



## The Canadian Geotechnical Virtual Archives

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### ABSTRACT

The Canadian Geotechnical Society (CGS) has long recognized the importance of preserving the history of Canadian geotechnique. Through its Heritage Committee, the CGS actively maintains the Canadian Geotechnical Virtual Archives as part of the CGS website. The archives contain information on the history of geotechnique in Canada, the society's history, profiles of past contributors and groups of contributors, and summaries of geotechnical projects of historic significance. These are available in the form of digitized articles, photographs and videos. The paper reviews the developments that led to the creation of the Virtual Archives and presents an overview of the current contents. The authors believe that awareness of our heritage fosters a sense of identity and pride in the professions that comprise geotechnique.

### RÉSUMÉ

La Société Canadienne de géotechnique (SCG) reconnaît depuis longtemps l'importance de préserver l'histoire canadienne de la géotechnique. Par l'entremise de son Comité sur le patrimoine, la SCG maintient activement les archives géotechniques virtuelles canadiennes sur son site web. Les archives contiennent des détails sur l'histoire de la discipline au Canada, sur l'histoire de la SCG, des profils sur des contributeurs et des groupes de contributeurs à la géotechnique canadienne, ainsi que des vignettes sur des projets géotechnique d'importance historique. Ces documents sont disponibles sous forme d'articles numérisés, de photographies et de vidéos. Le présent article revoit la chaîne d'événements qui a mené à la création des archives virtuelles et en survole le contenu actuel. Les auteurs croient en la sensibilisation à l'héritage des professions qui se rattachent à pour y insuffler un sens d'identité et de fierté.

## 1 INTRODUCTION

The importance of preserving the history of geotechnique in Canada has long been recognized by the leaders of the Canadian Geotechnical Society (CGS) and its predecessor organizations. Robert Legget, one of the fathers of Canadian geotechnique and a pre-eminent historian, famously stated "Every engineer needs a sense of history", in a speech given at an engineering convocation at the University of Waterloo in 1963. In 1929, Robert (Bob) Hardy, another of the fathers of Canadian geotechnique, who started his career as a structural engineer, wrote on the history of bridges and the contributions of the engineers who designed them (Mollard 1987).

As described in a companion paper in this conference (VanDine and Heinz 2020), in the early 1980s, the CGS began a project to document the history of the geotechnical profession in Canada, with the ultimate goal of producing a book. It was decided that an effective way to tell the story would be by interviewing Legget, Hardy and other individuals across Canada, and telling the story through their eyes. Over 70 in-person interviews were conducted, transcribed and filed in the University of Alberta Archives before the project was abandoned in 1986.

What was supposed to have been the first chapter in the "Heritage Book", covering the period up to 1936, the year of the first International Conference on Soil Mechanics and Foundation Engineering, was published as a paper titled "Early History of the Geotechnical Profession in Canada", in the *Proceedings* of the "CGS Canadian Engineering Centennial Convention" (VanDine 1987).

In 1997, Cyril Leonoff (Photo 1), a noted geotechnical engineer and historian, coordinated and edited "Geotechnical Engineering in Canada: an Historical Review" (Leonoff, editor 1997). This was published as a commemorative "Golden Jubilee" edition of *Geotechnical News* distributed to CGS members and all delegates of the 50<sup>th</sup> Canadian Geotechnical Conference, held in Ottawa in 1997. Though not published as originally envisaged in the early 1980s, this publication included a number of papers that referenced some of the material collected during the early 1980s project. Arguably, it is presently the most complete summary of the early days of the geotechnical profession in Canada. Both the paper by VanDine (1987) and the historical review edited by Leonoff (1997) are available in the Canadian Geotechnical Virtual Archives.

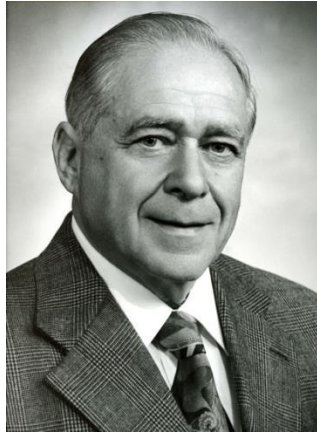


Photo 1. Cyril Leonoff, 1925-2016 (photo courtesy Klohn Crippen Berger)

