

**1. Type**  
Thesis

**2. Title**  
APPLICATION OF BENTONITE SLURRY AND POLYMER-BASED  
SLURRY TO WET-PROCESS BORED PILES CONSTRUCTION IN  
BANGKOK MULTI-LAYERED SOIL

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**5. School**  
School of Engineering and Technology

**6. Field of Study**  
Geotechnical and Geoenvironmental Engineering

**7. Abstract of the Work**

This study presents the performance of bentonite, polymer and polymer-based slurries through various laboratory tests. The laboratory tests were carried out in order to determine the basic properties of various slurries in different mix ratio. The laboratory tests were also performed to determine the filtration properties of slurries through first sand and second sand layer of Bangkok subsoil, thickness and shear strength of filter cake formed in various slurries after 24hours, 48hours and 72hours of elapsed time. Settling behavior of sand particles in slurries was included in this study.

The field data of past projects with the application of polymer-based slurry in Bangkok, Thailand were gathered and reviewed. The analyses including load distribution along pile shaft, unit skin friction mobilized at maximum test load and pile settlement. Shaft friction factor,  $\beta$  of the first sand and second sand layers and adhesion factor,  $\alpha$  for clay layers in subsoil of Bangkok were back-calculated from the load transfer data of relevant layers obtained from Vibrating Wire Strain Gauge (VWSG) data. These values are corresponds to the working load level of the test piles. For first sand layer, the back-calculated  $\beta$  value were in range of 0.25 to 0.38, while for second sand layer, the back-calculated  $\beta$  value were in the range of 0.1 to 0.40. The back calculated adhesion factor,  $\alpha$  range from 0.42 to 0.55 for undrained shear strength of 98kN/m<sup>2</sup> to 170kN/m<sup>2</sup>.

## 8. Keywords

Bentonite, polymer, polymer-based, bored piles, wet-process, drilled shaft

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