

The Fleming Award

In 1998 Cementation Foundation Skanska instituted “The Ken Fleming Award” given annually for geotechnical engineering excellence for Industry projects at large. An honour not often awarded during one's career, Ken was justifiably proud of this recognition. It is now the premier Annual Award, organised by the British Geotechnical Association for excellence in the field of geotechnics.

Winner of the 2003 Fleming Award

The 2003 Fleming Award was jointly won by the **World Trade Centre Recovery Effort** and the **Dublin Port Tunnel Team**.

The Dublin Port Tunnel team comprised

The Geotechnical Consulting Group (Geotechnical Design & Site Support)
Charles Haswell and Partners (Design and Site Support)
Nishimatsu-Mowlem-Irishenco JV (Contractor)
Dublin City Council (Client)

Dublin Port Tunnel received the award for optimisation and implementation of several novel geotechnical solutions, illustrated below with two examples.

Example 1: Tunnel Boring Machine launch Shaft WA2 is a 56.6m diameter 30m deep diaphragm wall supported excavation. Optimisation of design and construction took full benefit of positive shaft-ground interaction to achieve significant reductions relative to the winning tender design.. Account was taken of stress concentrations around large openings for the TBMs. During construction, monitoring was used to verify the shaft performance. Good teamwork was required in the iterative optimisation cycles.

Example 2: Over an 800m long section of the Northern Cut &C over, benefit of competent ground was taken to meet tight land-take constraints using steep, 12m deep slopes. A major motorway was diverted to run at the crest, which together with adjacent properties had to be protected at all times. Slope support was only needed for 3 to 6 months for horseshoe lining construction and backfilling. A novel observational approach was developed, utilising the stabilising effects of excavation induced pore water suctions in a controlled manner. The basic design required soil nails for the full slope height. However, for further economy and time saving, a novel observational approach was evolved whereby rows of nails were omitted unless required by adverse geology or unsatisfactory monitored performance (Figures 4 - 6). The partly nailed slopes were specifically designed with a limited “stand-up time” to match construction requirements. Successful implementation married (i) state of the art design and FE Analyses; (ii) a full-scale field trial; (iii) detailed risk assessments; (iv) extensive monitoring, and (v) sophisticated site procedures/ controls and contingency measures. Good teamwork was required at all stages from design development to consent/ approval and through to construction.



Director Robin Wood presents the Dublin Port Tunnel Team with their certificate.

(L to R : T. Brick, DCC, C. Menkiti GCG, R. Wood CFS, P. Higgins NMI.

The Judges were:

Professor Barry Clarke of Newcastle University,
Tony O'Brien of Mott MacDonald,
Gordon Torp-Petersen of Crossrail and
Philip Ball of Cementation Foundation Skanska.

The World Trade Centre Recovery Effort team comprised Mueser Rutledge Consulting Engineers, Port Authority of New York & New Jersey, Bovis Lend Lease, & Nicholson Construction/Hayward Baker JV.

The two other teams that made it to the final were CTRL C230 Thames Tunnels and CTRL C250 Ripple Road Bridge Settlement Mitigation.