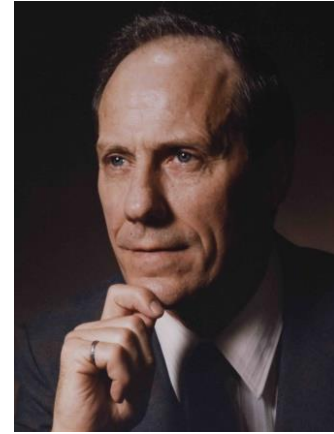


Photo 2. Lorne Gold, 1928-2018 (photo courtesy National Research Council)

## 2 HISTORY OF THE VIRTUAL ARCHIVES

In 1998, as the outcome of early discussions among Tony Stermac (CGS Director General 1987-1998), Jim Graham (CGS President, 1997-1998 and later Secretary General, 1999-2006) and Lorne Gold (Photo 2), then retired from the Division of Building Research of the National Research Council of Canada, a “Geotechnical Heritage Task Force” was formed, under Gold’s leadership (Graham, personal communication). Gold, known for his expertise in the areas of ice, snow and permafrost, was himself interested in history, having authored a book and papers on the WWII “ice ship” Habbakuk Project (Gold 1993 and 2014).

Gold recognized the importance of involving the local CGS Sections and, together with President Graham, issued a call for assistance. A letter to the Sections dated June 1998, noted the positive experience achieved during preparation of the 1997 “Golden Jubilee” edition of *Geotechnical News* (described above). The letter also mentioned the existence of a wealth of information still to be tapped, and defined the terms of reference for the Geotechnical Heritage Task Force as:

1. *To prepare an inventory of published and photographic materials and other artifacts that represent the early years of geotechnology in all parts of Canada.*
2. *To submit recommendations to the [CGS] Board on steps that should be taken to preserve this material and artifacts for further reference and use.*

The letter elicited interest from a few individuals. Gold, Earle Taylor (Toronto) and Ken Skafffeld (Winnipeg), working with Graham, were able to locate some archival material, as well as photographic records. An item collected during this early period was a series of Northern Photographs (1952-1992), provided by Branko Ladanyi of Polytechnique Montréal.

Graham (personal communication) recalls that other individuals who were engaged in collecting archival records at the time included Michael Bozozuk, Guy Lefebvre, Don MacDonald, Fred Matich and Nordie Morgenstern.

Initially, and into the early 2000s, the archival records were scanned and stored in CD ROM format. However, in November 2002, Gold issued a draft proposal to the Heritage Committee for a “CGS Virtual Archives” to be incorporated into the, then relatively new, CGS website. His proposal outlined the initial objectives of the Virtual Archives as:

*There is a rich and largely untapped resource in Canada of files containing historical information on geotechnical and laboratory and field research, geotechnical investigations, work of committees, geotechnical experience, etc. Ways to identify and tap this resource are being considered by the Heritage Committee of the Society. It is exploring the possibilities of a virtual archives web page. The page would give the location and content of accessible geotechnical material.*

(It was around 2002 that the “Geotechnical Heritage Task Force” evolved into the current Heritage Committee.)

The Virtual Archives were installed on the CGS website in July 2003. In addition to Gold and Graham, individuals involved in this effort were Denis LeBoeuf (then CGS VP Communications), Sarah Watson, and Kelly Rojas (CGS Administrative Assistants). The CGS President at the time was Suzanne Lacasse, who is a long-time member of the Heritage Committee.

As its first virtual item, and as an example for future submissions, Gold provided a listing of documents held at the National Archives of Canada in Ottawa, related to the Associate Committee on Soil and Snow Mechanics (1945-1965) and the Associate Committee on Geotechnical Research (1965-1990), predecessors of the CGS and the CGS Geotechnical Research Board. See current Virtual Archives, section “History of the CGS”.

The collection of Northern Photographs (1952-1992) by Branko Ladanyi (referred to above) was the first photographic collection uploaded to the Virtual Archives (Heritage Committee Activities July 1, 2008 to June 30, 2009; in CGS Annual Report, 2009). See current Virtual Archives, section “Canadian Geotechnical Projects”.

Starting in 2003 and into the 2010s, the contents of the Virtual Archives were augmented significantly, with the growing awareness that the limits of what could be stored on the website were quite flexible. In addition to links describing location and content of archival records, several stand-alone documents, photographic records and videos were added.

