

# *CURRICULUM VITAE*

---

**CARL T ERBRICH**  
**Director**

**DATE OF BIRTH:** 20 November 1964

**NATIONALITY:** British

**ACADEMIC  
BACKGROUND:** MEng in Civil Engineering, City University, London (1988)

**PROFESSIONAL  
AFFILIATIONS:** Member of the API Geotechnical Resource Group (RG7) and ISO  
Foundation Panel (P4).  
Graduate Member, Institution of Civil Engineers, UK

**COUNTRIES  
WORKED IN:** Britain, Australia, South Africa

**EXPERTISE:** Geotechnical Engineering, Offshore and Onshore Geomechanics,  
Numerical Analysis, Calcareous Soils, Bucket Foundations.

**MAJOR PROJECT  
EXPERIENCE:**

- Investigation into failure of drilled and grouted piles for BESPS project, offshore Libya.
- Preparation of interpretative geotechnical report for Chinguetti field, offshore Mauritania
- Investigation into collapse of piles for Valhall Water Injection platform, including 3D finite element analyses (ABAQUS) of soil-structure interaction during installation.
- Review of proposed soil treatment of the soft ground at the Burswood Lakes Development.
- 3<sup>rd</sup> party client review of geotechnical design of skirted raft foundation for DrillACE platform, Yolla Field, Bass Strait.
- Detailed design of suction piles for Zafiro, Offshore Equatorial Guinea, including 3D finite element analyses (ABAQUS).
- Responsible for the detailed design of anchor pile moorings for the Legendre CALM buoy and Bayu Undan FSO, including the development and implementation of a new design method for anchor piles in soft rock, including performing 3D FE analyses and planning and supervising centrifuge model tests.
- Detailed design analyses of the permanent mat foundations founded on calcarenite to be used for the Bayu Undan DPP and CUQ platforms, including state-of-the-art 3D FE analyses.

- Verification and back analysis of the installation performance and uplift capacity of suction anchors at Girassol, West Africa after difficulties were encountered during installation.
- Review of the eastern approach embankment stability for the railway bridge (Windan bridge) over the Swan River. This review also addressed long term settlements and pile soil interaction.
- Responsible for the detailed geotechnical design of a concrete GBS used to tether a control buoy for the Moss gas, E-M field, South Africa.
- Analyses of seabed liquefaction around pipelines in calcareous sands and silts, including development of appropriate numerical models.
- Design verification of suction piles in fined-grained calcareous soil for the Laminaria & Corallina Development for both installation and in-place performance. This also included specification and back analysis of centrifuge tests of model anchors and other special testing to establish expected skirt friction. Backanalysis of prototype anchor installation has also been performed.
- Detailed design, preliminary design and verification analyses of various foundations for subsea structures (manifolds, PLEMS and Riser Bases, etc) including West Natuna, Buffalo, Stag, Laminaria & Corallina and Blackback developments.
- Detailed design of Grillage and Berm anchors for the Apache, Stag Development, which included the development of new design methods.
- Preliminary foundation engineering of a cLNG GBS for the Bayu Undan project, sited on loose calcareous sands/ gravels in the Timor sea.
- Preliminary foundation engineering (including finite element analysis) for raft foundations, bucket foundations, drilled and grouted piles and driven and grouted piles, Gorgon Development. Also involved in planning and analysis for large scale offshore model tests.
- Foundation design of CALM buoy anchors in soft rocks for the Apache, Stag development. Options evaluated included drilled and grouted piles and a novel method comprising a buried grouted conductor and anchor chain.
- Lead Foundation Engineer for conceptual and detailed engineering of bucket foundations for the Sleipner SLT platform. Responsible for the development of new design methods, extensive finite element analysis (ABAQUS) and planning of model tests.
- Non-linear soil structure interaction analyses (ABAQUS) for modeling installation of bucket foundations, Statoil's Europipe platform.
- 3D non-linear soil structure interaction analyses (ABAQUS) for evaluating pile reformation operations, Goodwyn A platform.
- Finite element analyses of "underdrainage" for a proposed Guyed tower, East Spar. Final design audit for heat exchanger, manifold and Spar buoy foundations.
- Preliminary bucket foundation sizing for a number of clients, with different jacket configurations and soil types.

