



Asia

# Expert Witness for Arbitration for Failure of Piled Foundation Review of Feasibility of Remedial Piling

## Description of Work

During construction of two tower blocks in Hong Kong, tilting was recorded which exceeded normally acceptable values. An investigation was carried out which revealed that many of the piles were shorter than originally designed and that this was the most likely cause of the adverse tilting. The piles had been installed as a sub-contract to the main contract. The main Contractor responsible for constructing the tower blocks considered that it would be possible to install a number of additional piles adjacent to the existing piles in order to stabilize the two blocks and the provide an adequate overall factor of safety for the foundation. The proposed remedial piling scheme included both large diameter bored piles and pre-bored H-piles

The remedial piling scheme had been developed by a consultant working on behalf of the contractor. The consultant retained Dr Andy Pickles of GCG (Asia) Ltd. to provide assistance in demonstrating the feasibility of construction of the proposed piles and in particular to determine whether or not the installation of the remedial piles would adversely affect the settlement of the two tower blocks. Two approaches were taken, first based on a review of empirical evidence of the effect of piling on adjacent structures and second based on detailed numerical (finite element) modeling of the interaction between existing piles and the construction of new piles. The review indicated that it should be possible to install the remedial piles without undue disturbance to the existing piles.

Pile coring had been adopted to determine the as built depth of the piles and additional settlement had been recorded as a result of coring beneath the base of the piles. The study carried out by GCG (Asia) Ltd. also included a numerical assessment of the effect of coring down the centre and beneath the piles.

**Date:** February 2000 to March 2003

