"Design, Construction and Maintenance of Sedimentation Basins”

organized by IES

Date : 11 Apr 2013 (Thursday)
Time : 8.30 am – 6.00 pm
Venue : 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
Fee : $300 - IES member, SIA member, SILA member
      $380 - Non-member
CPD : PDU / PDU (QECP) / CPD – To Be Confirmed
INTRODUCTION

Two-thirds of Singapore functions as local catchment areas. Under the Active, Beautiful, Clean Waters (ABC Waters) Programme, PUB has embarked on a journey to harness the full potential of our waters by integrating them with our environment. Over the past 2 to 3 years, other public agencies and private developers have also embraced the ABC Waters design that leads to improvement in water quality, enhanced biodiversity and new recreational space for people to get closer to water.

With more ABC Waters projects, there is a need to ensure that suitably qualified Engineers/Architects/Landscape Architects are on board to undertake the designs of such water features. IES is collaborating with PUB and other agencies to introduce the ABC Waters Professional Programme. The programme is aimed at building up the expertise in the area of ABC Waters design and increase the competitive advantage of professionals in the Singapore market as well as within the region.

The objective of the Programme is to create awareness of ABC Waters design concept and its application in Singapore amongst professionals in the industry and to train professionals in the design, implementation and maintenance of ABC Waters Design features. Four core modules (CU1 to CU 4) and four elective modules (EU 1 to EU 4) are offered under the ABC Waters Professional programme. The Programme commenced on 16 Sep 2011 and to-date, a total of 12 core modules and 6 elective modules have been conducted.

Participants who complete all four core modules plus any two elective modules would be eligible to be registered as an ABC Waters Professional subject to full compliance with Registration Criteria. Registration Criteria will be announced at a later stage. Participants who complete any single module would receive certificate of attendance for the module completed.

It is envisaged that in the near term, the ABC Waters Professional certification may be a requirement for development proposals involving ABC Waters design features.

Supported by:

- PUB
- Housing & Development Board
- Land Transport Authority
- National Parks Board
- Singapore Institute of Architects
- Singapore Institute of Landscape Architects
Course Outline for Elective Module EU1

Dr Chew Soon Hoe (1 hour lecture)

(1) Introduction, Function and Types of Sedimentation Basin

Dr Stephen Tan (6 hours lectures and Case Studies) on

(1) Recap of role, treatment principles and various design considerations for a sedimentation basin (30 min)

(2) Basic design process: (3 hours)
- Determine Design Flow (Operation flow and above design flow)
- Estimation of treatment performance
- Estimation of dimension and size
  - Basin configuration
  - Basin edge treatment
  - Hydraulic efficiency
  - Sedimentation area
  - Storage volume for sediments
- Design of inlet flow system
  - GPT
- Design of outlet flow system

(3) Others related designs/considerations (1.5 hours)

(a) Prevention of Re-suspension of Accumulated Sediments
- Assessment of Inflow Regime (Froude)
- Design of energy dissipater system
- Design scouring protection

(b) Containment/Creation of permanent water for sedimentation process
- Lining methods
- Lining materials/configuration

(c) Safety
- Water safety – Edge treatment
- Accessibility by public
- Mosquito breeding problem

(4) Construction & Maintenance Requirements (1 hr)

MCQ Exam – 1 hour
Speaker Profile

Er Dr Chew Soon Hoe

Dr Chew Soon Hoe received his PhD from University of California at Berkeley. He is currently an Assistant Professor in the Department of CE, NUS, and also holds the position of Deputy Director of the Centre for Protective Technology, NUS. His research interests include geosynthetics, slope engineering, land reclamation, soil improvement, soil erosion, numerical modeling in geotechnical engineering and geo-environmental engineering. In the past 15 years, he has conducted extensive research on geosynthetics, especially on the reinforcement, filtration and drainage applications of geosynthetics material. His other research interests include survivability of geotextiles, geosynthetics for erosion control, vertical drains testing and applications. He has been very actively promoting the use of geosynthetics in civil engineering construction, and has been engaged as consultant to government agencies and private consultants and contractors on geosynthetics related projects and construction in this region. He is also actively consulted in general area of geotechnical engineering including slope stability, pile foundation and excavation related problem.