- Finite element analysis (ABAQUS) for bearing capacity of proposed bucket foundation on layered soil, Ekofisk 2/4J platform, Philips
- Modeling of piled foundation using SPLICE and mudmat design (non-linear FE), Chevron, Alba jacket.
- FE analysis of jackup spudcan - pile interaction, British Gas, North Morecombe jacket.
- Software development and testing, including SPLICE, ABAQUS and proprietary pile group analysis and wave equation programs
- Dynamic soil-structure interaction of bridge piers, including liquefaction under seismic loading, Jamuna Bridge
- Seismic liquefaction analyses, Conwy Tunnel

**EMPLOYMENT HISTORY:**

Advanced Geomechanics, Perth Director	1996 - Present
Kvaerner R.J. Brown, Perth Senior Engineer	1995 - 1996
Kvaerner Earl and Wright, London Senior Engineer	1990 - 1995
Fugro McClelland Assistant Engineer	1988 - 1990
Travers Morgan Trainee Engineer	1983 - 1988

**LANGUAGE PROFICIENCY:**

English

**PUBLICATIONS:**

Technical papers and articles include:

Erbrich C. and Hefer P. (2002) "Installation of the Laminaria Suction Piles – A Case History", Offshore Technology Conference, OTC 14240, 2002

Erbrich C. (2001) "Innovations in Geotechnical Design Leading the Way at Legendre", Oil and Gas Australia, June 2001.

Randolph MF and Erbrich C. (1999) "Design of Shallow Foundations for Calcareous Sediments", 2<sup>nd</sup> International Conference on Engineering for Calcareous Sediments, Bahrain, Balkema.

Erbrich C. and Neubecker S.R (1999) "Geotechnical Design of a Grillage and Berm Anchor", Offshore Technology Conference, OTC 10993, 1999.

Erbrich C. and Tjelta T.I. "Installation of Bucket Foundations and Suction Caissons in Sand – Geotechnical Performance", Offshore Technology Conference, OTC 10990, 1999.

Randolph, M.F. O'Neill M.P., Stewart, D.P. and Erbrich, C. (1998) "Performance of Suction Anchors in Fine-Grained Calcareous Soils" ", proc. Offshore Technology Conference, OTC 8831, 1998.

Erbrich C. (1996). "Bucket Foundations", ACG Newsletter, May 1996

Barbour, R.J. and Erbrich C. (1996). "Analysis of Soil Skirt Interaction During Installation of Bucket Foundations Using ABAQUS", proc. ABAQUS Users Conference, Paris, June 1995

Bye A., Erbrich C., Rognlien B. and Tjelta T.I. (1995). "Geotechnical Design of Bucket Foundations", proc. Offshore Technology Conference, OTC 7793, 1995.

Erbrich C. (1995). "Bucket Shop - Pileless Foundations; a New Era", Ground Engineering, April 1995.

Erbrich C. (1994). "Modeling of a Novel Foundation for Offshore Structures", proc. UK ABAQUS Users Conference, Oxford, September 1994

Barbour, R.J. and Erbrich C. (1994). "Analysis of In-situ Reformation of Flattened Large Diameter Foundation Piles Using ABAQUS", UK ABAQUS Users Conference, Oxford, September 1994

Horsnell M.R., Aldridge T.R. and Erbrich C. (1990), "Lateral Group Behaviour of Piles in Offshore Soil Conditions", proc. Offshore Technology Conference, OTC 6246, 1990.

Erbrich C. (1991), "An Investigation into Potential Liquefaction Beneath the Conwy Tunnel due to Seismic Activity", Ground Engineering, Vol. 24, No. 1. (Cooling Prize Winner)