**REGISTRATION FORM**

***(to be returned by Wednesday, 18th January 2017)***

***5-Day "Bridge Design Course"***

**(ACEMSWK/COURSE/ 01/2017-BEM APPROVED 30 CPD HOURS)**

**Date: 24 January 2017, 9 February 2017, 23 February 2017, 7 March 2017 & 21 March 2017 (5 Days)**

**(Limited to 39 places only on a'first - come, first - served basis')**

**Name of Organization: ……**

**Address: ……**

**……..**

**Email: …… Hand phone: …….**

**Tel:(O)..... Fax: ……**

**Contact Person: …… Designation: ……**

**I/We wish to enroll the following person(s) for the above-mentioned Seminar:**

| Name(s) | Designation | PE No |
|---|---|---|
| | | |
| | | |
| | | |

In view of the limited places available, participants are advised to send their registrations and payments as early as possible to avoid disappointment. Kindly return the reply slip to ACEM (Sarawak Branch) at fax no: 082-571606**.**

***The Organiser reserves the right to request the attendee to show Identity Card (IC) during registration / sign in / sign out period.***

**Registration fee (inclusive of 6% GST) per participant for 5 days course in lump sum cost :**

| | | |
|---|---|---|
| **ACEM Member Firm** | **RM 1,590.00** | ☐ |
| **Government Officer** | **RM 1,590.00** | ☐ |
| **EFT by Government depts.** | **RM 1,603.00** | ☐ |
| ** EFT (electronic fund transfer / e-perolehan)* | | |
| **Others** | **RM 1,802.00** | ☐ |

# 5- DAYS BRIDGE COURSE DESIGN

***(ACEMSWK/COURSE/01/2017- BEM APPROVED 30 CPD Hours)***

**Date : 24 January 2017, 9 February 2017, 23 February 2017, 7 March 2017 & 21 March 2017**
**(5 days)**
**(10:00 am to 5:00 pm)**

**Venue: Room G518 (Computer labs),**
**Block G, 5th Floor,**
**Swinburne University of Technology**
**(Sarawak Campus), Kuching**

**Presented by:**
**Ir. PATRICK C AUGUSTIN,**
**B.Sc., M.Sc., FIEM, PEng, FICE, CEng, FIStructE,**
**Chartered Structural Engineer**
**Organised by**

**Association of Consulting Engineers Malaysia (Sarawak Branch)**

**Swinburne University of Technology Sarawak Campus**

## Synopsis of the Course

**(Day 1) Module 1**

- Use spreadsheet to calculate lane loading factors for particular widths of bridge decks.
- Determine HA udl for span length.
- Design a reinforced concrete bridge with maximum span length of 15m that can be cast on site or precast on site for HA loading.
- Check design for limited HB loading.
- Check for crack widths
- Check for Additional Shear reinforcement.
- Design Deck slab and check for crack width.
- Design abutment as integral with bridge deck.
- Design of piled foundations.

The participants after Day 1 will be able to design a variety of RC bridges with spans under 15m

**(Day 2) Module 2- Assessable Sites**

- Using tools and skills developed from Day 1, the course continues with
- Design of per-stressed pre-tensioned beams with spans up to 25m.
- Composite behaviour.
- Appreciation of strand layout and positioning.
- The art of debonding (blanketing) strands at supports.
- Additional shear reinforcement and strands in excess of that needed for ultimate bending capacity.
- Design of deck.
- Ultimate design check.
- Selection of elastomeric bearings.
- Design abutment as semi-integral with bridge deck.

The participants after Day 2 will be able to design a variety of per-stressed pre-tensioned beams bridges with spans under 25m.

**(Day 3) Module 3- Assessable Sites**

- Using tools and skills developed from Day 1& 2, the course continues with
- Design of per-stressed post-tensioned beam with spans up to 30m.
- Appreciation of cable layout and positioning.
- The art of end block design.
- Shear resistance from inclined tendons and additional reinforcement and strands in excess of that needed for ultimate bending capacity.
- Design of deck.
- Selection of elastomeric bearings.
- Lateral stability of long span beams.
- Ultimate design check.
- Design abutment as semi-integral with bridge deck.
- The participants after Day 3 will be able to design a variety of per-stressed post-tensioned beams bridges with spans under 30m.

**(Day 4) Module 4- In-assessable Sites**

- Using tools and skills developed from Day 1,2 & 3, the course continues with
- Design of steel concrete composite bridges up to 20m with standard UB serial size.
- Appreciation of corrosion protection.
- The art of bracing.
- Shear resistance at steel concrete interface.
- Design of deck.
- Selection of elastomeric bearings when bearing shoes are used.
- Lateral stability of long span beams.
- Ultimate design check.
- Design abutment as semi-integral with bridge deck.

