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K Y Yong

Organising Committee Chair
CF Leung

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KK Phoon

Treasurer
SA Tan, Harry

Scientific Comm. Co-chair
Y K Chow

Scientific Comm. Co-chair
C I Teh

Members
M F Chang
S L Chiam
J Chu
B K Low
T G Ng
R F Shen
S K Tang

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F Tatsuoka (Chair)
A S Balasubramaniam
S F Chan
S-W Hong
S-K Kim
S L Lee
John Li
Z C Moh
H Sekiguchi
R N Taylor

Japan
Australia
Malaysia
Korea
Japan
Singapore
Taiwan
Taiwan
Japan
United Kingdom

Secretariat Address and Contact

For general enquiries
12 ARC Secretariat
AV Consultants Pte Ltd
232-A River Valley Road
Singapore 238290
Tel : (65) 67356255
Fax : (65) 67352091
Email : avconsul@pacific.net.sg
Attention : Ms Rosalind Zee

For enquiries on technical papers and presentations:
Email address : 12ARC@nus.edu.sg
Invitation from the Organising Committee

On behalf of the 12ARC Organising Committee comprising Southeast Asian Geotechnical Society, National University of Singapore and Nanyang Technological University, we cordially invite you to attend the 12ARC. We expect a good turnout at the conference as we have accepted about 200 full papers, with a good number coming from Asia and some from outside Asia. Besides presentations by the authors, there will be 7 keynote lectures delivered by prominent researchers and engineers. In addition, there will be 11 conference sessions sponsored by ISSMGE technical committees and Asian technical committees, the first time that such a large number of technical committees are taking part in ARC. In conjunction with the conference, there is a technical exhibition on latest test equipment and technology in geotechnical engineering. So far 6 exhibitors have confirmed taking part in the exhibition and more exhibitors are expected in due course. We sincerely invite you to take part in 12ARC to share your expertise and exchange ideas with fellow geotechnical engineers and researchers.

K Y Yong
President, Southeast Asian Geotechnical Society and 12ARC

C F Leung
12ARC Organising Chair

12ARC Provisional Programme

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Opening ceremony</td>
<td></td>
<td></td>
<td></td>
<td>Keynote 5</td>
<td>Keynote 7</td>
</tr>
<tr>
<td>09:00</td>
<td>Keynote 1</td>
<td></td>
<td>Keynote 3</td>
<td></td>
<td>Keynote 5</td>
<td>Keynote 7</td>
</tr>
<tr>
<td>10:00</td>
<td>Tea Break and Exhibition</td>
<td></td>
<td></td>
<td></td>
<td>Tea Break and Exhibition</td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td>Sessions: G1, TC2, ATC3 (I), ATC7</td>
<td></td>
<td>Sessions: G1, G4, G5,</td>
<td></td>
<td>Sessions: G10, G13, TC9,G14, ATC12, TC23(II)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>G6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch and Exhibition</td>
<td></td>
<td></td>
<td></td>
<td>Lunch and Exhibition</td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td>Keynote 2</td>
<td></td>
<td>Keynote 4</td>
<td></td>
<td>Keynote 6</td>
<td>Sessions: ATC9, G15, G16</td>
</tr>
<tr>
<td>15:00</td>
<td>Tea Break and Exhibition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:30</td>
<td>Sessions: G2, G3, ATC10, ATC11</td>
<td></td>
<td>Sessions: G7, G8, G9</td>
<td></td>
<td>Sessions: G11, G12, ATC3 (II), TC23 (II)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15:30 - Tea Break and Exhibition</td>
<td>16:00 - Closing Ceremony</td>
</tr>
<tr>
<td>17:00</td>
<td>End of Day</td>
<td></td>
<td>End of Day</td>
<td></td>
<td>End of Day</td>
<td>End of Day</td>
</tr>
<tr>
<td></td>
<td>18:00 to 21:00 Welcome Reception</td>
<td></td>
<td>17:30 to 19:30 Asian Societies Meetings</td>
<td>19:00 to 22:00 Dinner Banquet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
- Session Title
- Session Title
- Session Title


