To All Members, Date: 5 January 2007

CANDIDATES APPROVED TO SIT FOR YEAR 2006 PROFESSIONAL INTERVIEW

The following candidates have been approved to sit for the Professional Interview for 2007.

In accordance with Bylaws 3.7, the undermentioned names are published as having applied for membership of the Institution, subject to passing the year 2007 Professional Interview.

If any Corporate Member of the Institution has any reason as to why any of the candidates is not a fit and proper person for election, he should communicate in writing to the Hon. Secretary. Such communication should be lodged a month from the date of publication.

Engr. Oon Chee Kheng, F.I.E.M., P.Eng.
Honorary Secretary, IEM

TRANSFER APPLICANTS

Membership No	Name	Qualifications
	CHEMICAL ENGINEERING	
21961	VASANTHARAJAN S/O RAMALINGAM	BE (HONS) (UTM) (CHEM, 97) MSc (UKM) (IND. & MGMT. TECH., 00)
	CIVIL ENGINEERING	
25411	CHEONG CHOO HUI	BE (HONS) (LIVERPOOL JOHN MOORES) (CIVIL, 99) MPh (LIVERPOOL JOHN MOORES) (00)
19765	KHOR MIN SZE	BE (HONS) (UPM) (CIVIL, 01) MSc (UPM) (STRUCT., 03)
19570	KONG YUN KEONG	BE (HONS) (SURVEY) (CIVIL, 97)
19918	ROZIMAN BIN HAJON	BE (HONS) (UPM) (CIVIL, 00)
20694	TANG CHOON HAI	BE (HONS) (UM) (CIVIL, 98)
10828	THEVATHAS RAJAGOPAL	BSc (SOUTH DAKOTA STATE) (CIVIL, 87)
9223	YEAP TEONG AIK	BSc (HONS) (UNI. OF LONDON – KING'S COLLEGE) (CIVIL, 82)
23270	YEE THERN LIM	BSc (KENTUCKY) (CIVIL, 02)
22429	YUGABALAN KOOTHAYAN	BE (HONS) (USM) (CIVIL, 01) ME (UTM) (STRUCT., 06)
	ELECTRICAL ENGINEERING	
24092	ANG KEAN KUN	BE (HONS) (UTM) (ELECT., 03)
	MECHANICAL ENGINEERING	
19771	KHOO BOO HON	BE (HONS) (UPM) (MECH., 02)
26412	MOHAMAD FAHMI BIN MAMAT @ MOHAMAD	BE (HONS) (UTM) (MECH., 02)

NEW APPLICANTS

Name	Qualifications
CIVIL ENGINEERING	
AMRULLAH BIN KAMAL @ AMBRULLAH	BSc (UNI. OF LONDON – QUEEN MARY COLLEGE) (CIVIL, 83)
RAMLEE BIN KATCHI MYDIN	BE (HONS) (SUNDERLAND) (CIVIL, 92)
MECHANICAL ENGINEERING	
DR MOHAMMED RAFIQ BIN DATO' ABDUL KADIR	ME (HONS) (UNI. OF LONDON - IMPERIAL COLL. OF SC. TECH & MEDICINE) (MECH., 99) PhD (UNI. OF LONDON - IMPERIAL COLL OF SC., TECH & MEDICINE, LONDON) (MECH., 05)
FADELI BIN ABDULLAH	BE (NAGAOKA UNI) (MECH., 98)
OH SEONG POR	BSc (HANYANG) (MECH., 91) ME (UKM) (MNFG. SYST., 00)

NOTICE

HIGHWAY CAPACITY MANUAL MALAYSIA

Bahagian Perancang Jalan, Kementerian Kerja Raya dengan Kerjasama Pusat Pengajian Kejuruteraan Awam, Universiti Sains Malaysia telah berjaya menghasilkan "Highway Capacity Manual Malaysia." Untuk makluman tuan, Manual Kapasiti Jalan ini merupakan manual pertama yang dihasilkan berasaskan kepada parameter dan persekitaran tempatan. Oleh itu ianya penting sebagai panduan serta rujukan kepada perancang-perancang Jalan di Malaysia. Manual ini sekarang sedang dijual dengan kadar harga RM 280.00 senaskah di alamat seperti berikut: -

