The Canadian Geotechnical Society
La Société canadienne de géotechnique
Honours

Dr. A. W. Clifton, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

As an early geotechnical practitioner with Saskatchewan Highways and Transportation, Dr. Clifton developed technologies applied to construction of hundreds of kilometers of northern roads, primary highways, and bridge crossings of major rivers.

He received a degree in Civil Engineering (U of S, 1963) followed by a M.Sc. in Transportation (U of S 1965) and a DIC and M.Sc. in Soil Mechanics as an Athlone Fellow (Imperial College, University of London, 1967). He has authored numerous technical papers and served as an Adjunct Professor in the Engineering faculties at both the University of Saskatchewan and the University of Regina, while sponsoring more than 45 graduate students through those institutions.

In 1978, he founded Clifton Associates Ltd., a regional engineering consulting firm that specialized in Geotechnical and Civil Engineering and Environmental Management. He became a valued strategic advisor to both industry and governments on engineering and policy issues, particularly in the fields of transportation, environmental management and resource development. His contributions ranged from developing highly qualified geotechnical practitioners to advising on revised environmental regulatory processes and the first Saskatchewan Environmental Code.

Dr. Clifton received a Gold Medal for Distinction in Engineering (APEGS, 1994), and an honorary D.Sc. (U of S, 1996) in recognition of his contributions to engineering research. His passion for his work was infectious; he inspired generations of engineers, who will keep both his expanding company and his legacy alive.

The Canadian Geotechnical Society
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Honours

Dr. E. A. Christiansen, P. Eng., P. Geo.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

Dr. Christiansen developed and implemented methods for mapping the glacial geology of Saskatchewan. His original work yielded scholarly reference publications that detailed the nature and stratigraphy of glacial sediments, creating an invaluable geologic framework that has supported investment and regulation in the province.

From his position at the Earth Sciences Division of the Saskatchewan Research Council, he conducted more than four decades of mapping and interpretation of the glacial geology of Saskatchewan. The results of his work continue to be routinely applied to areas as diverse as groundwater management, development of mines or major transportation corridors. The exploration and mapping techniques that he developed have been adopted as standard practice by other agencies and institutions in Canada and internationally.

He published more than 100 consulting reports and numerous journal papers on the geology of Saskatchewan, receiving several authors awards from the Canadian Geotechnical Society for outstanding papers. The results of his research and preeminent knowledge of the provincial landscape have been incorporated in most post-1970 major developments in Saskatchewan.

In 1984, 1992 and 1994, Dr. Christiansen received the Thomas Roy Award for his contributions to engineering geology in Canada. In recognition of his technical excellence and achievements, he also received the prestigious Engineering Achievement Award from the Association of Professional Engineers and Geoscientists of Saskatchewan.

Dr. Christiansen set the framework for geological mapping in the glaciated prairie region; his colleagues praise the extent and importance of his work, saying that he "wrote the book" on the Quaternary geology of the province.

The Canadian Geotechnical Society
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Honours

Dr. D. G. Fredlund, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

Dr. Fredlund is a preeminent scholar, teacher, researcher, author and practitioner on matters dealing with the engineering behavior of unsaturated and expansive soils.

He spent most of his career in the Civil Engineering faculty at the University of Saskatchewan, where he served as head of the Department in 1966 and contributed in many capacities to the Canadian Geotechnical Society and other learned societies internationally. He forged development of the “Unsaturated Soils Group” to advance knowledge of unsaturated soil mechanics and incorporate that knowledge into routine geotechnical engineering practice, supervised more than 80 students through post-graduate degree programs, and traveled widely to teach and foster research and engineering practice worldwide.

Dr. Fredlund delivered many keynote lectures at conferences, published approximately 500 journal and conference papers, and co-authored two authoritative books on unsaturated soil mechanics, while contributing chapters to others. His discoveries resulted in substantive changes to geotechnical engineering practice, a compendium of his research on Emergence of Unsaturated Soil Mechanics can be found in the Fredlund Volume (NRC Press 1999) plus in two other books on Unsaturated Soil Mechanics that he co-authored. In addition to these accomplishments, Dr. Fredlund was co-founder of a software company to market the design products emanating from his research.

