



Asia

Expert Witness for Arbitration Excessive Settlement of Pipelines

Description of Work

A contract in Hong Kong comprised the construction of approximately 12 km of foul sewer, storm drain pipelines and box culverts by both cut and cover and pipe jacking methods. Following completion of construction of the pipelines some sections of the pipelines were found to have settled up to approximately 200 mm and the client required these sections to be reinstated in order to maintain the required drainage gradients. The contractor for the work claimed against the client for the costs of reinstating the pipelines and the claim was heading for arbitration. The Contractor employed Dr Andy Pickles of GCG (Asia) Ltd to act as its expert witness for the arbitration and to prepare an expert report. The claim was settled before arbitration proceedings commenced.

The pipelines were constructed in trenches supported by sheetpiles driven below the base of the excavation. Three mechanisms which could cause settlement of the pipeline were identified. First, the placement of backfill over the pipeline. Second, vibrations during the extraction of the sheet piling could result in some “shake down” of the ground beneath the pipe. Third, migration of the fine CDG material into the single sized bedding material below the pipe during dewatering for the adjacent sections of pipeline. The single sized bedding stone was not wrapped in geotextile.

The settlement due to backfilling was estimated to be small and likely to be of the order of 5 to 10 mm. There was some evidence of a correlation between the magnitude of settlement and the extraction of sheetpiles because the sheetpiles were left in place over certain lengths of the pipeline. However it was thought unlikely that, in view of the particular ground conditions at the site, this could explain settlements of up to 200 mm. The primary cause of the large localized settlement was therefore considered to be loss of fines from beneath the pipeline into the single sized bedding, with some contribution from the shake down during pile extraction.

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