Cawangan Pengurusan dan Perolehan Harta
Bahagian Kewangan, Tingkat Bawah, Blok A
Kompleks Kerja Raya, Jalan Sultan Salahuddin
50580 Kuala Lumpur
Tel: 03-2771 1100
Fax: 03-2711 3975

IEM DIARY OF EVENTS 2007

For further enquiries on the events below, please contact IEM Secretariat at 03-7968 4001/2 or visit IEM Homepage at http://www.iem.org.my

Oil, Gas and Mining Technical Division
12 - 13 FEBRUARY 2007
Time: 8.00 a.m. - 5.00 p.m.
2 Days Course on Maintenance Management: An Overview
Venue: Ilsas, Bangi

Standing Committee on Professional Practice
2 MARCH 2007
Time: 5.30 p.m. - 7.30 p.m.
Talk on "Certificate of Completion and Compliance: Its Impact on Engineers"
Speaker: Engr. TL Chen
Venue: 2nd Floor, IEM Conference Hall

IEM, PAM, MIArb
10, 17 & 31 MARCH 2007
Arbitration Award Writing Course and Examination

Project Management Technical Division
27 - 28 MARCH 2007
Time: 9.00 a.m. - 5.00 p.m.
"Essentials of Project Management – Theory and Practice Including Microsoft Project Tool"
Venue: IEM Seminar Room 2, Second Floor

SEAGS & IEM
8 - 11 MAY 2007
16th Southeast Asian Geotechnical Conference (16SEAGC)
Venue : Sheraton Subang Hotel & Towers, Subang

IEM Penang Branch
5 - 9 AUGUST 2007
World Engineering Congress 2007 (WEC 2007) – "Frontiers of Engineering: Global Challenges and Issues"
Venue : Penang, Malaysia
(Call for Papers – by 15 May 2007)

CONFERENCE & SEMINAR

Tunisia
6 - 8 June 2007
GLOBAL COLLOQUIUM FOR WOMEN ON ENGINEERING AND TECHNOLOGY: GLOBAL EFFORTS FOR LOCAL EMPOWERMENT
Venue : Tunis, Tunisia
Organiser : WFEO/FMOI
Fax : +1 312 596 5252 / +216 71 282 071
E-mail : wfeo@planet.tn
Website : www.wfeo.org/women/index.html
(Call for Papers)

CALL FOR NOMINATIONS

IEM Award for Contribution to the Engineering Profession in Malaysia 2008

To encourage interest in engineering and to recognise services or contributions to engineering in Malaysia, the IEM Award for Contribution to Engineering in Malaysia is to be presented to the person(s), who has

- contributed to the advancement of engineering in Malaysia, or
- designed and/or constructed an original engineering device or system of merit and immediate applicability to industry

The award is open to all Malaysian citizens and permanent residents.

NOMINATIONS

- Nominations will be invited annually. **The closing date for receipt of nominations for award for year 2008 is October 2007**.
- Nominations shall be made through a member of the Institution. Each member is restricted to one nomination per year.
- Each nomination shall be accompanied by a brief write-up of the services rendered or contributions made or system designed and/or constructed together with relevant photographs for publicity purposes.

AWARD

- Award is to be made by the Council upon recommendation by the IEM Awards Committee
- The Award shall comprise an appropriate metal plaque, a scroll and a sum of RM1,000 and shall be presented with due ceremony.

Hon. Secretary, The Institution of Engineers, Malaysia, Bangunan Ingenieur, Lots 60/62, Jalan 52/4, P.O. BOX 223, (Jalan Sultan), 46720 Petaling Jaya.