case of the document as if you were reading it naturally.
## Keynote Papers

<table>
<thead>
<tr>
<th>Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTA transport infrastructure projects - Challenges and opportunities</td>
<td>TC Chew, Singapore</td>
</tr>
<tr>
<td>Behavior and design of pile foundations subjected to earthquakes</td>
<td>K Tokimatsu, Japan</td>
</tr>
<tr>
<td>Geotechnical issues in design and construction of Taiwan high speed rail project</td>
<td>ZC Moh, Taiwan</td>
</tr>
<tr>
<td>Liquefaction potential in moderate earthquake region</td>
<td>S I Kim, Korea</td>
</tr>
<tr>
<td>Reinforcement – soil interactions under axial, transverse and oblique forces</td>
<td>M R Madhav, India</td>
</tr>
<tr>
<td>Consolidation of clay and compaction of sand- an elasto-plastic description</td>
<td>A Asaoka, Japan</td>
</tr>
<tr>
<td>Geotechnical aspects of large embankment dams in China</td>
<td>J M Zhang, China</td>
</tr>
</tbody>
</table>

### ISSMGE TC/ATC Sponsored Sessions

<table>
<thead>
<tr>
<th>TC/ATC</th>
<th>Title of session</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC2 Physical Modelling</td>
<td>Applications of Physical Modelling to Geotechnical Practice</td>
</tr>
<tr>
<td>TC9 Earth reinforcement</td>
<td>Combined Technology in Earth Reinforcement</td>
</tr>
<tr>
<td>TC23 Limit State Design</td>
<td>I - Advances in Geotechnical Limit State Design</td>
</tr>
<tr>
<td></td>
<td>II - Asian Geotechnical Design Codes: Current Status and Future Developments (Co-sponsored by Technical Committee on Civil Works and Geotechnics, SPRING, Singapore)</td>
</tr>
<tr>
<td>ATC3 Geotechnology for Natural Hazards</td>
<td>I - Diversity and Common Features of Recent Geotechnical Natural Hazards in Asia</td>
</tr>
<tr>
<td></td>
<td>II - Potential Geotechnical Natural Hazards in Asia</td>
</tr>
<tr>
<td>ATC7 Thick Deltaic Deposits</td>
<td>Foundations on Thick Clay Deposits</td>
</tr>
<tr>
<td>ATC9 Protection of Cultural Heritage from Landslides and Weathering</td>
<td>Protection of Cultural Heritage from Landslides and Weathering in Asia (Co-sponsored by IAEG, Asia)</td>
</tr>
<tr>
<td>ATC10 Urban Geoinformatics</td>
<td>Urban Geoinformatics</td>
</tr>
<tr>
<td>ATC11 Geotechnical Consultancy</td>
<td>Discussion Forum on Consultancy</td>
</tr>
<tr>
<td>ATC12 Land Reclamation and Coastal Structure in Asia</td>
<td>Land Reclamation and Coastal Structures</td>
</tr>
</tbody>
</table>

Refer to 12ARC Website on:

1. Listing of accepted papers (available April 2003)
2. Details of TC/ATC sessions (April 2003)
3. Latest update of sessions as and when available
Information on Conference

Conference Venue
The conference will be held at:
Meritus Mandarin
333 Orchard Road
Singapore 238867
Tel: (65) 6737 4411
Fax: (65) 6737 3130

Conference Language
The conference language will be English and all papers shall be written and presented in English.

Conference Registration Fees
In order to encourage as wide a participation as possible, the Organizing Committee has kept the conference registration fees as low as possible. The table below shows the registration fees in Singapore and US dollars.

<table>
<thead>
<tr>
<th>Category</th>
<th>By 30 April 2003 SGD / USD</th>
<th>After 30 April 2003 SGD / USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delegate (ISSMGE &amp; supporting organisation members)</td>
<td>S$800 / US$490</td>
<td>S$890 / US$550</td>
</tr>
<tr>
<td>Delegate (Non-members)</td>
<td>S$900 / US$560</td>
<td>S$990 / US$620</td>
</tr>
<tr>
<td>Student*</td>
<td>S$300 / US$190</td>
<td>S$390 / US$250</td>
</tr>
</tbody>
</table>

Full registration fee includes:
- Welcome reception (4 August 2003)
- Participation in all conference sessions and technical exhibition
- Lunches, morning and afternoon refreshments during the conference
- Poster sessions
- Technical field trip
- One set of conference proceedings – inclusive of CD Rom and printed proceedings.
- Post conference volume proceedings
- Banquet (7 August 03)

*Student registration fee is available to undergraduate and graduate students. For student registration, please enclose a copy of student card or letter by Head of Department certifying student status. Note: Student registration does not include printed proceedings and Banquet.

