

CHRISTOPHER ANDREW RAISON

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EDUCATION & AWARDS

- BEng Honours Civil and structural Engineering, Sheffield University (1973)
- MSc Foundation Engineering, University of Birmingham (1977)
- Chartered Engineer MICE CEng (1981)
- Institution of Civil Engineers T K Hsieh Award 2000

AFFILIATIONS

- Member of the Institution of Civil Engineers
- Member of the American Society of Civil Engineers and Geotechnical Institute
- Member of British Geotechnical Association
- Member of Midland Geotechnical Society
- Member of International Society for Soil Mechanics and Geotechnical Engineering

PROFESSIONAL

- Committee member - Midland Geotechnical Society 1991 to 1995
- Chairman - Midland Geotechnical Society 1994 to 1995
- Committee member - British Geotechnical Society 1995 to 1998
- Member - Géotechnique Advisory Panel 1998 to 2001
- Member - CIRIA Steering Group RP604 Treated Ground CP/92 1999 to 2000
- Member - Geotechnical Engineering Advisory Panel 2003 to 2005
- Committee member - British Geotechnical Association 2006 to 2009
- Committee member - Association of Geotechnical Specialists 2010 to 2013
- Committee member - Midland Geotechnical Society 2011 to date
- Committee member and Secretary - TC250/SC7 Evolution Group 7 2011 to 2016
- Committee member - TC250/SC7/WG3/TG3 2016 to date
- Committee member - British Standards Institute B/526 Geotechnics 2012 to date

SELECTED CONFERENCES AND PRESENTATIONS

- BRE Ground Treatment Seminar - Ground Treatment - February 2004
- British Geotechnical Association - Basement Construction RVH, Belfast - June 2009
- Midland Geotechnical Society - Driven Precast Piles - December 2010
- Piling and Foundations UK 2012 - UK Pile Design to EC7 - May 2012
- Midland Geotechnical Society - EC7 Seminar - September 2012
- Northern Ireland Geotechnical Group - UK Pile Design to EC7 - April 2013
- Geotechnica 2014 - Evolution of UK pile design to EC7 - July 2014
- ISSMGE - ETC3 International Symposium on Design of Piles in Europe - April 2016

EXPERIENCE

2002 to PRESENT – DIRECTOR - RAISON FOSTER ASSOCIATES LIMITED

Specialist geotechnical advice and guidance, design calculations and reporting to the Piling and Ground Improvement industry, Main Contractors, Developers and Consulting Structural Engineers. Projects and design works carried out include numerous basement retaining walls, pile foundations, ground improvement including VCC, slope stability analysis, the provision of specialist design advice and Expert Witness work.

Also actively involved within the geotechnical industry including technical presentations at BGA, MGS and regular attendance at informal evening meetings and symposiums. Currently serving on the British Standards technical committee B/526 and the Eurocodes TC250/SC7/WG3/TG3 working group dealing with the development and revision of BS EN 1997-1 Eurocode 7 in relation to pile design.

Principal Current Areas of Specialisation

Retaining wall analysis and design, design of pile foundations, soil nailing, ground anchorages, ground improvement and grouting. Slope stability, settlement analyses, earthworks design. General soil mechanics, foundation engineering, geotechnical, civil and structural engineering works. Trouble shooting and Expert Witness work.

Selected major Projects

- Angel Lane, Stratford, London E15. Prettys Solicitors LLP. Acting as Expert Witness in a dispute between the Main Contractor and Specialist Piling Contractor regarding, poor quality concrete, weak concrete and soil inclusions found in CFA bored piles installed for a 31 storey residential building.
- Hallsville Quarter, Canning Town, London. Fayat Piling. Design for diaphragm wall basement retaining wall and large diameter CFA bored pile foundation piles for a new residential complex.
- The Triangle Project, Cambridge. Fayat Piling. Design of large diameter CFA bored piles for a new headquarters building for Cambridge Assessment.
- City Quays 2, Belfast. FK Lowry Piling. Design of CFA bored foundation piles for a new commercial building. Dealing with review and investigations into construction issues identified during construction.
- Ilford Rail Depot, Logistics and Stores Building. Keller Foundations. Design check for shallow pad foundations and floor slab carried on vibro replacement stone columns.
- University of Ulster, Block BB. McLaughlin & Harvey. Design checks and geotechnical advice provided as part of the Main Contractor's tendering process.