IEM Outstanding Engineering Achievement Award 2008

The IEM Outstanding Engineering Achievement Award is created to confer recognition to outstanding engineering achievements within Malaysia. The award will be given to an organisation or body responsible for an outstanding engineering project in the country.

The basis for the award shall be an engineering achievement that demonstrates outstanding engineering skills which has made a significant contribution to the engineering progress and the quality of life in Malaysia. In making the selection, the following criteria will be given special consideration.

Contribution to the well-being of people and communities; resource-fulness in planning and in the solution of design problems; pioneering in use of materials and methods; innovations in planning, design and construction; unusual aspects and aesthetic values.

Engineering achievements which include, inter-alia, the following can be submitted for consideration:

- Bridges, Tunnels, Waterways Structures, Roads.
- Telecommunications of national/international character, Power Transmission and Transportation.
- Dams and Power Stations.
- Ports and Harbours.
- Building and Structures.
- Airports.
- Water Supply, Waste Disposal Projects.
- Military projects, such as bases, launching units, harbour facilities.
- Drainage, Irrigation and Flood Control Projects.
- Local design and manufacture of high technology products.
- Energy, Heat, Mass Transfer.
- Outstanding work in engineering research and development.
- Chemical processing of indigenous raw resources such as rubber, palm oil and various other local plants.
- Innovative use of local engineering materials.
- Outstanding contribution in engineering education.
- Original discovery of useful engineering theory.

Nominations are invited from all members of the Institution. Each nomination submitted should contain a brief summary/write-up of the project in approximately 1,000 to 2,000 words together with full relevant reports on the project and three copies of supporting documentation including photographs. A project or component part thereof which has received an earlier award, either from IEM or other institutions does not qualify for nomination.

The closing date for receipt of nominations for the 2008 Award is October 2007. Please submit nomination to:

Hon. Secretary, The Institution of Engineers, Malaysia, Bangunan Ingenieur, Lots 60/62, Jalan 52/4, P.O. BOX 223, (Jalan Sultan), 46720 Petaling Jaya.

CONGRATULATIONS

The Board and Management of the Institution would like to congratulate

Y. Bhg. Dato' Engr. Steve Chong Yoon On, F.I.E.M., P.Eng.
(Immediate Past Chairman, IEM Southern Branch)

on being conferred

Darjah Indera Mahkota Pahang (D.I.M.P.)

which carries the title "Dato"

by

His Royal Highness

The Sultan of Negeri Pahang Darul Makmur,
Sultan Haji Ahmad Shah Al-Musta'in Billah Ibni Al-Marhum Sultan Abu Bakar Ri'ayatuddin Al-Mu'adzam Shah

in conjunction with

HIS ROYAL HIGHNESS

SULTAN AHMAD SHAH'S
76th Birthday at the Istana Abu Bakar in Pekan, Pahang

CONGRATULATIONS

The Board and Management of the Institution and Project Management Technical Division would like to congratulate

Y. Bhg. Laksamana Pertama Dato' Engr. Hj. Ahmad Murad bin Hj. Omar, F.I.E.M., P.Eng.
(Committee Member, Project Management Technical Division)

on being conferred

Darjah Paduka Mahkota Selangor (D.P.M.S.)

which carries the title "Dato"

by

His Royal Highness

The Sultan of Negeri Selangor Darul Ehsan,
DYMM Sultan Sharafuddin Idris Shah Al-Haj Iobni Al-Marhum Sultan Salahuddin Abdul Aziz Shah Al-Haj

in conjunction with

HIS ROYAL HIGHNESS

SULTAN SHARAFUDDIN IDRIS SHAH'S
61st Birthday at the Istana Alam Shah, Klang, Selangor

on

11 December 2006 (Monday)

NOTICE

Use of SYABAS Approved Products and Materials in the Water Supply System to be Handed Over to SYABAS

Since the commencement of SYABAS' operation and management of the distribution system in the State of Selangor and the Federal Territories of Kuala Lumpur and Putrajaya on 1 January 2007, SYABAS continued and improved on the efforts made by PUAS Berhad in the standardisation and specification of material and products used in the water supply distribution system handed over to SYABAS. By doing so, the benefits of a vastly improved distribution system resulting in high quality water supply will benefit all the consumers in the State of Selangor and the Federal Territories of Kuala Lumpur and Putrajaya.