**(Day 5) Module 5**

- Pile group analysis by hand methods
- Earth pressure coefficients Ka ~ Ko, when pile groups are vertical or raked
- Shear and Bending of piles in pile group
- Geo-technical capacity of piles determined by SPT

The participants after Day 5 will be able to design a variety of piled foundations by hand before proceeding to use software such as PIGLET, AllPile, etc. The participants after the 5th day training should proceed to continuously enhance their capability by using standard industry software such as PROKON in all aspects of bridge and foundation design.

**Bio-data of speaker**

**Ir. PATRICK C AUGUSTIN, B.Sc., M.Sc., FIEM, PEng, FICE, CEng, FIStructE, Chartered Structural Engineer** has a broad Design experience equally in Bridges and High Rise Structures. He has published several papers namely,

- Computer Application in the Design of a Voided Slab Deck" – Regional Conference on Engineering (1988)
- The Design of Prestressed Bridge Beams in Accordance with BS 5400 for Steel, Concrete and Composite Bridges: Part 2: 1978 : (Specification for Loads) (and as Amended by Department of Transport (DTp), Highways and Traffic, Departmental Standard BD 37/88, Loads for Highways Bridges) Part 4 : 1984 (Code of Practice) for Design of Concrete Bridges). Published on July 1991 – Bulletin of the Institution of Engineers Malaysia
- Construction of a New Railway Embankment and Trackworks on Soft Ground Adjacent to an Existing Mainline Track at Pondok Tanjung (AU41) for Keretapi Tanah Melayu Berhad (KTMB) - 2nd International Conference on Advance in Soft Soil Engineering and Technologies (2nd - 4th July 2003) Putrajaya, Malaysia
- Bow String Girders or Tied Arches, A Place in Malaysian Bridge Construction – Suara Perunding, Journal of the Association of Consulting Engineers Malaysia
- "The Design and Construction of New Railway Bridge BR123 and Realignment of Tracks Between KM75.750 and Pondok Tanjung Station" - Railtech 2003 International Conference and Exhibition
- Selection Criterion for Elastomeric Rubber Bearings for Bridges – A Technical Note IEM Bulletin July 2005

***Other work,***

- Lectured for 1 Day course, Introduction to Bridge Design
- Construction and design of a 50m single span uhp ductile concrete composite road bridge. The Structural Engineer 89 (15/16) 2 August 2011 page 24-31 Awarded the Husband Prize: The Husband. Prize is named after Professor J Husband, an Institution President from 1937 to 1938. The Husband Prize is awarded for papers of merit related to bridges, published in The Structural Engineer during the session.

## Who should attend

Engineers

## Language

English will be used during the course.

**Goods and Services Tax ( GST)**

GST will apply with effect from 1st April 2015.

## Continuing Professional DevelopmentCPD and Certificate of Attendance

The course is eligible for **30** **CPD Hours** for Professional Engineers registered with BEM, and a Certificate of Attendance will be issued subject to full attendance. Subsitution of participant is allowed. However, the Certificate of Attendance will only be issued to the person attending the course.

## Registration Fee (inclusive of 6% GST) for 5 days Course in lump sum cost

| | | |
|---|---|---|
| ACEM Member Firm | RM 1,590.00 | per person |
| Government Officer | RM 1,590.00 | per person |
| *EFT by Government depts. | RM 1,603.00 | per person |
| ** EFT (electronic fund transfer / e-perolehan)* | | |
| Others | RM 1,802.00 | per person |

Registration fee must be submitted together with the registration form. All fees are payable in Ringgit Malaysia by **crossed cheque to "ACEM (Sarawak Branch)".**

Completed registration form should be returned to the ACEM (Sarawak Branch) Secretariat by **Wednesday, 18th January 2017**:

Association of Consulting Engineers Malaysia (Sarawak Branch)
S/l 40, 1st Flr, Block E, King's Centre,Jln Simpang Tiga, 93350 Kuching, Sarawak

For further enquiries, please contact the ACEM (Sarawak Branch) Secretariat at **tel: 082-464692, fax: 082-571606** or **email: acemsarawak@acem.com.my.**

**Regulations of the course**

1) **Participant is required to present the IC during registration / sign in / sign out period.**
2) **Participant MUST ATTEND 5 MODULES OF THE COURSE in order to obtain Certificate of Attendance.**
3) **Participant is not allowed to send representative to attend certain modules of the course.**
4) **Participant MUST BRING LAPTOP TO ATTEND THE COURSE.**

**Tentative schedule**

| **DATE** | **24/1/2017, 9/2/2017, 24/2/2017, 7/3/2017 & 21/3/2017** |
|---|---|
| **10.00 am – 10.30 am** | **Registration** |
| 10.30 am – 10:35 am | Opening Remarks |
| 10.35 am – 12.30 pm | Session 1 |
| **12.30 pm – 1.30 pm** | **LUNCH** |
| 1.30 pm – 3.30 pm | Session 2 |
| **3:30 pm – 3:45 pm** | **TEA BREAK** |
| 3:45 pm – 5:00 pm | Continue Session 2 |
| 5.00 pm – 5:10 pm | Session Q & A |
| 05:10 pm | End of Seminar |