GEOSYSTEMS, L.P.

DR. DONALD ALEXANDER BRUCE

EDUCATION	B.Sc. (First Class Honours) Geology and Mineralogy, University of Aberdeen, Scotland Ph.D. Faculty of Science, Engineering Department, University of Aberdeen, Scotland
PROFESSIONAL QUALIFICATIONS	Chartered Civil Engineer (UK) Licensed Geologist (WA) Licensed Engineering Geologist (WA) Board Certified Geotechnical Engineer (Geo-Institute of American Society of Civil Engineers) Professional Geologist (AL)
PROFESSIONAL SOCIETIES	Fellow, Institution of Civil Engineers (UK) Fellow, American Society of Civil Engineers Member, Association of Engineering Geologists Member, U.S. Society on Dams Member, Association of State Dam Safety Officials Member, Canadian Dam Association
PROFESSIONAL COMMITTEES	ASCE Grouting Committee (Former Chairman) DFI Diaphragm Wall/Slurry Trench Committee (Former Chairman) DFI Micropile Committee (Former Chairman) International Society for Micropiles (ISM) (Founder and Honorary Chairman) PTI Rock and Soil Anchor Recommendations Committee (1996, 2004, 2014)
PRINCIPAL PROFESSIONAL DISTINCTIONS	Martin S. Kapp Award Winner 1998: ASCE Geotechnical Division Wallace Hayward Baker Award Winner 2004: Geo-Institute of ASCE Karl Terzaghi Award Winner 2015: Geo-Institute of ASCE Grouting “G.R.E.A.T” 2023, Geo-Institute of ASCE Danny McCook Medal Recipient, 2024, Association of State Dam Safety Officials Lecturer - Annual Grouting Course, Colorado School of Mines and University of Texas, Austin (Formerly Missouri, Rolla) 1988-2023 Legacy Lecturer: 2019, USSD Lecturer and Chairman - Annual Short Courses on Geotechnical Engineering, University of Wisconsin/Milwaukee, 1989-1999 Organizing Committee ASCE - International Grouting and Deep Mixing Conference, 1992, 2003, 2012, 2017, 2022/2023 and 2027 Lizzi Lecturer, 2009, International Society of Micropiles Organizing Committee - Deep Mixing Conference, San Francisco, CA, 2015 Co-Founder – Japanese Association of Micropiles, 1997 Organizing Committee, ASCE Conference, Blacksburg, VA 2001 Lecturer and Organizer – ADSC/DFI/ASCE Short Course Workshops on various topics, 2000-2014 Technical Program Chair and Proceedings Editor, ADSC GeoCubed, Construction Quality Assurance/Quality Control Technical Conference, Dallas, Texas, 2005 Invited Lecturer, Cross Canada Lecture Tour, 2006

Instructor, NHI Short Courses on Ground Improvement and Micropiles, 2000-2016

PROFESSIONAL EXPERIENCE AND BACKGROUND

PRESIDENT, GEOSYSTEMS, L.P., PITTSBURGH, PA, MAY 1996 TO PRESENT (FORMERLY KNOWN AS ECO GEOSYSTEMS, INC.)

Dr. Bruce formed Geosystems, L.P., a consultancy which offers advisory services in the practical and business aspects of specialty geotechnical construction, with a focus on drilling and grouting techniques, anchors, micropiles, deep mixing, cut-offs, and dam safety remediation. Over 2000 projects have to date been successfully completed, many of them relating to seepage management in karst, for dams and quarries. The scope of services includes all phases of projects from feasibility assessments, peer reviews, and bid preparation to crisis management and expert witness duties. Dr. Bruce is a member of numerous Boards of Consultants and Advisory Panels for major projects in North America and elsewhere. He has acted as Principal Investigator for the FHWA on studies relating to micropiles (1997) and deep mixing (2000 and 2001) and as Co-Principal Investigator for CEATI's project on rock anchors for dams (2023). Dr. Bruce continues to teach at short courses, seminars, webinars (for USSD and ASDSO), and conferences worldwide, and is active in many national and international technical societies and committees. He has co-authored over 350 technical papers and 4 textbooks, principally relating to ground treatment and support of excavation.

DIRECTOR, CENTER ROCK, INC., NOVEMBER 2008 TO APRIL 2023

Dr. Bruce was a Board Member for this company which manufactures drilling equipment.

PARTNER, SBMA LLC, JANUARY 2001 TO DECEMBER 2008

Dr. Bruce was a Partner in SBMA LLC, a company specializing in designing and supplying high capacity ground anchors.

DIRECTOR, SOLDATA, INC., APRIL 2000 TO DECEMBER 2008

Dr. Bruce was a Director of Soldata, Inc., a largely French-owned company based in Rockville, MD specializing in the collection, management, and real time display of geotechnical and structural data.

