

Anna Burwash

Introduction to Geotechnique?

As an undergraduate, the geotechnical field was attractive to me, in part, because many of its pioneers got their start in my lifetime. For example, in 1946, the year I was born, Geoff Meyerhof [then with the Building Research Station, UK] began his research on bearing capacity, and Elio D'Appolonia [Carnegie Mellon University] and R.M. Hardy [University of Alberta] published a paper on the construction of airports, highways and power plants on permafrost. Geotechnical papers in journals were interesting to read and reassuringly practical. I liked the prospect of working with a wide variety of very heterogeneous materials: soil, rock, muskeg, permafrost, snow and ice.

Other women in your classes?

I was the only female student in my class and probably only the third woman to receive a BSCE from Carnegie Mellon University in Civil Engineering since 1900. In 1968, three other women received undergraduate degrees in other engineering disciplines.

Difficulty getting your first job?

Yes! I moved to Toronto after graduation and tried to get work in the geotechnical field but ended up as a supply teacher in science and mathematics. I moved to Fredericton in 1969 and worked for two University of New Brunswick professors. That work led to an opportunity to work in the geotechnical field at the Muskeg Research Institute at UNB ... to my great relief!

Involvement with CGS and other organizations?

I attended my first Canadian Geotechnical Conference in Halifax in 1971. I encountered some polite skepticism at the registration desk when I indicated that I wanted to attend the conference as a delegate. I was CCS Atlantic Region Director from 1973-1976. That experience ignited a life-long interest in corporate governance. In Fredericton, I established a CGS section.

Also in the 1970s, I served on the NRC's Associate Committee on Geotechnical Research, was an Associate Editor of the *Canadian Geotechnical Journal* and Assistant Editor of the *Journal of Terramechanics*.

After moving to Calgary, I joined the local branch of the Engineering Institute of Canada and became the Chair in 1980. I joined the ASTM Subcommittee on Peats and related Materials

Education

- 1968 BSc in Civil Engineering (with a minor in Philosophy); Carnegie Mellon University, Pittsburgh, Pennsylvania.
- 1981 Professional Development Degree in Engineering; University of Wisconsin-Madison (through distance education). As a project, I developed a course on motivation of engineers and scientists

Employment

Fredericton, NB

- 1969-70 Atlantic Resource Planners/Environmental Resource Consultants
- 1970-73 Muskeg Research Institute, University of New Brunswick
- 1973-76 Geocon

Calgary, AB

- 1976-80 Hardy Associates
- 1980-87 A.L. Burwash Consulting (management consulting)

Notable Achievements

- 1999 ASCE's CAN-AM Civil Engineering Amity Award
- I may have been the first female member of the CGS, and definitely the first female Board member
- I was the first and possibly the only female member of the (Canadian) NRC's Associate Committee on Geotechnical Research (disbanded in 1990)
- I was the first female Associate Editor of the *Canadian Geotechnical Journal*
- In 1997 I authored "Breaking New Ground – Women in Geotechnical Engineering" published in *Geotechnical News'* commemorating the CGS' 50th anniversary

and became the Chair in 1987-88. I also became active in three committees of the ASCE's Technical Council on Cold Regions Engineering and became Chair of the Council's Executive Committee, becoming the first woman to chair an ASCE Executive Committee.

Who were your mentors?

At the University of Wisconsin, George Sell (Mechanical Engineering), Allan Wortley (Civil Engineering) and Sandra Courter (student coordinator). When I moved to Canada, I married a geotechnical engineer, Bill Burwash (married 1969-1990). Others included Bill Radforth (Muskeg Research Institute, Fredericton, NB) and Jack Clark (Hardy Associates, Calgary, AB).

On being a woman in a man-dominated profession?

I focused on getting the work done and striving to be an effective member of the team. I kept Andrew Carnegie's motto in mind: "My heart is in the work". The skepticism I faced came largely from the broader society rather than from co-workers and clients. I was fortunate to get my start in Fredericton, a place where, as Alden Nowlan has described, "things are on a very human scale".

Advice to other women?

Start thinking in your pre-university years about what you need to do to explore your interests at university and beyond.

When you get to university, consider options such as co-op programs, combined undergraduate and graduate programs, joint university-college programs, and study abroad. In the geotechnical context, consider the variety of academic paths that are available; for example Civil and Environmental Engineering, Geological Engineering and Engineering Geology.

At university, build networks of contacts with students in your department and others. Join student chapters of professional/technical organizations. Start making connections with those in the profession.

Upon entry into the workforce, leave no doubt in anyone's mind that you are keen to get better and better at what you do. Take on volunteer roles in technical/professional organizations. Strive to become a role model for others. Regard the employment journey as one of lifelong learning – on the job and through formal study.

Photographs



Taken at the 1999 ASCE Convention in Charlotte, North Carolina



Anna, 2011 (photo by Michael Hudson, Toronto)