Geotechnical Consulting Group

Professor Kelvin Higgins

BSc MSc DIC FREng FICE FCIHT

Senior Partner, and Visiting Professor at Imperial College London

Proven experts in a geotechnical world

Professional Summary

In 2019 Kelvin became a Fellow of the Royal Academy of Engineering. Since 2012 he has been a Visiting Professor at Imperial College, London. Until recently he was Chair of the British Geotechnical Association and Chair of CIRIA's Geotechnical Advisory Panel. Since joining GCG in 1986 Kelvin has worked on the application of numerical methods to engineering problems, including the design of tunnels, retaining structures, highways, dams, embankments, cuttings, and foundations (offshore and onshore). During his career he has gained practical and design experience of foundations, highway construction earthworks (cuttings and embankments & drainage schemes. He has acted as an expert witness in legal disputes. In addition, he has directed and facilitated research in different aspects of geotechnical engineering.

Career

Since 1986: GCG, London

Since 2015: Visiting Professor, Imperial College London

1977-85: Sir Alexander Gibb & Partners

Education

MSc and DIC, Imperial College London

BSc, Birmingham University

Professional Qualifications & Memberships

Since 2019: Fellow of the Royal Academy of Engineering, FREng

Since 2000: Fellow Institution of Civil Engineers, FICE (Member: 1981-2000)

Since 2000: Fellow Chartered Institution of Highways & Transportation (Member: 1982-2000)

UK Registered Ground Engineering Adviser

Member of the British Geotechnical Association British Tunnelling Society & Railway Civil Engineers Association

Service on Technical / Professional Bodies

Construction Industry Research and Information Association, CIRIA:

Experience with GCG

Kelvin has extensive experience of the assessment of the effects of underground construction, (excavations, shafts and tunnels) on adjacent structures. This includes developing alternative designs, construction techniques and sequencing of works to mitigate the effects of construction on adjacent structures and services by predicting the effects of construction on adjacent structures, services, operational tunnels and installations within these structures (e.g. escalators, permanent way, etc.). These activities have been predominately within a railway environment and in a number of cases he has been able to demonstrate economic benefits to alternative sequences and designs. He regularly advises Clients on these issues and the infrastructure companies.

Responsible for GCG's input to the Port of Dublin Tunnel and recently he has worked on the design of the Bank Station Upgrade that included assessing the effects of construction on buildings (masonry & framed), tunnel and shaft construction, the Bloomberg development in the City of London adjacent to Bank Station, the Nova development in Victoria built while the Victoria Station upgrade was underway, developments at Heathrow over existing tunnels and numerous other developments in the urban environment. In most of these cases piled foundations and retaining structures of different form have been used. His work has extended to the design of monitoring systems and the interpretation of results throughout construction and beyond. Currently, he is responsible for GCG's work on the Palace of Westminster R&R scheme and a member of HS2's independent geotechnical review panel.

He worked for Tideway reviewing reports related to the impact on bridges, tunnels, river walls etc. and was an expert witness for the DCO. In addition. he has also provided expert advice related to legal proceedings.

He has investigated the causes of the failures of foundations and slopes, designed remedial schemes and monitored construction.

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2021-22: Chair of Steering Group for "Piling guides – good practice guidance (P3198)"

2021: Chair of Steering Group for "Assessing the impacts of construction-induced ground movement on framed buildings (C796)"

2019-20: Co-authored good practice guidance "The management of advanced numerical modelling in geotechnical engineering: good practice (C791)"

2018-19: Chair of Geotechnical Engineering Advisory Panel (Member: 2010-17)

Institution of Civil Engineers, ICE:

Since 2021: Member, Professionalism Panel

Since 2003: Member, Awards Panel for Papers

2021-23: Member, Structural & Geotechnical Community Board

2017-19: Member, Qualifications Panel

2017-19: Chair, Exemptions & Recognition Panel (Vice Chair: 2015-17, and Member: 2009-15)

2001-04: Member, Geotechnique Advisory Panel

British Geotechnical Association, BGA:

Since 2021: Immediate Past Chair of the BGA (Chair: 2019-21, Vice Chair: 2017-19, and Executive Committee Member: 2000-03 & 2015-17)

2019-21: Piling 2020 Conference: Chairman of organising committee

Since 2015: Member of the ISSMGE Committee TC207, Soil-Structure Interaction and Retaining Walls

Scholarships / Awards

1999: ICE R&D Enabling Fund: Pile-Tunnel Interaction Problems

Countries worked

UK, Argentina, Belgium, Falkland Islands, Fiji, Iran, Ireland, Mexico, Papua New Guinea, Russia, Serbia, Sultanate of Oman, Saudi Arabia, Singapore, West Africa, UAE & the USA

His research and publications cover earth retaining structures, slopes, sheet piling, new monitoring technologies, soil behaviour, the performance and analysis of foundations, earth retaining structures, tunnels, embankment dams, slope stability, thermal plies, monitoring, soil behaviour and the use of advanced numerical methods. He was a general editor for the 2nd edition of the ICE's "Manual of Geotechnical Engineering".

Previous experience

Sir Alexander Gibb & Partners (1977-85):

1985-86: Mount Pleasant Airport Falklands Islands. Resident Engineer for all roads and services and for the construction of earth retaining structures and Design Liaison Engineer for other aspects of the development.

1983-85: Foundation design of Sizewell "B" new nuclear power station. Responsible for the geotechnical design work relating to the Mount Pleasant Airport in the Falkland Islands.

1982-83: Post-graduate Imperial College. Research into ground movements associated with diaphragm wall construction.

1981: Design of embankment dams and monitoring.

1979-81: Assistant Resident Engineer, road schemes in Middle East.

1977-79: Design of foundations and embankment dams.

Other Professional Activities

Imperial College London:

- CPD courses Lecturer for "Numerical Analysis in Geotechnical Engineering" and "Earth Retaining Structures: Recent developments in design and analysis".
- Supervision MEng. & MSc Soil Mechanics research projects.
- Peter Vaughan Memorial Symposium. 2009: Member organising committee.

International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE):

- 1st Int. Conf. on Transportation Geotechnics, 2008: Member of International Advisory Committee and Session Chairman.
- 2nd Int. Symposium. Pre-failure Deformation Characteristics of Geomaterials, IS Torino '99: Discussion Leader.

Institution of Civil Engineers:

- Skempton Conference. 2004: Member of organising committee.
- Retaining Structures, 1992: Panel Member.

Invited Lectures:

- Imperial College, Nottingham University, Midlands Geotechnical Society, and East Midlands Geotechnical Group.

Other

- EMAP Basements & Underground Construction. 2010, London: Conference Chairman.
- EMAP: Judge Ground Engineering Awards 2018 - 2023.
- CIRIA Int. Conference "Response of Buildings to Excavation: Induced Ground Movements". Imperial College, London, 2001: Discussion Leader.