

# GEOTECHNICAL SOCIETY OF SINGAPORE (GeoSS)

Cordially invites you to

## Inauguration of GeoSS

**Date:** Tuesday, 29 Jan 2008

**Time:** 6:00 – 8:30pm

**Venue:** LT1  
Faculty of Engineering  
National University of Singapore

### Program

- |             |   |
|-------------|---|
| 1815 – 1900 | Reception and registration of GeoSS membership  |
| 1900 – 1930 | Inauguration of GeoSS   |
| 1930 – 2030 | <b>First GeoSS Lecture</b><br><b>Collapse of Nicoll Highway – a Global Failure at the Curved Section of a Cut-and-Cover Tunnel Construction</b><br><b>Professor KY Yong</b> |

## Abstract

### Collapse of Nicoll Highway – a Global Failure at the Curved Section of a Cut-and-Cover Tunnel Construction

K.Y. Yong<sup>1</sup>, H. S. Teh<sup>2</sup>, K. S. Wong<sup>3</sup> and S. L. Lee<sup>1</sup>

<sup>1</sup> National University of Singapore; <sup>2</sup> TY Lin International; <sup>3</sup> Nanyang Technological University

The failure of a section of temporary earth retaining structure led to the collapse of the adjacent Nicoll Highway on 20 April 2004. A 100-section of the six-lane highway subsided by up to 13m. The excavation is for a cut-and-cover tunnel construction and the excavation depth at the time of collapse was about 30m with 9 levels of struts. The diaphragm wall used at the collapsed section was generally 800mm thick. Two layers of JGP were also installed between the diaphragm walls at depths of about 28m and 33.5m. The collapse of the temporary works was a system failure due to a combination of adverse factors. These include the inadequacy of design and poor detailing of the temporary earth retaining structure and the lack of lateral structural continuity of diaphragm wall to provide robustness for the temporary retaining wall system. The paper presents the shortcomings in design and construction, and the influence of the curvilinear alignment of the cut-and-cover tunnel on the failure through 3D finite element analyses.

## About the Speaker

Prof Yong Kwet Yew is Professor of Civil Engineering and Vice President (Campus Infrastructure) at NUS. He is also Chairman, NUS-MINDEF Centre for Protective Technology, and was formerly Director, Centre for Soft Ground Engineering and Head of Civil Engineering. A graduate of the University of Sheffield, England, with a BEng (1st Class Hons) and PhD under a Grouped Scholarship and George Senior Fellowship, he is also a registered Professional Engineer, a Fellow of IES and an Accredited Adjudicator.

Prof Yong has supervised 14 Master and 15 Doctoral Students, published more than 200 technical publications and presented 30 keynote/invited lectures in areas related to his research in deep excavations, deep foundations, ground improvement and land reclamation. He is Immediate Past President of Southeast Asian Geotechnical Society and chairs several government advisory and professional committees including Accredited Checkers Selection Panel, BCA; Fundamentals of Engineering Examination Committees (Civil), PEB; International Board of Advisors, LTA; and Project & Development Committee, Sembawang Town Council. He is also a Board and ExCo Member of Land Transport Authority, Singapore and a listed construction company. He has served as consultant to government agencies as well as local and international companies on more than 100 major construction projects in Singapore, ASEAN and China.

**Contact Person:** A/Prof K K Phoon (Secretary, GeoSS)  
Email: [cvepkk@nus.edu.sg](mailto:cvepkk@nus.edu.sg)

**General Enquiry:** Email to [cvesrf@nus.edu.sg](mailto:cvesrf@nus.edu.sg)

Visitors may park their cars at the cashcard operated [Car Park 2A](#) opposite Blk E3A. Alternatively, free parking is available at the [Car Park at Kent Vale](#). Free shuttle bus services are provided to transfer commuters from this location to their campus destinations. The location of the seminar venue is indicated on the [Engineering campus map](#).