Dr Stephen Tan Boon Kean

Dr Stephen Tan is currently the Vice President (Environmental) with CPG Consultants. Dr Tan is a hydrology, hydraulic and water quality specialist. Some of his ongoing and completed projects related to implementation of ABC Waters Design Features include Lower Seletar Family Bay (Singapore), Sengkang Floating Island (Singapore), Lorong Halus Wetland (Singapore), Gardens by the Bay (Singapore), MacRitchie Reservoir Phase 2 (Singapore); Punggol-Serangoon Reservoir Scheme (Singapore), Eco-Tourism Park (Vietnam), Integrated Water Management for Pearlhill Development (Qingdao, China), Pilot Rain Ganden and Bio-Retention Swales in Brunei Darussalam; Redevelopment of Sungei Buloh Wetland Reserve (Singapore). Dr Tan obtained his PhD from the Nanyang University of Singapore.
# ABC Waters Professionals
## Elective Module EU 1

<table>
<thead>
<tr>
<th>Schedule for ABC Waters Professional Course in 2013:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Module CU1: Understanding ABC Waters Design Guidelines and Certification – 16 Jan 2013</strong></td>
</tr>
<tr>
<td>Duration: 8 hours including lectures, case studies and MCQ exam</td>
</tr>
</tbody>
</table>

**Competency Areas**
- Understand ABC Waters Management Strategies;
- An overview on planning, design and performance considerations for ABC Waters Management including:
  - Catchment Elements
  - Treatment Elements
  - Collection & Storage Elements
- Understand Safety Considerations, Public Health & Maintenance
- Understand Multi-disciplinary nature of ABC Waters Management
- ABC Waters Certification Scheme

<table>
<thead>
<tr>
<th><strong>Core Module CU2: Stormwater Quality Management -Planning and Designing ABC Waters Design features – 21-22 Feb 2013</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration: 11 hours including lectures, case studies and MCQ exam</td>
</tr>
</tbody>
</table>

**Competency Areas**
- Appreciate ABC Waters Design
- Understand Storm Water Quality Parameters including the following:
  - Suspended Solids
  - Nutrients
  - Litter
  - Metals
- Formulate Stormwater Management Strategy
- Appreciate Sizing Stormwater Treatment Systems
- Introduction to Model for Urban Stormwater Improvement Conceptualization (MUSIC)
- Understand ABC Waters Design features including the following:
  - Sedimentation Basins
  - Swale/Buffer systems
  - Bioretention Swales
  - Bioretention Basins
  - Cleansing biotopes
  - Bio-engineering
  - Constructed Wetlands

<table>
<thead>
<tr>
<th><strong>Core Module CU3: Design, Construction and Maintenance of Swales and Buffer Strips – 13 Mar 2013</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration: 7 hours including lectures and MCQ Exam</td>
</tr>
</tbody>
</table>

**Competency Areas:**
- Understand design considerations for swales
- Able to produce suitable design for swales
- Able to provide construction advice for swales
- Knows the maintenance requirements for swales
- Case Example

<table>
<thead>
<tr>
<th><strong>Core Module CU4: Design, Construction and Maintenance of Bioretention Basins and Bioretention Swales –14 Mar 2013</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration: 8 hours including lectures and MCQ Exam</td>
</tr>
</tbody>
</table>

**Competency Areas:**
- Understand design considerations for bioretention basins and bioretention swales
- Produce a suitable design for bioretention basins and bioretention swales
- Preparing and testing of soil media
- Sub-soil drainage system
- Plant selection
- Provide construction advice for bioretention basins and bioretention swales
- Appreciate the maintenance requirements for bioretention basins and bioretention swales
- Case example
### Elective Module EU1: Design, Construction and Maintenance of Sedimentation Basins- 11 Apr 2013

Duration: 8 hours including lectures and Case Studies and MCQ exam

<table>
<thead>
<tr>
<th>Competency Areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand design considerations for sedimentation basin</td>
</tr>
<tr>
<td>Produce suitable design for sedimentation basin</td>
</tr>
<tr>
<td>Apply construction advice for building sedimentation basin</td>
</tr>
<tr>
<td>Appreciate the maintenance requirements for sedimentation basin</td>
</tr>
<tr>
<td>Case example</td>
</tr>
</tbody>
</table>

### Elective Module EU2: Design, Construction and Maintenance of Cleansing Biotopes and Bio-Engineering Techniques - 18 Apr 2013

Duration: 8 hours including lectures and Case Studies and MCQ exam

<table>
<thead>
<tr>
<th>Competency Areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand design considerations for Cleansing Biotopes</td>
</tr>
<tr>
<td>Able to produce suitable design for Cleansing Biotopes</td>
</tr>
<tr>
<td>Able to provide construction advice for Cleansing Biotopes</td>
</tr>
<tr>
<td>Knows the maintenance requirements for Cleansing Biotopes</td>
</tr>
<tr>
<td>Case example of Cleansing Biotopes</td>
</tr>
<tr>
<td>Understand design process for Bio-Engineering</td>
</tr>
<tr>
<td>Understand design techniques for Bio-Engineering</td>
</tr>
<tr>
<td>Provide construction advice for Bio-Engineering</td>
</tr>
<tr>
<td>Appreciate the maintenance requirements for Bio-Engineering</td>
</tr>
<tr>
<td>Case example of Bio-engineering</td>
</tr>
</tbody>
</table>

