KEMPSEY BYPASS

CLIENT

Abigroup

SERVICES PROVIDED

Constructability Advice
Driveability Analysis
PDA Testing
Pile Driving Monitoring (PDM)

PROJECT BRIEF

The McLeay River Floodplain Bridge in Kempsey, NSW is the longest road bridge in Australia with twin carriageways each extending 3200m over 93 piers. FSG was selected by Abigroup to provide engineering support, testing services and constructability advice for the driven piling works which were self-performed by Abigroup. A significant technical and safety innovation for the project was the use of the Pile Driving Monitoring (PDM) device.

SITE GEOLOGY AND CHALLENGES

The site geology is complex with thick beds of overconsolidated clays at the southern abutment and deep soft soils overlying dense sands and gravels over the majority of the alignment.

The underlying sandstone typically has a very limited weathering profile. This combined with rapid changes in rock elevation caused by ancient creek crossings posed significant challenges for establishing pile acceptance criteria and installing piles into the rock without crushing the toes.

SCOPE OF WORK

FSG were engaged by Abigroup to provide specialist technical support, pile driveability analysis and construction advice for the driven piling works which were self performed by Abigroup. All piles were slender, open-ended steel tubular piles driven to depths of 22m to 50m with all piles founding in the underlying Sandstone.

FSG also provided remote testing services for the driven piling, including PDA/Capwap at each pier and training of Abigroup site engineers on proper PDA testing methods.

A significant safety and technical innovation was also introduced to the project by FSG. The Pile Driving Monitoring (PDM) device allowed pile set and temporary compression to be remotely measured without the need for personnel to stand directly under the piling hammer.

By correlation with a single CAPWAP analysis in each pile group, it was also possible to infer capacities for all other piles in the group by using PDM. This greatly increased construction confidence and expedited pile acceptance across the job.

CONCLUSIONS

FSG assisted Abigroup in successfully self-performing the driven piling works on the McLeay River Bridge, in challenging geotechnical conditions. Under FSGs technical supervision and guidance, all piles were installed to the RTA's satisfaction, safely and to capacity using PDA testing in combination with Pile Driving Monitoring (PDM).

Abigroup's use of PDM also assisted in reducing target pile capacities and eliminated the need for personnel to stand under working piling hammers during final drive which was a significant safety initiative.

Foundation Specialists Group

Unit 15, 71 Victoria Crescent
Abbotsford VIC
3067 Australia
P: +61 3 9417 4333
contact@foundationspecialists.com.au

Unit 5, 99 Musgrave Rd
Red Hill QLD
4059 Australia
P: +61 7 3368 1661
foundationspecialists.com.au

P.O. Box 1177
Collingwood VIC
3066 Australia
F: +61 3 8648 5693