TECHNICAL DIRECTOR, NICHOLSON CONSTRUCTION COMPANY, PITTSBURGH, PA, OCTOBER 1986 - MAY 1996

Dr. Bruce assumed the position of Technical Director, with special responsibility for the transfer and promotion of "European Technologies" to the U.S.A. These technologies were largely the newer developments of the related Rodio group of companies, then one of the world's largest geotechnical contractors. Dr. Bruce spent much time on sites throughout Europe gaining first-hand experience, especially in ground treatment and ground support. In June 1994, he also became Manager of the Business Development Group before being appointed Manager of the newly formed Technical Services Group a year later following the amalgamation of Nicholson and Rodio in North America. Duties included the management of the Engineering, Safety, and Contracts/Claims Sections. Responsibility was also held for Research and Development, project troubleshooting, process quality initiatives, special project management, and

technical writing. He was appointed Vice President in June 1991.

MAIN BOARD DIRECTOR, COLCRETE LTD, WETHERBY, UK, DECEMBER 1983 - SEPTEMBER 1986

Dr. Bruce was promoted as Main Board Director, responsible for the operation of the Geotechnical Engineering Division. This Division encompassed activities worldwide in the field of anchors, micropiles, nails, all forms of grouting, tunnels, structural repair, and fabric formwork. During the period Dr. Bruce headed the Division, volume increased fivefold, and the contribution of the Division to total group volume increased from 10% in 1983 to about 60% in 1986. The major contract won and executed in this period was a tunnel chemical grouting project in Cairo, Egypt, then valued at almost $4 million. Dr. Bruce was also responsible for the company marketing and publicity matters, and undertook over 20 major marketing/technical visits to countries in Western and Southern Europe, North Africa and the Middle East.

MANAGING DIRECTOR, COLCRETE LTD, HONG KONG, JANUARY 1982 - NOVEMBER 1983

Dr. Bruce was appointed Managing Director of the newly formed Hong Kong subsidiary and was responsible for all aspects of the establishment of the new company. Duties were wide-ranging and included marketing, bidding, contract management, technical direction, and financial reporting. Contracts worth over $3 million U.S. were won and executed in this period, and featured the chemical grouting of many sections for tunneling of the Mass Transit Railway, sealing of deep excavations, and the installation of micropiles. At the height of activity, monthly volume ranged from $300,000 to $500,000 U.S., and involved 10 expatriates and over 200 locals. During this time, several technical visits were made to tunneling and grouting specialists in Japan, Taiwan, Thailand, and Malaysia.

GROUP TECHNICAL MANAGER, COLCRETE LTD, WETHERBY, UK, AUGUST 1980 - DECEMBER 1981

Upon his return from Pakistan, Dr. Bruce was appointed Group Technical Manager. His role was involvement with all matters relating to technical development within the Group, including troubleshooting at site level, studies on new techniques or processes, rationalization of existing methods, and delivering both in-house and external lectures and seminars. He was also a member of the "Special Projects Group" and was directly responsible for major projects in the North Sea and Middle East. He also took part in two major market assessment tours with the Managing Director (to U.S.A., and to Australia, and the Far East), both in 1981.

TECHNICAL AND PLANNING MANAGER, COLCRETE-RODIO-KELLER JOINT VENTURE, PAKISTAN, OCTOBER 1979 - JULY 1980

Dr. Bruce was appointed Technical and Planning Manager for the Joint Venture for the massive remedial works executed at Tarbela Dam, on the Indus River. The scope of the duties included responsibility for all scheduling, planning, testing, quality assurance, general technical services, production analyses, and technical reporting. The value of the season's work was then over $7 million, and the staff comprised over 30 expatriates and 350 locals. The work involved rock anchors, soil and rock grouting, slabjacking, and drainage systems.

PROJECT ENGINEER, COLCRETE LTD, WETHERBY, UK, FEBRUARY 1977 - OCTOBER 1979

Dr. Bruce joined Colcrete, specialist ground engineering contractors, as a Project Engineer. During this time, he was responsible for all aspects of the drilling and grouting work conducted on four major dams in England, and several mine infill sites in Scotland. From February 1979 he also acted as the liaison engineer with VSL in Bern, Switzerland, with respect to developing rock anchor technology.

Ph.D. RESEARCH, DEPARTMENT OF ENGINEERING, ABERDEEN UNIVERSITY, OCTOBER 1973 - JANUARY 1977

Donald Bruce joined the Geotechnics Research Group to conduct Doctoral studies under Dr. G.S. Littlejohn into the fundamental behavior of prestressed rock anchor systems. This involved very close liaison with specialists worldwide and with contractors in the U.K., with whom two full-scale field trials were organized and conducted. During this period, he assisted classes in both the Geology and Engineering Departments of Aberdeen University and acted as anchor consultant to two specialist contractors.

A list of 4 books and 350 technical papers authored by Dr. Bruce can be provided upon request.