- Accolade Wines (formerly Constellation Europe), Avonmouth. Keller Foundations. Investigations and preliminary Expert Advice regarding excessive settlement and damage to localised areas of floor slabs to a new distribution warehouse carried on driven cast insitu piles. Works included detailed review and assessment of remedial precast piles.
- Inver Energy, Queen Alexandra Dock, Cardiff. Kennedys Law LLP. Acting as Expert Witness in an dispute and Adjudication between the Main Contractor and Specialist Ground Improvement Contractor regarding settlements to a petrol storage tank carried on vibro stone columns.
- Sainsbury's Distribution Centre, Dartford. Keller Foundations. Technical guidance and advice as part of a dispute between the Client, Main Contractor and Specialist Piling Contractor regarding excessive settlements of driven pile foundations.
- Suffolk Energy from Waste Plant. FK Lowry Piling. Final design works for a deep excavation forming the waste bunker. Design of secant bored pile walls.
- Royal Victoria Hospital, Belfast. FK Lowry Piling. Final design works for a deep basement retaining wall. Design of contiguous and secant bored pile walls, rock anchorages and rock bolts for a new hospital development.
- Miller Street, Manchester. May Gurney. Final design works for a deep basement retaining wall. Design of contiguous bored pile wall for a new HQ building.
- Felixstowe South Reconfiguration. Costain. Consolidation and creep settlement check calculations for a section of the reclamation project involving prefabricated vertical band drains and surcharging.
- BLCP Power Project, Map Ta Phut, Thailand. DLA Piper (Thailand) Ltd. Acting as an Expert Witness in a dispute between the Main Contractor and Insurance Company involving the failure of driven precast piles. Work involved preparation of Expert Witness reports and cross examination as part of the insurance tribunal.
- Drive in BBQ Site, Jersey. Amplus Limited. Final design for soil nail stabilisation of an existing soil slope as part of a new housing development.
- Donegall Quay, Belfast. FK Lowry Piling. Extensive design checks for a two storey deep basement formed using heavy section sheet piling, steel tubular propping and Cfa bored foundation piles. Also involved in provision of technical advice during an Adjudication between the Client and Main Contractor.
- Thelwall Old Viaduct. Flint & Neill Limited. Category 3 design checks for pile foundations to the existing bridge foundations following replacement and refurbishment of the bearings.
- Cooperative Food Store, Moat Sole, Sandwich. Berrymans Lace Mawer. Acting as

Expert Witness in a dispute between the Client, Engineer, Main Contractor and Specialist Ground Improvement Contractor regarding settlements to a floor slab carried on vibro stone columns.