To ensure that the information of SYABAS approved products and materials are used in the water supply system handed over to SYABAS, we have published the list in our website *www.syabas.com.my*. The list is continually updated to keep the industry abreast with the latest development. Alternatively, the members can visit SYABAS' Planning and Design Division at the following address to obtain a hard copy for a small fee. As failure to use only approved products and materials in water system to be handed over to us **WILL NOT BE APPROVED OR ACCEPTED**.

Syarikat Bekalan Air Selangor Sdn Bhd
Planning and Design Division
9th Floor, Wisma Pantai, Plaza Pantai,
No.5, Jalan 4/83A, Off Jalan Pantai Baru
59200 Kuala Lumpur

CONDOLENCE

With deep sadness, we announce the demise of Engr. Kulasingam s/o Appiah (M00926) and wish to extend our condolences to their families. The Institution would like to thank him for their past support and contribution.

ANNOUNCEMENT

CALL FOR DONATION TO FLOOD VICTIMS

IEM (Southern Branch) has recently donated RM4,000 to the New Straits Times Press's Flood Victim Assistance Fund which will be channeled to the National Disaster Relief Fund.

IEM (Southern Branch) is also currently indentifying all IEM members in Johor who have been affected by the recent floods. Members who have been severely affected are kindly requested to contact the Southern Branch office. Similarly, if you know of any IEM member who has been affected by the floods, please let us know the detailed information.

IEM (Southern Branch) also welcomes any donation from members to help the flood victims. Please contact the branch office for details.

Thank you.

IEM (Southern Branch)
Tel: 07-331 9705
Fax: 07-331 9710
E-mail: iemsouthern@gmail.com

NEW BOOKS DONATED IN THE IEM LIBRARY

DONATED BY C & S TD

PRECAST CONCRETE STRUCTURES
KIM S. ELLIOTT / BUTTERWORTH HEINEMANN
693.5 / 004664

Precast Concrete Structures introduce the subject in detail looking at the design process, manufacture and construction using precast concrete for multi storey buildings. Detailed structural analysis of the material and its use is provided. The theory is supported by practical case studies and worked examples. There are explanatory illustrations throughout.

DONATED BY PROJECT MANAGEMENT

MICROSOFT OFICE PROJECT 2003 STEP BY STEP
CARL CHATFIELD / MICROSOFT PRESS
681.324 / 004656

The Smart way to learn Microsoft Office Project 2003 – one step at a time.

- Learn how to develop and present your project plan
- Master the tools for managing schedules and resources effectively
- Identify critical paths and manage multiple dependencies
- Track progress and costs-and make real-time adjustments
- Work better together-coodinating projects online with Microsoft Office Project Server 2003
- Plus, sharpen you project management skills with the quick course in the Appendix

THE PROJECT MANAGEMENT TOOL KIT – 100 TIPS AND TECHNIQUES FOR GETTING THE JOB DONE RIGHT
TOM KENDRICK / AMACOM
658.4 / 004663

This book collects the best known project management techniques in an easy-to-apply, accessible format. The book presents easy-to-understand summaries of every indispensable practice, showing you step-by-step how to handle important considerations like:

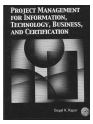
Cost estimating and budgeting / Communications and technology / goals for individuals and project teams / negotiation and decision making / establishing and retaining management support / implementing change and process improvement / quality assurance and control / risk assessment and management / scheduling and time management

