



Elsewhere in *ICE Proceedings*

A. Bond, *Honorary Editor*

The following are summaries of papers published in other parts of ICE Proceedings that readers of Geotechnical Engineering may find of interest.

The Three Gorges project on the Yangtze river in China

R. Freer

Proceedings of the Institution of Civil Engineers—Civil Engineering, 2001, 144, Feb., 20–28

Taming the mighty 6300 km long Yangtze river in south China was never going to be easy. Its history is littered with catastrophic flooding events that have destroyed lives and livelihoods and caused untold economic loss. The proposal to build what will still be the world's largest flood-control dam at the Three Gorges site in the river's mid-section was put forward as long ago as 1919. Wars and revolutions delayed the start until 1993 and completion is not now scheduled until 2009. This paper describes the planning and design of the £15 billion project and reports on construction progress to date. It highlights in particular the difficulties experienced in assessing the scheme's benefits against its costs—not least the need to relocate and reskill over one million people.

Foundations for the future

T. Chapman, B. Marsh, and A. Foster

Proceedings of the Institution of Civil Engineers—Civil Engineering, 2001, 144, Feb., 36–41

For the past 50 years civil engineers have been filling the ground under our towns and cities with, among other things, bored concrete piles. In London Clay in particular, such piles are a quick, quiet and cost-effective method of supporting ever-taller buildings and structures. But, unlike the shallower footings of old, today's deep foundations are almost impossible to remove when the building reaches the end of its life and the site needs to be redeveloped. The easiest solution—but one that is clearly not sustainable—is to fill up the space in between with even bigger piles. This paper argues that reuse of existing piles is the real answer and discusses the changes needed in our approach to designing, building and paying for foundations in the future.

Failure probabilities for plastic utility ducts in roadway trench reinstatements

I. W. S. Hounscome and C. A. Fairfield

Proceedings of the Institution of Civil Engineers—Transport, 2001, 147, Feb., 1–7

Wavin Industrial Products Limited arranged access in conjunction with Balfour Beatty Construction Limited and Bovis Construction Limited to the Braehead construction site, near Glasgow, to test a mixture of smooth bore and corrugated utility ducts in situ. Samples of all ducts were then parallel plate compression tested to BS EN 50086. Results of all site tests are presented with cumulative frequency charts showing the likelihood of a duct failing. Detailed analysis and discussion of the test results from site then follow. Key points arising from the field deformation measurements were: the stiffest ducts performed well; at no point did the vertical diametral strain exceed 5.3%. This indicated both good-quality duct and good-quality installation. Comparisons are drawn with other types of duct and the cumulative frequency plots revealed that duct stiffness played a major role in ensuring satisfactory performance. The vertical diametral strains are categorized with pass/fail decisions attached to each category. This paper casts doubt on the 450N limiting force at 5% vertical diametral strain; the authors feel it is too low and that 700 kPa is a more suitable minimum specific stiffness. This was supported by a plot of failure probability against average specific stiffness from four different ducts tested in situ over the last five years.

Engineering feasibility studies for a large reservoir in the Fens

P. G. de Lande Long and C. W. Scott

Proceedings of the Institution of Civil Engineers—Water and Maritime Engineering, 2001, 148, March, 25–37

Feltwell reservoir is a potential strategic water resource for the whole of East Anglia. This paper describes the work undertaken by Binnie Black and Veatch on the technical aspects of the site identification, pre-feasibility and feasibility studies for the construction of a reservoir at Feltwell. The process by which the site was identified is described. The incremental approach to the assessment of the feasibility of developing a reservoir at the site involving a desk study, preliminary ground investigation, pre-feasibility study and feasibility study is outlined. The bulk of the paper discusses the feasibility study undertaken in 1997/1998. A feasibility ground investigation was carried out and a digital geological model was developed. This geological model was used to assess the optimum reservoir depth and capacity and to determine the embankment alignment. The problems associated with the site geology are discussed, particularly in relation to the peat covering the site and the sourcing of material for filters and drains. The selection of

cut-off options and the dewatering requirements are described. The complex hydraulics of the inlet/outlet system are also described together with the proposed solution.

CrossRail: planning and design of the central London section

D. J. Taylor and J. C. Fergusson

Proceedings of the Institution of Civil Engineers—Transport, 2001, 147, May, 71–83

Provision of around £1 billion of new infrastructure for the central London tunnels and stations has required significant investment in procurement of both the design and information to support that design. This paper outlines the procurement and management of the design process, including a description of the central area infrastructure and the relevant supporting technical work.

Geotechnical investigation and assessment of potential building damage arising from ground movements: CrossRail

G. E. Torp-Petersen and M. G. Black

Proceedings of the Institution of Civil Engineers—Transport, 2001, 147, May, 107–119

One of the largest geotechnical survey and site investigations ever carried out in London, costing approximately £3 million, was undertaken prior to the design of the underground sections of CrossRail. This paper outlines the procurement, management and technical aspects of this survey, the application of the

results to the prediction of ground movements arising from tunnelling and the design of building protective works.

Intelligent pathological assessment of housing subsidence

C. J. Anumba and D. Scott

Proceedings of the Institution of Civil Engineers—Structures and Buildings, 2001, 146, May, 183–193

Interest in the pathological assessment of subsidence damage to residential buildings in the UK has grown considerably over the last 20 years. This followed a dramatic increase in claims to insurance companies for subsidence damage. Structural engineers and other construction professionals involved in the management of these cases require experience and sound engineering judgement to assess accurately the nature and extent of subsidence damage, the possible causative agents, and the most appropriate measures to rectify the situation. Problems have arisen where an incorrect diagnosis has been made, an inappropriate course of investigations followed, or ineffective remedial measures adopted. This paper describes an intelligent approach to the pathological assessment and rectification of subsidence damage to residential buildings based on a knowledge-based system known as SCAMS (subsidence case management system). SCAMS is intended to provide guidance for engineers dealing with subsidence cases at all stages of the management process—from initial diagnosis and prognostic assessment to further investigations and the specification of effective remedial measures. Details of the system's architecture, operations and benefits are included in the paper and substantiated with appropriate examples.