- Littleton Street, Walsall. Van Elle Piling. Review of site investigation and mini pile installation records as part of a detailed claim regarding ground conditions.
- Norton Bridge Alliance. Piling Solutions. Responsible for design of piled foundations for new overhead signal gantries and OLE structures constructed as part of the route modernisation carried out by the Norton Bridge Alliance on the Railtrack West Coast Main Line.
- Rugby Alliance. Piling Solutions. Responsible for design of piled foundations for new overhead signal gantries constructed as part of the route modernisation carried out by the Rugby Alliance on the Railtrack West Coast Main Line.
- Nuneaton Alliance. Owen Williams Rail. Final pile design for a large diameter pile foundation for an OLE structure at Nuneaton Station.
- Mainstream Way, Birmingham. Acting as Expert Witness in a dispute between a Developer and Specialist Ground Improvement Contractor regarding floor slab and building settlements to a warehouse structure founded on vibro stone columns.
- Docklands Light Railway Extension. AMEC. Review of foundation proposals and provision of specialist design and guidance to Main Contractor.
- Vulcan Street, Oldham. Provision of Expert Advice in a dispute between a Consulting Engineer and Site Investigation Contractor following settlements to a floor slab to an industrial building.
- Gallions Reach Beckton. Pennine. Responsible for composite VCC, deep concrete foundations and geogrid upfilling for a new commercial development. Design included finite element analyses of the composite foundation substructure and full liaison with the Specialist Contractor and Engineer.
- Numerous other contracts covering deep basement design, pile foundations, cuttings and embankment analysis, soil nailing and ground improvement. Projects involving office and commercial buildings, power stations, bridges, earthworks, roads and rail infrastructures.

1999 to 2002 – DIRECTOR - CHRIS RAISON ASSOCIATES LIMITED

Specialist geotechnical advice and guidance, design calculations and reporting to the Piling and Ground Improvement industry, Main Contractors, Developers and the smaller Consulting Structural Engineers. Projects and design works carried out include numerous basement retaining walls, pile foundations, ground improvement including VCC and the provision of specialist design advice.

Particular specialist design projects

- Tally Ho Deep Basement, North Finchley, London N12. Responsible for the detailed design of a 9m deep basement retaining wall formed using 600mm diameter Cfa bored piles. Design included stability and wall displacement computations.
- Gallions Reach, Beckton. Final design for a composite VCC, deep pad footings and geogrid load transfer platform foundation system for a new retail development. Design included detailed finite element analyses.
- Frogmore Garage, Frogmore, Hertfordshire. Acting as Expert Witness in a dispute between a House Builder and Site Investigation Contractor regarding piling problems during construction of foundations on a Chalk site.
- North Staffs Alliance. Responsible for design for piled foundations for new overhead signal gantries and OLE structures constructed as part of the route modernisation carried out by the North Staffs Alliance on the Railtrack West Coast Main Line.

1987 to 1999 – CHIEF ENGINEER - KELLER GROUND ENGINEERING

Senior Design Engineer to May 1989 then Chief Engineer. Technical support and specialist design to the piling and ground improvement departments, design auditing, checking and validation and specialist software development.

Particular specialist design projects

- Wimbledon Town Hall Development. Responsible for the final design for large diameter bored piles and contiguous bored pile retaining walls for a two storey deep basement.
- College Road Harrow. Responsible for all geotechnical design relating to an 18m deep basement construction including large diameter bored piles, contiguous bored pile retaining wall and overall performance of the foundations. Responsible for the management and reporting of retaining wall instrumentation to monitor wall displacements during construction.
- North Morecambe Terminal, Barrow. Responsible for driven cast in place and precast pile design for a new gas process plant. Foundations designed for defined levels of earthquake and to overcome the effects of ground liquefaction. Responsible for the planning and interpretation of an extensive pile testing programme.
- A406 North Circular Road, Edmonton, Silver Street Bridge Jacking Pit. Responsible for the detailed design of a 15m deep jacking pit formed using large diameter bored piles. Design included stability and wall displacement computations.

1982 to 1987 – SENIOR GEOTECHNICAL ENGINEER - OVE ARUP AND PARTNERS

Project Geotechnical Engineer engaged on the design and supervision of construction of a major structure and deep basement founded in London Clay. Providing of advice and foundation design to external clients.

