



*Proceedings of the 15th Annual Vancouver
Geotechnical Society Symposium*

***LAND RECLAMATION
GEOTECHNIQUE***

*Vancouver, B.C.
May 25, 2001*

Papers

- Landfill redevelopment: Beneficial use and aftercare* Robert B. Wallace.....
- Reclamation of a contaminated utility corridor, Surrey, BC* Matthew Janes, John Clarke, John Driedger, Dave Newton, and Randall Warren
- Emergency geotechnical instrumentation for a burning landfill to monitor the impacts of fire-fighting and post-fire reclamation* Saman Vazinkhoo, Rod Kostaschuk, Tony Sperling, and Randy Wolsey
- Interpretation of in situ test results in cohesionless fills before and after ground improvement* John A. Howie, Ali Amini Asalemi, Takahiro Shozen, and Yoginder P. Vaid.....
- A.R. MacNeill School - site development and foundation design* Ernest Naesgaard and Gunther Yip.....
- Road deactivation for hillslope restoration: lessons learned on the Escalante Watershed Restoration Project* Mike Wise, Mike Leslie, Glynnis Horel, Denis Collins, and Warren Warttig.....
- Design and construction of mine waste rock pile rehabilitation works at Cirque Mine, Mackenzie, British Columbia* Garry Davies, Andy Haynes, and Alistair Lowry.....
- Geotechnical Studies for Reclamation of the Nickel Plate Mine Tailings Facility* Graham R. Greenway, Sonia M. Sahota, and Bruce S. Brown.....
- Characterisation of the Reclaimed Soils in the Foreshore Area of Manila Bay, Philippines* Tony Dell, John McClung, and Emilio Morales.....
- Design and construction of an export harbour in Persian Gulf* Karim Karimzadegan and Houshang Raissi.....
- Ground improvement for Cruise Ship Terminal Expansion Project at Canada Place, Vancouver, BC* Dave Smith.....

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The Vancouver Geotechnical Society (VGS), a local chapter of the Canadian Geotechnical Society (CGS), is a non-profit organization dedicated to the dissemination of geotechnical information for the local Civil Engineering community. In addition to the annual one-day symposium, regular evening seminars are held from September through May. For further information on the activities of the VGS, visit the VGS web page at:

<http://www.vancouvergeotechnicalsociety.com>

or the CGS web page at:

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Land Reclamation Geotechnique – Preface

Rod Kostaschuk, Symposium Chair

The Vancouver Geotechnical Society (VGS) selected the theme of *Land Reclamation Geotechnique* for the Year 2001 One-Day Symposium. The theme encompasses the geotechnical and hydro-geological aspects of reclaiming land to a stable, natural state, or reclaiming land to use for developments that satisfy public needs.

The 2001 VGS Symposium Proceedings contain technical papers that include insightful case histories and cover many aspects of design, analysis and construction for a wide variety of projects. The papers describe engineering in difficult and unusual geotechnical materials including mine tailings, landfill waste and a wide variety of natural soil and rock materials. The papers discuss projects in mining and forestry reclamation and remediation of contaminated sites. As well, projects where land is reclaimed for shoreline or inland developments are discussed, including harbours, ports and schools. Ground improvement for the purpose of reclaiming land for development is described in some of the papers. The contents of these technical papers will provide useful information to practicing geotechnical engineers.

The Organizing Committee wishes to thank the authors, members of our local community and distinguished visitors, who took time off their busy schedules to share their expertise and experience with the fellow members and colleagues and, most importantly, to attend the symposium.

In addition to the excellent member support, the financial success of the annual symposium is important for the continued operation and sustainability of the VGS. In this regard, we are grateful to the many organizations listed herein for their generous support by becoming sponsors and exhibitors of the symposium.