Cancellation of Registration and Refunds
The conference secretariat must be notified in writing of cancellation and registration.
Before 30 May 03 50% of registration fees will be refunded
After 30 May 03 no refund

Call for Exhibition
In conjunction with the conference, an exhibition will be held 1 floor below the conference hall. Companies interested to take part in the exhibition, please obtain the 12ARC Exhibition brochure and registration form from: http://www.eng.nus.edu.sg/civil/conf/12ARC/
Official Hotel Accommodation

Official Airline

12ARC has appointed Singapore Airlines Pte Ltd (SIA) to be the official airline. SIA has put together a very attractive airline package to 12ARC delegates. Information on SIA economical airfares can be obtained from the 12ARC website: http://www.eng.nus.edu.sg/civil/conf/12ARC/.

How to get to Meritus Mandarin, Conference Venue

Delegates can take taxi to Meritus Mandarin at Orchard Road from Changi Airport. It is approximately 20 – 30 minutes drive ride, costing about S$25.00 per taxi. A midnight surcharge of 50% extra will apply for taxis hailed after 12 midnight.

Alternatively, delegates may wish to take the MRT, situated at Terminal 2 of Changi Airport. From Changi station, you need to stop and cross the platform at CityHall MRT station and change to a Northbound train to Somerset MRT station. The journey is about 40 minutes, costing S$1.90 per person.

Official Hotel Accomodation

<table>
<thead>
<tr>
<th>Hotel</th>
<th>Nett Room Rates per night **</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meritus Mandarin</td>
<td>South Tower $196.25</td>
<td>A 5 Star conference hotel. 20 minutes ride from the airport by taxi and 2 minutes walk from Somerset MRT station.</td>
</tr>
<tr>
<td></td>
<td>Main Tower $253.97</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclude breakfast</td>
<td></td>
</tr>
<tr>
<td>Phoenix Hotel Singapore</td>
<td>$159.31</td>
<td>This 4 Star hotel is a 3 minutes walk from Mandarin Singapore, next to Somerset MRT station.</td>
</tr>
<tr>
<td></td>
<td>Exclude breakfast</td>
<td></td>
</tr>
<tr>
<td>Hotel Grand Central</td>
<td>$100.00</td>
<td>This 3 Star hotel is a 6 minutes walk from Mandarin Singapore. It is ideal for budget travelers.</td>
</tr>
<tr>
<td></td>
<td>Include breakfast</td>
<td></td>
</tr>
</tbody>
</table>

** All accommodation amount quoted in Singapore Dollars. Room rates are nett values inclusive of 10% service charge, 1% cess & 4% GST.

Delegates may visit our website at http://www.eng.nus.edu.sg/civil/conf/12ARC/ for a list of other supporting hotels at special rates by our official travel agent, Tradewinds Tours and Travel Pte Ltd.
Accompanying Person Programme

12ARC Functions

<table>
<thead>
<tr>
<th>12ARC Functions</th>
<th>Cost per person SGD / USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01 Welcome Reception, Meritus Mandarin, 4 August 03</td>
<td>40 / 25</td>
</tr>
<tr>
<td>F02 Banquet Dinner, 7 August 03</td>
<td>60 / 40</td>
</tr>
</tbody>
</table>