The CGS website went through a few minor revisions over the years, and so did the Virtual Archives. Contributions from many individuals from across Canada and abroad were added. These additions were made by the Heritage Committee under its Chairs over the years: Lorne Gold, Ken Skafffeld, Sai Vanapalli, Dennis Puhfal, Jim Graham, Mustapha Zergoun, Suzanne Powell and David Cruden.

### 3 THE CURRENT VIRTUAL ARCHIVES

The present structure of the Virtual Archives, coordinated by the authors, was established during a major revision of the CGS website in December 2016. Figure 1 gives an overview and hierarchy of the current Virtual Archives. The archives are accessed through the “Resource Centre” tab on the CGS website ([www.cgs.ca](http://www.cgs.ca)) (see APPENDIX). The sections, and some examples of the contents, are summarized below. Items in most sections are presented from youngest to oldest, according to the date the contents were produced, not the date they were uploaded to the website. Note that some of the content of the archives is purposely duplicated in several subsections.

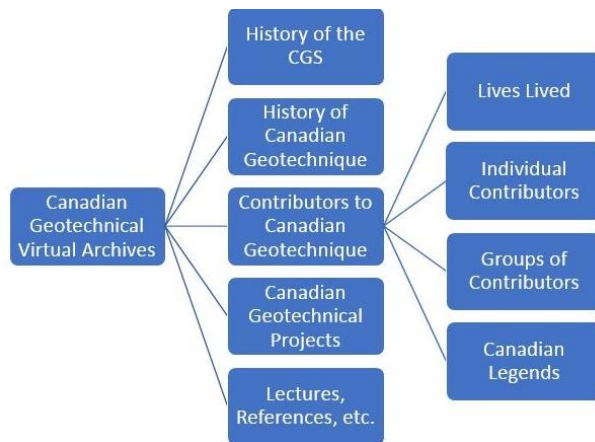


Figure 1. Overview and hierarchy of the current Virtual Archives

#### 3.1 History of the CGS

This section contains a series of downloadable text files, in Portable Document Format (PDF), associated with the history of the society. They include items such as “A Brief History of the Canadian Geotechnical Society”, originally written in 1985 and last revised in 2016. The latest entry is “History of the Development of the Canadian Foundation Engineering Manual”, written in 2017 and updated in 2018.

A useful item for researchers is the list of past CGS-organized or co-organized conferences, which includes the annual Canadian Geotechnical Conference (held yearly since 1947), the Canadian Young Geotechnical and Geoscience Conferences (held every three years since 2004) and others. The proceedings of most of these conferences are accessible to CGS members in the Members Section of the CGS website.

#### 3.2 History of Canadian Geotechnique

This section recognizes that the history of geotechnique in Canada encompasses more than that of the CGS. This collection includes, for instance, the “History of the Canadian Foundation for Geotechnique”, the entity which funds many opportunities for the benefit of our professions. It also includes items associated with the history of northern engineering and permafrost, engineering geology, and various case histories.

A noteworthy item is a PDF version of the personal memoir by Robert Legget, written as part of the 1980s “Heritage Book” project (described above). This 104-page manuscript, type-written and hand-edited by Legget, gives his personal account of the development of geotechnique in Canada, starting in 1929.

#### 3.3 Contributors to Canadian Geotechnique

This section is subdivided into four subsections, all of which pay tribute to the individuals who contributed to geotechnique in Canada. The four subsections are, in the order presented:

- *Lives Lived* are short memoirs about deceased CGS members or other notable Canadian geotechnical professionals, as submitted by their colleagues.
- *Individual Contributors* provide more in-depth information and documentation about specific contributors to Canadian geotechnique, going back to Thomas Roy in the 1800s. (after whom the Thomas Roy Award of the CGS Engineering Geology Division is named).
- *Groups of Contributors* contain posters, presentations and videos showing individuals who contributed significantly to specific regions or topics in geotechnique. For example, the “Historical Cavalcade”, an 83-minute video with short presentations from the landmark, 50<sup>th</sup> 1997 CGS Conference in Ottawa, brings to life the voices and images of 20 early contributors to geotechnique in Canada. It is a poignant and at times humorous tribute to these pioneers, of which very few are still with us. Another example is a collection of images and contribution summaries of Eastern Quebec pioneers, presented at GeoQuebec2015.
- *Canadian Legends* contain interviews with distinguished Canadian geotechnical professionals and highlights the wisdom gained from their lives and professional careers. This is a relatively new initiative and a co-operative effort between the CGS Heritage and Education committees. Interviews conducted with prominent Canadians, and previously published in the ASCE *GeoStrata* magazine, have been included with permission.