Particular specialist design projects

- Misr Bank, Cairo, Egypt. Two months on site as temporary Resident Engineer responsible for the supervision of the installation of 1.5m diameter bored piles, ground instrumentation and excavation carried out during construction of a two storey deep basement in silts and sands.
- Houndsditch, City of London. Responsible for carrying out a design check for a 15m deep basement in the City of London. Also required to provide geotechnical advice to Building Surveyors representing adjacent owners for a Party Wall agreement.
- British Library, Euston. Project Geotechnical Engineer responsible for the geotechnical aspects of the final design of a secant pile wall basement, ground anchors and raft foundation. Design included finite element computer analyses and parametric studies to investigate the behaviour of the deep basements. Also engaged in the design and planning of the sequence of construction in conjunction with the Project Management Contractor, and in dealing with all site related queries and problems during the works.
- Resident Engineer responsible for the design and supervision of factory and on site ground anchor trials, and the reporting and back analysis of the trial anchor testing.
- Temporary Resident Engineer supervising the installation of underreamed bored piles. Supervision included the descent and inspection of pile underreams, and the installation of instrumentation for monitoring the behaviour of the piles.
- Responsible for the management and reporting of all site survey, ground and retaining wall instrumentation monitoring with the assistance of survey staff and instrumentation technician. Duties also included liaison with the Client, and dealing with owners of adjacent buildings and tunnels both before and during the works.

1981 to 1982 – GEOTECHNICAL ENGINEER - PETER FRAENKEL AND PARTNERS

As a Geotechnical Engineer based in their London office providing geotechnical advice to the other civil engineering groups within Peter Fraenkel and Partners, including the preparation of geotechnical specifications and proposals for various contracts.

Particular specialist projects

- Chao Phya River Crossing, Bangkok, Thailand. Appraisal of site investigation and test results, and the design of large diameter bored piles for a 450m span bridge.

- Sha Tin to Tai Po Trunk Road, Hong Kong. Three months on site as the Geotechnical Engineer responsible for the detailed design and checking of dredging and earthworks necessary for the construction of marine embankments on very soft silts and clays.
- Suriname River Bridge, Suriname. Outline foundation design for a large span cable stayed bridge and the preparation of proposals for additional site investigation.
- Sabah Rural Trunk Roads, Malaysia. Geotechnical advice and preliminary foundation design for Kinabatangan Bridge.

1979 to 1981 - GEOTECHNICAL ENGINEER - OVE ARUP AND PARTNERS

As a member of one of the geotechnical service groups responsible for providing geotechnical advice on request to the building and structures groups within Ove Arup and Partners and for providing geotechnical input and detailed foundation design for many contracts.

Particular specialist projects

- M40 Motorway. Four months on site as Resident Engineer responsible for the supervision of site investigation for the Wendlebury to Souldern Section of the M40. Responsible for detailed design and Specific Recommendations and Materials reports.
- Swindon. Site investigation appraisal and design of earthworks and foundations for an industrial warehouse.
- Farnborough. Site investigation, assessment and detailed design of piled foundations for a multi storey office building, including the installation and testing of a trial pile.
- M25 Motorway. Design check of a reinforced earth retaining wall.

1977 to 1979 – ASSISTANT GEOTECHNICAL ENGINEER - SOIL MECHANICS

Assistant Geotechnical Engineer. Planning and preparation of contracts.

Particular projects

- Hong Kong Mass Transit Railway. Two months on site carrying out Menard pressuremeter tests as part of the site investigation for the Tsuen Wan extension to the MTR and the subsequent analysis and reporting.
- Castle Peak Power Station, Hong Kong. Site Agent responsible for installation of geotechnical instruments to monitor the behaviour of a sea wall embankment.

