

## **NORMAN D. LEA (1923–2004)**

By M.A.J. (Fred) Matich and T.F. (Frank) Saunders, 2016



Norman D. Lea, a prominent geotechnical engineer, was born in Toronto in 1923. He graduated from the University of Toronto with a B.A.Sc. Degree in 1945.

After one year working in construction, he joined the Soils Engineering Department of the Foundation Company of Canada Ltd. Later, he undertook advanced studies in soil mechanics at Harvard University, receiving an S.M. degree in 1950. On returning to the Foundation Company, Norman was appointed manager of the Soils Engineering Department, which was already applying soil mechanics to practical problems. Righting of the failed Grain Elevator at Transcona, Manitoba in 1914 is considered one of the most challenging underpinning projects ever carried out [for more information on this project, see elsewhere in the Canadian Geotechnical Virtual Archives on the CGS website]. The company had already acquired (or custom-built) equipment and employed operating crews to carry out drilling and soil sampling for site investigation purposes. At that time, the company was one of only two organizations in Eastern Canada with this capability. Under Norman's direction, it also acquired specialized soil sampling and testing equipment for performing soil investigations in difficult marine conditions.

Norman faced the important challenge of adding science-based technologies to the practical application of soil mechanics. To do this, he added engineers with specialized training and experience in soil mechanics in Canada, the U.K., the U.S.A. and elsewhere to the existing technical staff. In the process, he formed a team that combined the technical abilities of engineers fresh from postgraduate studies with the review capabilities of experienced engineers. This became one of the earliest consulting companies that offered services in applied soils engineering in Canada. The format the team established for "soils reports" became widely adopted by others.

Laboratories were set up for soils testing and special tools acquired (or manufactured) for field investigations. These included a vane testing apparatus designed in-house and the Swedish Foil Sampler (introduced from Sweden under license). Geocon Ltd., a wholly-owned subsidiary specializing in soil mechanics and foundation engineering, was formed in 1954 with Norman Lea as General Manager. In these early years, he participated in Soil Mechanics Conferences in Canada, publishing a paper on vane testing equipment in 1952 at the 6<sup>th</sup> Canadian Soil Mechanics Conference and a paper on steel sheet piling at the 1953 ISSMFE Conference in Zurich, Switzerland. He was appointed Chairman of a Canadian

Standards Association Committee on soil boring and sampling in 1954, and presented a paper on this topic at the 13<sup>th</sup> Canadian Soil Mechanics Conference in 1959.

After eight years in Soils Engineering, Norman transferred to the company's subsidiary, Foundation of Canada Engineering Corporation Ltd. (FENCO), as Vice-President of the Transportation Division. He continued to direct geotechnical studies for major projects such as the Burlington Skyway Bridge in Ontario, the Deas Island Tunnel under the Fraser River, and the Burnaby Expressway, also in B.C. Norman left FENCO in 1962 to form N.D. Lea and Associates Ltd., specializing in traffic and transportation engineering. The firm subsequently expanded its operations across Canada and internationally and is still operating through successor organizations.

Norman was predeceased by his wife Berenice, and is survived by daughters Diane Olson; Sharon Mason; Barbara Lea and Nancy Smith Lea.