

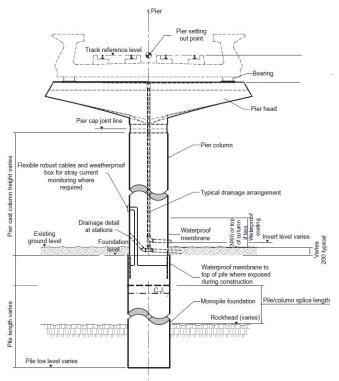


Repute Expert-Ease is a professional consulting service provided jointly by Geocentrix and Geomarc to aid engineers undertaking numerical modelling

and design of pile foundations.

The scope of this consulting service can be customized to fit your specific requirements. For example, you may wish to consult us if:

- You have limited in-house expertise/resources to dedicate to numerical modelling
- You need someone to review your numerical analyses to increase your confidence
- You need to tackle specific problems, such as the pile response due to earthquakes or to ground movements induced by tunnelling, landslides, excavations, consolidation, construction of adjacent piles or buildings, etc.
- You need a design check or an alternative solution to your pile design
- You need to calibrate your preliminary pile analyses/design



with the pile testing results in order to develop a serviceability limit approach for the final pile design

Whether a small design check or a major R&D project, you will enjoy a high quality and cost-effective service tailored to fit your specific needs.

Pile raft response

Piled rafts are often a cost-effective type of foundation in which the applied loads are carried partly by the piles and partly by the raft contact stresses, thereby allowing a significant reduction in required pile length as compared to a conventional pile foundation. The latest raft module of PGroupN* performs a non-linear boundary element analysis of the piled raft under general loading conditions. The negligible computational costs make the analysis suitable not only for the

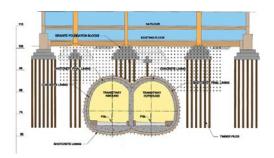


design of piled rafts supporting high rise buildings (generally based on expensive 3D finite element or finite different analyses) but also for that of ordinary buildings and bridges.

Pile response to tunnelling

The latest tunnel module of PGroupN* provides a cost-effective method for estimating the deformation and load distribution of existing pile foundations during tunnel excavation. Due to the negligible computational costs, a large number of cases can be analysed efficiently,

enabling multiple tunnel configurations to be quickly examined and parametric studies to be readily performed. This represents a significant advantage over the cost and complexity of a complete 3D finite element or finite difference analysis of tunnel-soil-pile interaction, particularly when non-linear soil behaviour is to be taken into account. The approach is based on two steps:



- Estimate of the free-field tunnelling-induced ground movements using alternative procedures, ranging from empirical methods and closed-form analytical solutions to 3D numerical analyses
- Non-linear boundary element analysis of the pile group subjected to the computed free-field ground movements and to the superstructure loads

Pile response to earthquakes

Repute *Expert-Ease* can provide specialist advice regarding seismic analysis and design of pile foundations. We make use of the latest seismic module of PGroupN*, based on a practical pseudo-static approach that overcomes the limitations of Winkler models and the cost and complexity of dynamic finite element analyses. The approach, which is capable of accounting for both inertial and kinematic effects (as required by Eurocode 8 Part 5, EN 1998-5), involves two main steps:

- Free-field site response analysis to obtain the maximum ground displacement profile along the pile and the maximum ground surface acceleration generated by the earthquake
- Static non-linear boundary element analysis of the pile group to estimate the deformation behaviour and internal forces of the piles, subjected to the maximum free-field ground displacement profile (kinematic loading) and to the pile cap load given by the cap-mass multiplied by the maximum free-field ground surface acceleration (inertial loading).

Contact us

Please feel free to contact us to discuss your requirements. Our specialists will work with you to determine the scope of work necessary and present you with a proposal outlining what would be required for a resolution, including an estimate of all fees and expenses.





*These modules are not currently available in Repute 2

Repute Expert-ease is a consulting service provided jointly by Dr Francesco Basile (of Geomarc) and Dr Andrew Bond (of Geocentrix).

Dr Francesco Basile

Francesco Basile is a civil engineer with over 20 years experience in the field of geotechnical engineering design, analysis and research. He received his PhD from the University of Glasgow (UK) in 1999 following submission of a thesis on non-linear analysis of pile groups.

After working for Halcrow in London (1999-2003), he returned to Italy to set up his own geotechnical consultancy, Geomarc. During his career, Dr Basile has been involved in a variety of major

international projects in Italy and the UK (including RLE Channel Tunnel Rail Link and the Submarine Refit Complex at Devonport Royal Dockyard), and his consulting experience ranges from site investigation to shallow foundations, piling, retaining structures, and slope stability.

Dr Basile has specialist expertise into numerical analysis of pile foundations and is the author of the calculation engine for Repute, the UK's leading pile-design software and widely used worldwide. He has published two theses and over 20 technical papers on pile behaviour, including the book chapter "Analysis and design of pile groups" (Taylor & Francis, Oxford).

Dr Andrew Bond

Andrew Bond graduated from Cambridge University with 1st Class honours in 1981 and, after a few years working for Atkins, went on to complete his Masters and Doctorate at Imperial College, where he won the 1989 Unwin Prize for his PhD on the behaviour of displacement piles in overconsolidated clay. He created the Imperial College Pile, which has been a mainstay of piling research at the college ever since.

Dr Bond then joined the Geotechnical Consulting Group where he developed the computer programs ReWaRD, for embedded retaining wall design, and ReActiv, for reinforced slope design.

In 1999, he setup his own company, Geocentrix, to concentrate on software development, consulting, and teaching. He has developed Repute for single pile and pile group design and is currently creating Redoubt for shallow foundation design, both of which are fully Eurocode compatible.

Andrew has been one of the UK's representatives on CEN TC250/SC7, the committee responsible for producing Eurocode 7, since 1997. He is lead author of the highly successful book 'Decoding Eurocode 7' published by Taylor and Francis, London, in 2008. He is also co-author of several other publications for BSI, the Concrete Centre, IStructE, and the Association of Geotechnical Specialists. Through his company, Geocentrix, he has delivered training courses on Eurocode 7 to over 2000 engineers throughout the UK, South Africa, Namibia, Singapore, and Malaysia.

In June 2010, Dr Bond was appointed Chairman of the Eurocode 7 committee and he is actively engaged in researching future improvements to the new geotechnical code.