PROJECT MANAGEMENT TOOLBOX : TOOLS AND TECHNIQUES FOR THE PRACTICING PROJECT MANAGER
DRAGAN Z. MILOSERVIC / WILEY
658.4 / 004660

It provides more than fifty tools and techniques that ensure a seamless performance of orderly project activities resulting in fast, repeatable, high-quality products in any industry. Based on the industry-standard Project Management Institute's Body of Knowledge, this instant-access guide provides the tools, skill sets, expert advice, and step-by-step guidance to : -

- plan project realistically to accomplish business goals and strategies
- control project scope, schedule, cost, and quality
- built effective teams and respond to risk
- select and customize a PM toolbox by project size or type
- Align the PM toolbox wit corporate strategy

PROJECT MANAGEMENT FOR INFORMATION, TECHNOLOGY, BUSINESS AND CERTIFICATION
GOPAL K. KAPUR / PEARSON
658.4 / 004659



This book provides you with proven project management processes, broadly tested techniques, and solid approaches to successfully manage projects of varying sizes and complexity. IT and business students will find this text useful in educating them on the important role disciplined project management plays in transforming corporate strategy into reality.

PROJECT RISK MANAGEMENT :
PROCESSES, TECHNIQUES AND INSIGHTS – 2 ND EDITION
CHRIS CHAPMAN & STEPHEN WARD / WILEY
658.4 / 004658

This second edition of this seminal work is a tour de force – a comprehensive, lucid and highly readable guide to one of the thorniest aspects of managing projects. Their book is a combination of leading edge scholarship coupled with strong, practical advice for project managers.

AGILE PROJECT MANAGEMENT :
HOW TO SUCCEED IN THE FACE OF CHANGING PROJECT REQUIREMENTS
GARY CHIN /AMACOM
658.4 / 004661

Agile Project Management gives you the practical strategies you need to take charge of crucial but unpredictable projects. This timely book improves on classical project management methodology by tying project processes more directly to the ever-changing requirements of business objectives. A stronger connection between project tasks and the bigger picture allows for the faster response time and flexibility necessary to accommodate altered priorities and changed business realities like shortened schedules and tighter budgets.

THE PROJECT MANAGEMENT : QUESTION AND ANSWER BOOK
MICHAEL W NEWELL & MARINA N. GRASHINA / AMACOM
658.4 / 00 4662

The Project Management Question and Answer Book is a obe-stop reference that both beginning and experienced project managers will use in countless on-the-job situations. Providing the answers to critical questions, from the simplest to the most advanced, the book is arranged to get you the information you need the moment you need it. You'll find helpful explanations of crucial project management issues, including :

- why PM is useful to you and your organisation
- how to interact with project stakeholders to maximise productivity
- how to establish realistic costs, schedules and scope baselines
- what management techniques can be used to motivate teams
- what methods you can use for evaluating project team performance

DONATED BY OIL, GAS AND MINING TECHNICAL DIVISION

INTRODUCTION TO THE TECHNOLOGY OF EXPLOSIVES
PAUL W. COOPER & STANLEY R. KUROWSKI / WILEY-VCH
662.2 / 004665

The book is intended to provide the worker new to the field with sufficient background to understand problems that may arise and to interact intelligently with specialists in the field. The book covers the fundamentals of the chemistry of explosives; he mechanics of burning; sound; shock, and detonation; initiation and initiators; scaling in design and analysis; and off-the-shelf explosive devices. It provides the basic calculational skills needed to solve simple, first-order engineering design problems, and emphasizes the crucial importance of safety considerations. The book contains a broad range of data on explosive materials, and their properties and behavior, along with extensive lists of useful references. Example problems with solutions are provided in each technical area, as are descriptions and analysis of a wide variety of explosives devices. The book concludes with a through and comprehensive description of regulatory requirements for the classification, transportation, and storage of explosives, and an extensive guide to explosives safety in plant and test facilities. This book will be of interest to explosives technicians and engineers, government regulators, crime and accident scene investigators, and instructors in military, police, and FBI bomb schools.