### Elective Module EU3: Design, Construction and Maintenance of Constructed Wetlands – 14 or 15 May 2013

Duration: 8 hours including lectures and Case Studies and MCQ exam

<table>
<thead>
<tr>
<th>Competency Areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand design considerations for Constructed Wetlands</td>
</tr>
<tr>
<td>Produce suitable design for Constructed Wetlands</td>
</tr>
<tr>
<td>Plant selection</td>
</tr>
<tr>
<td>Provide construction advice for Constructed Wetlands</td>
</tr>
<tr>
<td>Appreciate the maintenance requirements for Constructed Wetlands</td>
</tr>
<tr>
<td>Case example</td>
</tr>
</tbody>
</table>

### Elective Module EU4: Slope Stability and Channel Design – To be confirmed
ABC Waters Professionals
Elective Module EU 1

Registration Form

ABC WATERS PROFESSIONALS ELECTIVE MODULE EU1
Design, Construction and Maintenance of Sedimentation Basins

Date: 11 April 2013 (Thursday)
Time: 8.30 am – 6.00 pm
Venue: 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
Fees*: $300.00 (IES/SIA/SILA Members) / $380.00 (Non-Members) / $320.00 (CJIC Members)

Please register online/fax the completed form by 08 Apr 2013 before 3pm to:
Rasheedah Goh- IES Academy 70 Bukit Tinggi Road S(289758) Tel: 6463 9211 Fax: 6463 9468

Participant Details

Name: ___________________________ NRIC: ___________________________

Company: ___________________________ Designation: ___________________________

Address 1: _____________________________________________________________
(For mailing of invoice and receipt)

Address 2: _____________________________________________________________
(For mailing of Certificate)

Postal Code: ___________________________ Sex: __________ Male / Female

Mobile No.: ___________________________ Fax: ___________________________

Email: ___________________________
(For sending of confirmation email)

Please indicate:
- IES/SIA/SILA members IES/SIA/SILA M'ship No.: __________ PEB/BOA No.: ________ (if applicable)
- Non-members
- Sponsored by company
- Vegetarian
- CJIC member (Please write organization name) ___________________________

Contact Person Details (if different from participant)

Name: ___________________________ Designation: ___________________________
Tel: ___________________________ Fax: ___________________________
Email: ___________________________

Payment Details

Bank / Cheque No.: __________ Amount ($) : __________

* All Fees are inclusive of 7% GST. Cheque should be made payable to: “IES”.

Acceptance of Terms and Conditions for Registrations of IES Academy’s Events
I agree to abide by the Terms and Conditions for Registration of IES Academy’s Events.

Name: ___________________________ Signature: ___________________________
ABC Waters Professionals  
Elective Module EU 1  

TERMS & CONDITIONS COURSE REGISTRATION

Registration

Registration can be done either online or by faxing in the registration form.

Any registration, whether on-line or fax will be on a **first-come-first-served basis** and will only be confirmed upon receipt of full payment by The Institution of Engineers, Singapore (IES).

Email and phone registrations will not be accepted.

Closing Date & Payment

The closing date of the event will be 7 days prior to event commencement date. Cheques should be crossed ‘A/C payee only’ and made payable to ‘IES’, with the **Date of event, Title of The Event and participants’ name indicated clearly on the back of the cheque**, and post to:

IES Academy  
70 Bukit Tinggi Road  
Singapore 289758

Confirmation of Registration

Confirmation of registration will be given 7 days prior to the commencement date of event via email. If you do not receive the said confirmation email, you are required to contact IESA general admin immediately at 6463 9211 (office).

IESA reserves the right to allow only confirmed and paid registrants to attend the Event.

Withdrawals/Refunds of Fees

Notice of withdrawal must be given in writing to IESA. Policy on refund of course fee is as follows:

- **FULL** refund if we receive your written notice of withdrawal at least 7 days before the commencement of the Event.
- **NO** refund otherwise.

No show of participant would not be accepted as reason for withdrawal/refund.

Replacement is allowed but restricted to once only. Replacement will be allowed only if written notice is received by us at least 3 working days before the commencement of the event. However, when an IES member is replaced by a non-member, the participant has to pay the difference in the relevant fees.

Cancellation/Postponement

Changes in Venue, Dates, Time and Speakers for the Events can occur due to unforeseen circumstances. IESA reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement.

Fees will be refunded in FULL if any Event is cancelled by IESA.

Enquiries

For further enquiries, please contact IESA general office at Tel: 6463 9211.