PUBLICATIONS

- 1 C. A. Raison and D. Egan (2016)
Design of piles – United Kingdom practice.
ISSMGE - ETC 3 International Symposium on Design of Piles in Europe.
Leuven, Belgium, 28 & 29 April 2016.
- 2 C. A. Raison (2005)
Discussion on Cheng (2004). *Géotechnique* 54, No. 2, 149 – 150,
Nq factor for pile foundations by Berezantzev. *Géotechnique* 55, No 6, 493-494.
- 3 C. A. Raison (2004)
Géotechnique Symposium in Print. Ground and Soil Improvement.
Editor of hardcopy book, Thomas Telford Limited, April 2004.
- 4 T. J. P. Chapman, M. L. Connolly, D. P. Nicholson, C. A. Raison and H. C. Yeow (1999)
Advances in understanding of base grouted pile performance in very dense sand.
Tunnel Construction & Piling 99, September 1999, 57-69.
- 5 C. A. Raison (1999)
Setting an Example. Report on the joint BGS/ICE Ground Board workshop 'Eurocode
7: A commentary' held at the Institution of Civil Engineers on 5 October 1998.
Ground Engineering, Vol 32, No 6, June 1999, 30-31.
- 6 C. A. Raison (1999)
North Morecambe Terminal, Barrow: Pile design for seismic conditions.
Proceedings of the Institution of Civil Engineers, Geotechnical Engineering, 1999, 137,
July, 149-163.
- 7 C. A. Raison (1998)
Discussion on D. Baird and I. Williamson (1997),
New Control building envelope for British Gas.
Proceedings of the Institution of Civil Engineers. Structures & Buildings, 1997, 122,
November, 420-431.
(Discussion submitted to *Proceedings of the Institution of Civil Engineers* but not
published).
- 8 C. A. Raison (1995)
North Morecambe Terminal, Barrow: An Overview.
(Discussion submitted to *Proceedings of the Institution of Civil Engineers* but not
published).
- 9 C. A. Raison, B. C. Slocombe, A. L. Bell, and J. I. Baez (1995)
North Morecambe Terminal, Barrow, Ground Stabilisation and Pile Foundations.
*Proceedings of the Third International Conference on Recent Advances in
Geotechnical Earthquake Engineering and Soil Dynamics*, St Louis, Missouri. April
1995.

- 10 C. A. Raison (1995)
Discussion on the observational method in geotechnical Engineering (1994).
The observational method in geotechnical Engineering, Thomas Telford Publishing, 175-179.
- 11 C. A. Raison (1992)
Deep basement construction at College Road, Harrow.
Proceedings of the Conference on Piling, European Practice and Worldwide Trends, Institution of Civil Engineers. April 1992, 111-119.
- 12 C. A. Raison (1991)
Discussion on D. M. Potts and R. A. Day (1990),
Use of sheet pile retaining walls for deep excavations in stiff clay.
Proceedings of the Institution of Civil Engineers. Part 1, 1991, 90, December, 1258-1263.
- 13 C. A. Raison (1988)
Discussion on J. B. Burland and J. C. Kalra (1986),
Queen Elizabeth II Conference Centre.
Proceedings of the Institution of Civil Engineers. Part 1, 1988, 84, February, 114-117.
- 14 C. A. Raison (1987)
Ground anchorages: drillhole alignment determination at the British Library, Euston.
Proceedings of the Institution of Civil Engineers. Part 1, 1987, 82, June, 627-634.
- 15 C. A. Raison (1987)
Ground anchorages: component testing at the British Library, Euston.
Proceedings of the Institution of Civil Engineers. Part 1, 1987, 82, June, 615-626.
- 16 J. W. Pappin, B. Simpson, P. J. Felton and C. A. Raison (1986)
Numerical analysis of flexible retaining walls.
Symposium on Computer Applications in Geotechnical Engineering, The Midland Geotechnical Society. April 1986, 213-242.
- 17 C. A. Raison (1985)
Discussion on 5th Symposium in Print (1984),
Performance of propped and cantilevered rigid walls. Géotechnique 35, No 4, 540-544.
- 18 J. W. Pappin, B. Simpson, P. J. Felton and C. A. Raison (1985)
Numerical analysis of flexible retaining walls.
Proceedings of the International Conference on Numerical Methods in Engineering: Theory and Applications, Swansea. January 1985, 789-802.