In 2005, Dr. Fredlund was the recipient of Order of Canada award for his engineering and charity works in several countries. He was an inspiration as a geotechnical pioneer for both his contributions to geotechnical engineering practice and his diligence in helping those less fortunate.

The Canadian Geotechnical Society
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Honours

Paul Machibroda, P. Eng., P. Geo.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

Paul Machibroda P.Eng contributed his knowledge and specialized skills to delivery of more than 20,000 commercial, industrial and residential development projects throughout the western provinces, spending more than fifty years as a consulting Geotechnical Engineer.

Graduating from the University of Saskatchewan (Civil Engineering, 1960), Paul joined Torchinsky Consulting Ltd. in Saskatoon, Saskatchewan, before founding the multidisciplinary geotechnical and geoenvironmental consulting engineering firm P. Machibroda Engineering Ltd. in 1977. He became recognized as an authoritative geotechnical practitioner and an early adopter of new technologies for geotechnical and geoenvironmental site characterization. He was preeminent in the fields of foundation engineering, site characterization, construction inspection, quality control and quality assurance. Many of the major mining, industrial, institutional, agricultural and urban developments in Saskatchewan, and a number in other provinces, benefited from his geotechnical and civil engineering knowledge.

Throughout his career, Paul actively supported activities of the learned societies, particularly at the community level, encouraging participation by his staff and clients as well. Approachable and affable, Paul served as coach, mentor and confidante to innumerable young professionals, generously sharing his experience and knowledge with them and other colleagues; that, his generosity and personal touch will be his legacy.

The Canadian Geotechnical Society
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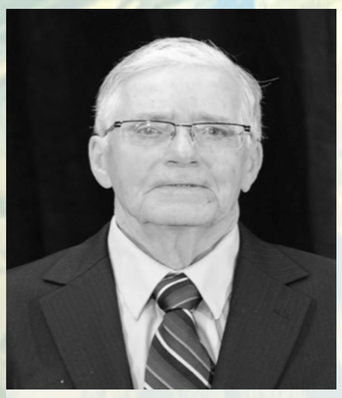
Honours

Barry W. Mickleborough, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada



Barry Mickleborough was the driving force in incorporating modern geotechnical engineering into design of roads, bridges and pavements in Saskatchewan and many other projects worldwide.

A Civil Engineering graduate from the U of S (Distinction, 1956), Mickleborough went on to graduate studies at Imperial College, London (as an Athlone Fellow), and at University of Saskatchewan (M.Sc., 1970). Later, he gained comprehensive knowledge of the design, construction and maintenance challenges facing highway transportation in his home province during his tenure at Saskatchewan Highways.

Mickleborough used his geotechnical and transportation engineering skills to improve the quality and performance of the provincial highway system and pioneered adaptation of geology and soil mechanics knowledge through collaboration with universities, federal agencies and the Saskatchewan Research Council. In his role as Principal Geotechnical Engineer, he adopted new methods of site investigation; improved laboratory testing, design and construction practices. He initiated joint research with the University of Saskatchewan and mentored of a cadre of geotechnical engineers, many of whom migrated to senior roles in government and industry. Later, he had a lead role as a consulting engineer on many industrial, resource development and transportation projects, including the Confederation Bridge linking PEI with mainland Canada.

Mr. Mickleborough's natural curiosity and passion for Geotechnical Engineering lead to many innovative practices that influenced Geotechnical practice far beyond the borders of his home province.

The Canadian Geotechnical Society
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Honours

Dr. J.D. Mollard, P. Eng., P. Geo.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

Dr. Mollard introduced air photo interpretation and applied engineering geology first to Saskatchewan and then to Canada. He excelled, with a combination of natural curiosity, unbounded enthusiasm, and a flair for positive communication, in applying his specialized knowledge of earth sciences and geotechnical engineering to a vast array of projects.

