine rig comprised a Casagrande RM21 rotary unit built into a cantilever frame and incorporating the necessary functions to operate as a DTH rig. The drill rig frame was mounted off the side of the Zeebouwer jack-up on a 'bull rail' and could travel 26m laterally and 3m transversely, allowing up to 10 pile locations to be drilled per jack-up move. This feature was particularly beneficial when working in a tidal environment, as the drill rig set-ups were not dependent on the high tides required to reposition the jack-up.

The Numa C240 DTH hammer used was the largest in Europe powered by a 3000cfm / 150PSI compressed air supply which also provided the cuttings flush. Drilling rates on site achieved a 5m socket between 30 to 45 minutes. The shore team achieved the output record for 2002, with six piles drilled, installed and grouted during a single tidal shift.