Local Tours Conducted by Tradewinds Tours & Travel Pte Ltd

<table>
<thead>
<tr>
<th>Tour Code</th>
<th>Local Tours</th>
<th>Duration</th>
<th>Departures</th>
<th>Cost per person SGD / USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT01</td>
<td>The City Experience</td>
<td>3,1/2hrs</td>
<td>Twice Daily - 9.30 am - 2.30 pm</td>
<td>21 / 14</td>
</tr>
<tr>
<td>LT02</td>
<td>Jurong Bird Park with Ming Village</td>
<td>3,1/2hrs</td>
<td>Twice Daily - 9.30 am - 2.30 pm</td>
<td>29 / 20</td>
</tr>
<tr>
<td>LT03</td>
<td>Sentosa Special (Include Transfers, Cable Car, Underwater World, Images of Singapore)</td>
<td>3,1/2hrs</td>
<td>Twice Daily - 9.30 am - 2.30 pm</td>
<td>50 / 34</td>
</tr>
<tr>
<td>LT04</td>
<td>Sentosa Glitter (Include Transfers, Cable Car, Underwater World, Musical Fountain)</td>
<td>3,1/2hrs</td>
<td>Daily - 4.30 pm</td>
<td>59 / 39</td>
</tr>
<tr>
<td>LT05</td>
<td>Breakfast at the Zoo</td>
<td>3,1/2hrs</td>
<td>Daily - 8.30 am</td>
<td>56 / 38</td>
</tr>
<tr>
<td>LT06</td>
<td>Zoo Tour</td>
<td>3,1/2hrs</td>
<td>Twice Daily - 8.30 am - 2.30 pm</td>
<td>31 / 21</td>
</tr>
<tr>
<td>LT07</td>
<td>Night Safari</td>
<td>3,1/2hrs</td>
<td>Daily - 7.00 pm</td>
<td>46 / 31</td>
</tr>
</tbody>
</table>

General Information

About Singapore

An island situated at one of the important crossroads of the world, Singapore is truly a unique place where East and West come together. Here, Chinese, Indian and Malay communities living harmoniously with their traditional cultures create an interesting juxtaposition to a modern outlook.

Singapore's tropical climate is warm and pleasant all year round, with temperatures ranging from 30°C in the day to 23°C by night. English is spoken everywhere and is the official business language.

Singapore has convention facilities that rank among the finest in world. For business and pleasure, Singapore has everything to offer. Surely, you will have a productive symposium and a memorable experience.

Note:
1. Tours operate on seat-in-coach basis.
2. Tours are conducted in English.
3. Tours pick-up 30 minutes before departure time. Departure timing is subject to change.
4. Tours must be pre-booked prior to arrival.
5. Full payment is required upon tour confirmation.
# Registration Form

**NAME** Prof / Dr / Mr / Ms

**AFFILIATION**

**ADDRESS**

**CITY** POSTAL CODE

**COUNTRY**

**TEL NO** FAX NO

**E-MAIL**

## Registration (A)

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee per Person By 30 April 03</th>
<th>Fee per Person After 30 April 03</th>
<th>Number</th>
<th>Amount Payable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delegate Member*</td>
<td>S$800 / US$490</td>
<td>S$890 / US$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delegate Non Member</td>
<td>S$900 / US$560</td>
<td>S$990 / US$620</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>S$300 / US$190</td>
<td>S$390 / US$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Valid with ISSMGE & supporting organisation members

**Total**

## Social / Accompanying Persons Programme (B)

<table>
<thead>
<tr>
<th>Tour Code</th>
<th>Local Tours</th>
<th>Cost per person</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01</td>
<td>Welcome Reception, Meritus Mandarin</td>
<td>S$40 / US$25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F02</td>
<td>Banquet Dinner</td>
<td>S$60 / US$40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT01</td>
<td>The City Experience</td>
<td>S$21 / US$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT02</td>
<td>Jurong Bird Park with Ming Village</td>
<td>S$29 / US$20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT03</td>
<td>Sentosa Special</td>
<td>S$50 / US$34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT04</td>
<td>Sentosa Glitter</td>
<td>S$59 / US$39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT05</td>
<td>Breakfast at the Zoo</td>
<td>S$56 / US$38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT06</td>
<td>Zoo Tour</td>
<td>S$31 / US$21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT07</td>
<td>Night Safari</td>
<td>S$46 / US$31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Cost**

**Total amount to be paid:** (A) + (B) = 

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Please complete in BLOCK Letters and return this form with full payment to:

12th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering
c/o AV Consultants Pte Ltd
232A River Valley Road, Singapore 238290
Tel: (65) 6735 6255, Fax: (65) 6735 2091,
E-mail: avconsul@pacific.net.sg
Registration Form

Mode of Payment

Please indicate

- Credit Card
- Bank Draft
- Cheque
- TT

Payment made by bank draft drawn on a bank in Singapore or telegraphic transfer in SGD or USD is to be made payable to:

<table>
<thead>
<tr>
<th>Account Name</th>
<th>Account Number</th>
<th>Bank</th>
<th>Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>12ARC – AV Consultants Pte Ltd</td>
<td>934-342-046-0</td>
<td>United Overseas Bank Ltd</td>
<td>South Bridge Road</td>
</tr>
</tbody>
</table>

Bankers Draft/Telegraphic Transfer No

For payment by credit card, the following details and authorization must be given:

- Type of card: Visa, Master, Amex, Diners
- Credit Cardholder’s Name
- Credit card Number
- Card Expiry Date

I hereby authorise AV Consultants Pte Ltd (12ARC Secretariat) to charge the amount

Cardholder’s Signature

Date

12ARC Accommodation Reservation

Please reserve room at:

- Meritus Mandarin, South Tower
- Meritus Mandarin, Main Tower
- Hotel Phoenix
- Hotel Grand Central + Breakfast

RATES INCLUDE LOCAL TAXES OF 10% SERVICE, 1% CESS AND 4% GST, SINGLE OR DOUBLE OCCUPANCY

<table>
<thead>
<tr>
<th>Arrival Flight No</th>
<th>Arrival Date &amp; Time</th>
<th>Departure Date</th>
<th>Number of Nights</th>
</tr>
</thead>
</table>

Credit card information is required for confirmed room reservation.

- Type of card: Visa, Master, Amex, Diners
- Credit Card Holder’s Name
- Credit Card Number
- Credit Card Expiry Date

Cardholder’s Signature

Date
STRENGTH AND WEATHERING OF ROCK AS BOUNDARY LAYER PROBLEMS
by Christine Barlow
Imperial College Press

THE LEGAL, ENGINEERING, ENVIRONMENTAL AND SOCIAL PERSPECTIVES OF SURFACE MINING LAW AND RECLAMATION BY LANDFILLING
Getting Maximum Hold from Surface Mines
by Robert Lee Aiton
University of Akron, UK & University of Missouri-Rolla, USA

ENVIRONMENTAL IMPACT OF LAND USE IN RURAL REGIONS
The Development, Validation and Application of Model Tools for Management and Policy Analysis
by Peter J. rijkmans, Piet Groenendijk & Jeroen Govers
CML Division, Wageningen Agricultural University, The Netherlands

GEOLOGY OF THE CARPATHIAN REGION
by G. Z. Faldvany

GEOLOGICAL SURVEY OF THE CARPATHIAN REGION
by G. Z. Falvany

FORTHCOMING
BOMBARDED BRITAIN
A Search for British Impact Structures
by Richard Stratford

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Situated at one of the most important crossroads of the world, Singapore is a fusion of East and West, modernity and old world charm. When you meet in New Asia - Singapore, you are at the centre for business. And pleasure - Singapore represents a blend of cultures, customs and cuisines that is as diverse as it is captivating.

With cuisines from all over the world found right here, Singapore is truly a gourmand's paradise. And when it comes to fun, Singapore is your tropical playground, with beaches, theme parks, sightseeing, golf and other attractions galore. And to whet your appetite further, there is a wide array of cultural and modern dance, music and theatre performances in this Global City of the Arts. And shop-until-you-drop takes on a new meaning in Singapore. You’ll be able to experience Singapore to the fullest especially since Singapore is known to be one of the safest cities in the world. Public transport is reliable and inexpensive and our world-class transport system makes seamless travel along clean and green streets.

The climate in Singapore is warm and welcoming all year round with temperatures ranging between 31°C in the day and 28°C in the night. English is a widely spoken language and the common business language of all.

You’ll find a wide variety of beautifully appointed yet reasonably priced hotels, all offering impeccable standards of Asian service and hospitality. And as Asia’s convention and exhibition capital, Singapore has facilities that rank among the finest in the world.

Whether you’re here for business or pleasure, Singapore has everything to make your stay a most memorable experience.
Being on a business trip isn’t always the most fun thing to do. Unfamiliar faces. Long meetings that stretch into the night. But planning my trip here was definitely the easiest part of the journey. I just picked up the phone, called Tradewinds, and all my travel needs were sorted out instantly.

The fantastic in-flight service, first-rate tours, and being put up at a splendid hotel certainly took the edge off work. It made the trip almost fun.

Take me with you.

www.tradewindstours.com