As in the many past events, the success of this Symposium is dependent on a large number of individuals who voluntarily contributed their time and effort. In particular, we would like to thank the following committee members who worked very hard to make the Symposium a success:

Linda Fong (Terra Macleod Engineering Ltd.):
Venue

Marita Galdo and Sonia Sahota (Knight Piésold Ltd.): Registration

Sarah Griffiths and Jeremy Kinch (Knight Piésold Ltd.): Exhibitors and Sponsors

Richard Hall (Jacques, Whitford and Associates Ltd.): Symposium Proceedings

Henrik Kristiansen (Thurber Engineering Ltd.):
Pre-Symposium Dinner

Garry Stevenson (Klohn Crippen Consultants Ltd.):
Paper Review and Coordination of Authors

We would like to thank Martyn Bayne (VGS Chair, Jacques, Whitford and Associates Ltd.), Sonny Singha (VGS Treasurer, Terra Macleod Engineering Ltd.), and Upul Atukorala (Past Chair, VGS Symposium, Golder Associates Ltd.) for their encouragement, input, and help in organizing the Symposium activities.

Finally, we would like to thank the individuals who took part in the cover design competition. Congratulations to Bryon Richardson of Geopac West who won this competition.

Cover Photo: Dynamic Compaction of Caisson Wall
Infill, Deltaport Container Terminal

Inset Photo: Deltaport/ Roberts Bank, Delta
British Columbia, Canada

Cover Design: **GEOPAC WEST LTD.**

Picture Credit: Fraser River Pile & Dredge Ltd.

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Hong Kong International Airport - Reclamation at 10 tonnes per second

Outline of Keynote Address for the Vancouver Geotechnical Society Symposium, Pre-Symposium Dinner Meeting, May 24, 2001

The interrelationship of the new airport with other major infrastructure development in Hong Kong was provided as background. The platform on which the new Hong Kong International Airport has been built was created in just two and a half years by a combination of dredging, quarrying and seawall operations. The influence of political and economic environments on engineering design and construction was demonstrated. The presentation described the marine and land works undertaken on a 24-hour basis to complete the 1248-hectare platform, three-quarters of which was reclaimed from the sea. The settlement performance of the reclamation was described including some derived creep rate parameters of the fill. The importance of having a thorough understanding of the geology and ground conditions was highlighted with the Airport Authority carrying the risks associated with settlement of the reclamation. A flavour of just some of the many geotechnical activities carried out in construction of the airport was included together with some illustrations of the operational airport.

Career biography – Dr. Graham Plant

Dr. Graham Plant graduated from the University of Sheffield, England, with First Class honours in Civil and Structural Engineering in 1968. He then undertook research into the behaviour of multi-anchored retaining walls and lectured at the same university between 1970 and 1972. From 1973 to 1991 he was involved in the design and implementation of a variety of civil engineering and building projects principally in the United Kingdom and Southern Africa where he was a Director of Ove Arup and Partners. During his period in Southern Africa (1976 -1987) a wide range of projects were undertaken, which included the provision of site infrastructure, foundations, dams, reservoirs and waste disposal facilities.

From 1991 to 1999 he was engaged on the engineering development of the new Hong Kong International Airport from inception to completion. As Head of Engineering he was responsible for all engineering disciplines as well as architectural, environmental and related activities for the new airport, which had a project value of about C\$9000m. He carried ultimate engineering and commercial responsibility for managing and satisfactorily concluding more than 40 contracts and studies for the design of the airport with a total fee value in excess of C\$250m. Graham also had ultimate responsibility as the Engineer under the contract for the C\$1700m site preparation, which was completed within budget and four months early. The timely and successful completion of the 1,248-hectare site reclaimed from the sea was crucial, providing the basis upon which all other airport development depended.

Dr. Plant is the author of many articles and technical papers with particular emphasis on practical solutions to engineering issues. He has also co-authored and edited a book with colleagues on the design, construction and performance of the Hong Kong airport site reclamation published in 1998 by Thomas Telford Limited. He is a Fellow of the Institution of Civil Engineers, the Hong Kong Institution of Engineers and a Member of the South African Institution of Civil Engineering and the American Society of Civil Engineers. In 1999 he was awarded the Telford Medal, which is the Institution of Civil Engineers' highest award for a paper.

In April 2000, he established Graham Plant Consulting Ltd. to undertake consultancy services in Major Project and Engineering Management.