Dr. Mollard received his PhD from Cornell University where he studied air photo interpretation under pioneering professor, Donald Belcher. Following service as a photo interpreter in support of the war effort (WW2), he introduced air photo terrain analysis in western Canada while working for the Prairie Farm Rehabilitation Administration on water development projects, including Gardiner Dam. He subsequently founded J.D. Mollard and Associates Limited and conducted over 5,000 terrain analysis projects on seven continents and in all Canadian Provinces and Territories. Further, Dr. Mollard was a consultant to NASA geoscientists on the interpretation of landforms on Mars.

He has written three books, published numerous technical papers and delivered over 80 short courses on applied remote sensing from aerial and space imagery, including terrain mapping and evaluation for a variety of planning and development projects. He gave freely of his knowledge and took particular interest in encouraging and mentoring young engineers.

Dr. Mollard was a deserving recipient of the Order of Canada award for his skills as a practitioner and teacher. The technologies he introduced became an essential component of geotechnical engineering practice and made major contributions to the development of Canada.

The Canadian Geotechnical Society
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Honours

R. O. Peterson, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

Bob Peterson brought Geotechnical Engineering to western Canada and lasting change to the Prairie region.

Graduating in Civil Engineering (Great Distinction, U of S, 1939), he went on to Harvard to study Soil Mechanics under Karl Terzaghi, receiving a M.Sc. (Civil Engineering, 1941). He returned to the Prairie Farm Rehabilitation Administration (PFRA) in Saskatoon and began a career in development of water resources (dams and irrigation) that brought water to the southern prairies, forever changing the landscape and the economy of that region.

He was Chief of the Soil Mechanics and Materials Division at PFRA, establishing the first Soil Mechanics laboratory in the region. He was responsible for all soil and concrete investigations and research, and the earthwork design of hundreds of projects. Some, such as the St. Mary, Waterton, Shellmouth and Gardiner dams, presented unprecedented engineering challenges. Under Peterson's leadership, new methods were developed to address these issues and, at the same time, he developed an advanced, internationally recognized, technical organization on the University of Saskatchewan campus.

During his career, he trained many colleagues who excelled in public service, academia or as principals of accomplished consulting engineering firms. He published many authoritative papers on Soil Mechanics and earth dam design; presented many invited lectures; and, acted as consultant for difficult projects, such as the Panama Canal and the Mangla Dam in Pakistan.

A true pioneer, an accomplished and innovative Geotechnical Engineer; the Canadian Geotechnical Society honoured him posthumously with the first R. F. Legget Award in 1970.

The Canadian Geotechnical Society
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Honours

A. Stewart (Stew) Ringheim, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada

The highlight of Mr. Ringheim's career was Construction Engineer at Gardiner Dam, where he had overall responsibility for all on-site activities during construction; his name is on the bronze plaque at the Dam commemorating that achievement.

Graduating with a B.Sc. in Civil Engineering (U of S, 1948), he studied Soil Mechanics under Arthur Casagrande and Karl Terzaghi, receiving a M.Sc. (Harvard, 1949). He joined the Prairie Farm Rehabilitation Administration (PFRA) in Saskatoon, responsible for exploration and design of earth dams, including initial design of the upstream blanket and seepage control system for Gardiner Dam, a unique design concept at that time.

He was instrumental in facilitating an innovative "confirm as you go" approach to design issues (the forerunner of "the observational approach") during construction of Gardiner Dam in 1958, when the concept of residual strength was first being introduced to geotechnical practice. Foundation movements during construction required unprecedented levels of test installations, instrumentation and monitoring, resulting in substantial modifications to the initial embankment design as work proceeded.

He was an active contributor to geotechnical literature, and led preparation of a much-referenced book describing all aspects of investigation, design, construction and performance of Gardiner Dam and associated works.

He retired as Director of Engineering at PFRA in 1980, then served on many engineering review boards, including for the Oldman, Dickson and Paddle River dams. In this work, and in all phases of his career, he left a legacy as a valued associate, generously sharing his considerable knowledge and mentoring many colleagues.

