DUSTY RHODES

Controlled Modulus Columns

Client: Sunshine Coast City Council

Contractor: Civil Mining & Construction Pty Ltd

Consultant: Qantec McWilliam

Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

Dusty Rhodes Bridge forms an essential link between Nambour and the Sunshine Coast, carrying up to 7,000 vehicles per day. With the bridge nearing the end of its serviceable life, the Sunshine Coast City Council decided to replace the existing timber bridge structure. The Dusty Rhodes Bridge reconstruction project consisted of the upstream construction of a completely new bridge next to the existing bridge which remained in service throughout the reconstruction phase. Construction of new approach embankments was required for the new bridge.

Civil Mining & Construction Pty Ltd were contracted to build the new bridge but it was highlighted early in the tender phase that the ground investigation report revealed one abutment within the construction zone was to be built within a variable and changing geology that included the presence of soft clay layers up to 11m in average thickness immediately adjacent to existing Mangroves. This underlying and variable soft soil profile posed a potential large risk in not only overall long term but also differential settlements, lateral displacements and embankment stability. In order to mitigate these risks, the viability of a ground improvement technique was investigated.

MENARD BACHY'S ROLE

As a recognized Ground Improvement Specialist, Menard Bachy offered a Design and Construct package to treat the left embankment using an innovative soil improvement technique known as Controlled Modulus Columns (CMC). As part of the overall design and construct package, a design was successfully realised that included the design of the temporary works platform to enable the rig to move onto and subsequently work upon the difficult and unstable ground conditions.

Approximately 200^{No} 450mm diameter CMC's were installed to an average depth of 11m using a Liebherr LRB 155. The Rig was equipped with computer monitoring to control and record the installation parameters of the columns live allowing the operator to follow and record the installation depths and column formations throughout the drilling and extraction operations. All installation data was extracted on a daily basis and formed part of the overall quality monitoring and control systems for the works.

The works were successfully completed in September 2010.

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