Note: IEM Library is open from 9.00 a.m. to 6.00 p.m. (Mon - Fri)
9.00 a.m. to 4.00 p.m. (Every Saturday)

ANNOUNCEMENT

PRO ETI BUREAU - TO PREPARE EXPORT READINESS AMONG IEM MEMBERS

After two rounds of MITI dialogues in 2005 and 2006, the IEM (by way of our positive memorandum) has been recognised by MITI as the Malaysian Engineering, Technology and Innovation i.e. ETI Stakeholders' organisation that can harness the collective expertise and experience that first went into the development, and more importantly, providing the on-going assets O&M plus R&D management of Brand Malaysia infrastructure, utilities, facilities and other public and private assets.

The IEM pro-ETI Bureau has been established by both Excomm and Council decisions to prepare export readiness among IEM members. The IEM support the Third Industrial Master Plan (2006-2020) - i.e. the IMP3 which *"serves as an important planning instrument in expanding the sources of growth and positioning Malaysia's long-term industrial competitiveness. Apart from the manufacturing sector, the non-Government services sector will be targeted for greater development"*. "We intend to be part of the national solution; we will "facilitate and not frustrate" our members' efforts.

Further, we wish to facilitate purpose specific clustering of our members' enterprises to tap into the 9MP's Services Export Fund which has been reported to have a budget of RM150 million.

Pro ETI Bureau is open to all IEM members for those interested to be in the loop for export rediness, kindly get in touch with the chairmanEngr. Rocky H.T. Wong via secretariate staff Puan Abriza at 03-796 84001 / 2.

Professional Interview Essay

By: Engr. Terence Leong Hian Yoong, Grad. IEM

Question 2:
You are given a job to link a new project site to cross an existing highway. Discuss the constraints and all important considerations to arrive at an optimum design taking into consideration also the construction implementation stages.

Engineers often are regarded as the builders of a nation. Even more so when it comes to Civil Engineering. Many countries around the world have brighter and better socio economy due to advancement in technologies in construction. For instance, in our very own mother land, construction has brought together closer ties among states (i.e. Penang) and nations (i.e. Malaysia - Singapore).

Bridges play a very significant role in development. For a particular project where development is deemed necessary to cross over existing highways, the selection of a particular type of bridge structure is of paramount importance. The most obvious constraint is the disruption to traffic flow. A construction must never interfere with the routine lives of the pedestrians / motorists. Hindrance to the public is often regarded as a failure of the engineering profession.

The other constraint that might arise due to bridging over existing highway is the available land on site. For the instance of the superstructure, whether or not to use precast or cast in-situ highly depends on this situation. For precast construction, the main structure of the bridge (i.e. the bridge deck) can be precast in a factory located a distance away from the site. It is then transported to site in segments to be hoisted into position. For cast in-situ methods, a vast area of land is required on site to erect the temporary scaffolds / formwork.

As for the foundations, the selection from the variety of substructure system is crucial. Normally in a conventional bridge, bored piles or driven piles are the best option. However, this is true when space is plentiful. For the case of crossing an existing highway, it has to be determined that the median is sufficient for the machines to work in.

For the determination of the type of bridge system to be constructed, the width of the existing highway has to be taken into consideration also. Whether or not to cross the highway with a single span, or with a column planted into the median of the highway has to be carefully thought of. Of course, while taking into consideration of these, cost will indefinitely be the obvious basis of determination. This is because to span a single bridge over an existing highway would mean beefing up the reinforcements or prestress of the bridge. However, it is very seldom that a single span bridge structure can extend over a highway. Headroom clearance is of another significant factor. For most cases, a headroom of at least 5.0m is required for loaded vehicles to pass underneath. Hence, the entire bridge will either be elevated higher (which then increases the cost of construction), or a thinner beam / deck be selected as the optimum design.