### 3.4 Canadian Geotechnical Projects

This section includes papers, compilations of papers, and summaries of some notable projects. Also included is a 24-minute, 1994 video which tells the story of Lt. Colonel John By, the engineer in charge of the location and construction of the Rideau Canal between Ottawa and Kingston, and narrated by Robert Legget, a prominent historian of the canal. Another valuable collection is selected papers and photographs of the "Failure and Righting of the Transcona Grain Elevator" in 1915, prepared by Ken Skafffeld.

### 3.5 Lectures, References, etc.

Items that are too distinct to fit into any of the previously described sections are in this section. Some may be relocated as additional sections are added. A notable example is a 36-minute lecture on "Engineering Judgement" by Canadian-born Ralph Peck, a worldwide recognized geotechnical educator, researcher and consultant with many ties to Canada. The video was recorded in 1991 and is narrated by Nordie Morgenstern.

### 3.6 Future Additions

The quantity of items being suggested or supplied by CGS members and friends of the Heritage Committee is significant. This is very positive, however it frequently outpaces the speed with which the items can be prepared and uploaded to the Virtual Archives.

Upcoming items that will be added include a series of posters on some of the first women in Canadian geotechnique, presented at GeoEdmonton2018. There are also a number of contributions to Canadian geotechnique by international contributors that are planned for an "International" section. These include paper references, voice and video records of Karl Terzaghi, Arthur Casagrande and Ralph Peck.

## 4 CONCLUDING REMARKS

This paper documents the development of the Canadian Geotechnical Virtual Archives, and presents a brief overview of the current contents. The authors hope that readers will be interested in deepening their knowledge of the Canadian Geotechnical Virtual Archives and the history of the geotechnique in Canada, because they believe that awareness of our heritage fosters a sense of identity and pride in the professions that comprise geotechnique.

CGS members and other interested parties are encouraged to identify, collect and submit material that may be of archival interest to the Heritage Committee at [heritage@cgs.ca](mailto:heritage@cgs.ca). Potential material is evaluated by an informal panel whose members are the current Heritage Committee Chair and two of its senior members. Please note that neither the CGS nor the Heritage Committee have the ability to retain physical documents.

## 5 ACKNOWLEDGEMENTS

The authors would like to acknowledge those who contributed in various ways to the Canadian Geotechnical Virtual Archives over the years. A special thank you to Jim Graham, for all his support and work on the archives over his tenures as CGS President, Secretary General and Chair of the Heritage Committee, and for providing access to his correspondence with Lorne Gold and others, going back to 1998 (quoted as Graham, personal communication). Thank you also to Lilianne Landry-Pare for translating the abstract.

As any history researcher knows, the task of documenting the full story of a group or project is difficult. In the end, errors and omissions are almost unavoidable, for which we take full responsibility.

## 6 REFERENCES

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APPENDIX follows



## APPENDIX



### Overview

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The Canadian Geotechnical Virtual Archives have been assembled by the CGS Heritage Committee. They reflect the interests of CGS members, and others, who have generously provided, or provided access to, geotechnical archival material in electronic format.

Click on one of the links below to enter the virtual archives:

- [History of the CGS](#)
- [History of Canadian Geotechnique](#)
- [Contributors to Canadian Geotechnique](#)
  - [Lives Lived \(Memoirs\)](#)
  - [Individual Contributors](#)
  - [Groups of Contributors](#)
  - [Canadian Legends](#)
- [Canadian Geotechnical Projects](#)
- [Lectures, References, etc.](#)

CGS members, and others, are encouraged to submit archival material to be considered for posting.

Submissions should include the location of the material, a description of its nature and content, its historical significance and conditions under which it can be accessed. Electronic files of scanned photographs, drawings, etc. are preferred. Please do not submit hardcopy archival material as the CGS has no storage facilities.

Submissions, or questions about submissions should be sent to the Chair at [Heritage@cgs.ca](mailto:Heritage@cgs.ca), or to the CGS National Office at [cgs@cgs.ca](mailto:cgs@cgs.ca).

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Canadian Geotechnical Virtual Archives Overview web page, [http://www.cgs.ca/virtual\\_archives\\_overview.php](http://www.cgs.ca/virtual_archives_overview.php)