The Canadian Geotechnical Society
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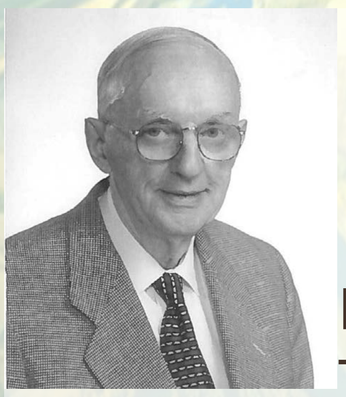
Honours

Dr. E. K. Sauer, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada



Dr. Sauer was at the forefront of incorporating geology and terrain analysis principles into Geotechnical Engineering practice.

He obtained a B. Sc. in Civil Engineering (Queens University), a M.Sc. in Engineering Geology (Cornell University), and a Ph.D. in Geotechnical and Transportation Engineering (University of California, Berkley). He joined Saskatchewan Highways and served in capacities ranging from Resident Engineer to Principal Geotechnical Engineer, introducing site characterization and application of geotechnical science to road location and design; he changed standard highway engineering practices, delivering more cost-effective and durable transportation facilities.

Dr. Sauer joined the Department of Civil Engineering at the University of Saskatchewan in 1967 where he continued to research geotechnical issues related to the geology of the province. He mentored many graduate students, fostering a greater understanding of regional geotechnical issues and the engineering significance of geological processes. He was a prolific researcher who published over 40 refereed journal papers and a book ("Airphoto Interpretation for Terrain Evalua-tion") that became a valued reference volume.

Following retirement in 1994, Dr. Sauer continued his research interests while consulting on many large public works and resource projects. He also co-authored Geological Site Characterization Guidelines that became a reference document for environmental impact assessments for geotechnical components of resource projects.

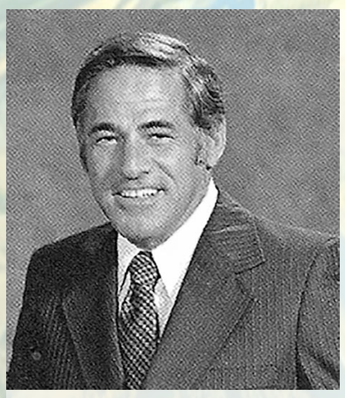
He enthusiastically shared his comprehensive knowledge of transportation engineering, engineering geology and geotechnical practice; his legacy is our greater understanding of the natural world and how to practice Geotechnical Engineering in harmony with it.

The Canadian Geotechnical Society
La Société canadienne de géotechnique
Honours

Dr. B.B. Torchinsky, P. Eng.

Saskatchewan Geotechnical Pioneer

To honour his significant contribution to geotechnical engineering in Saskatchewan and on the economic development of Canada



Dr. Torchinsky was the first Professor of Soil Mechanics (later known as Geotechnical Engineering) at the University of Saskatchewan, where he was privileged to teach the principles of civil engineering to veterans returning from WWI.

But, his pioneering and entrepreneurial spirit soon induced Dr. Torchinsky to put geotechnical theory into practice, and teaching gave way to starting his own business, Torchinsky Consulting Ltd. and a subsidiary, Western Caissons Limited, that introduced augured-cast-in-place concrete piles to the region. As business grew, his belief in good people and good ideas, and his ability to take a risk on both, came to the fore. He moved his thriving engineering company into new and diversified fields under the banner of Agra Industries (later AMEC), and became a pioneer in vegetable oil processing, cable TV, medical diagnostics, and recycling. Agra and its subsidiaries were involved in some of the largest engineering projects - the massive Three Gorges Dam in China; Hibernia, Sable Island, and Terra Nova oil and gas projects off Canada's East Coast; Alliance Gas Pipeline in both Western Canada and the U.S. Midwest; Highway 407 in Ontario; Diavik Diamond Mine in the Northwest Territories; and building nuclear reactors for South Korea.

Dr. Torchinsky received awards for his engineering accomplishments, including the 1997 Sir John Kennedy Medal from the Engineering Institute of Canada, the 2001 Beaubien Award presented by the Association of Consulting Engineers of Canada, and an Honorary Doctorate in 2003 from his alma mater, the University of Alberta. His legacy was the ability to demonstrate that the skills and abilities of geotechnical engineers can be applied equally to technical and business endeavors.