Should aesthetics be significant, it is recommended that a segmental box girder be the obvious choice. This is true if the bridge structure consists of a visible curvature. Also, should the median be of limited space, hand-dug caissons could prove to be the best option. This is because hand-dug caissons involve minimal machineries. Furthermore, hand-dug caissons are regarded by most professionals as equivalent or better than bored piles. This is true due to the fact that the contribution of the base resistance in the design can be increased compared to bored piles. The involvement of humans to do the excavation is more reliable when it comes to identifying and confirming the types of soil underneath.

For the sake of discussion, two systems of foundation, i.e. bored piles and hand-dug caissons will be discussed. Also, two systems of bridge superstructures will be considered, i.e. precast beams and segmental box girder.

In bored piles, it is the norm that at least one (1) lane be closed to traffic on either side of the road. In most cases, the closed lane will be the outer most, fast lane. Without a doubt, this increases the risk to road users. Proper sign boards and temporary road markings should be provided to warn road users of the lane closure. Temporary beacons or lightings should also be provided at night to steer traffic away from the closed lanes. The operation of the bored piling machine will then be constrained to within the median of the highway, with limited maneuvering space. Skilled / experienced personnel would be required to operate the machine.

In hand-dug caissons, the only machinery required is the air ventilator and temporary genset to power up the excavation tools and the air ventilator. An A-frame is erected over the proposed pile location for hoisting purposes. This reduces the space required significantly. The only set-back would be the temporary closure of lanes for transporting of soil away from the excavation. However, this activity can be reduced to a minimal of perhaps 2 to 3 hours daily as compared to the total lane closure for the bored piling machine. Also, in hand-dug caissons, no temporary steel casing is required. The hole is reinforced with workers excavating on average of 1.0m depths and concreting the perimeter of the hole with BRC in placed. The rings act as a temporary protection, while it is also considered to be able to provide skin friction for the completed caisson pile. However, necessary risk has to be considered due to the fact that live

traffic is traversing directly beside the excavation works. Collapse of soil material has to be anticipated with proper temporary protection be provided when necessary.

Under normal circumstances, a pile group can be reduced to just a single large diameter hand-dug caisson. This however reduces the stiffness of the foundation, and hence the design of the superstructure has to incorporate the reduction of the stiffness of the pile. For the case of a monolithically joined superstructure with the columns, a lesser stiffness of the foundation is usually preferred. This is due to the controlled allowable movement / sway of the structure during expansion and contraction.

In the instance of the superstructure selection, the width of the existing highway determines the depth of the structure. For a norm, a span / depth ratio of 18 is adopted. This means that for a span of 18m, the depth of the structure would be in the region of 1.0m deep. It is a rule of thumb to determine the thickness of the beam. For the case of a precast beam, the amount of tendons introduced into the beam would be limited by the thickness of the beam, hence more beams would have to be provided to cross the highways. Also, not forgetting the need to construct the slab of the beam, proper temporary falsework may be required to temporarily hold the formwork in place from above the slab. This might cause hindrance to the construction.

In the state of the art segmental box girder construction, a typical box girder of predetermined depth (again using the rule of thumb span / depth ratio of 18) is precast in a factory. Upon completion of the columns, the individual segments are transported to site and hoisted into position one by one. It is relevantly a simple construction concept, with minimal site activities. However, the preparation of each segment by its own requires proper analysis and consideration. This is because the prestress tendons introduced into the segments will indefinitely clash with the reinforcements. Also, the alignment of the structure is crucial during precasting in the factory. Any misalignment has to be corrected in the subsequent segments. Careful surveying techniques and complicated calculations are required to ensure that after hoisting the segments into place, the bridge will be in its required alignment.

As far as the implementation of the entire project, a segmental box girder will prevail as the most time saving technique. This is because after hoisting the segments into position, the bridge deck is already in place. This is not so for a conventional precast beam, where the slab has to be cast after all beams are in proper position.

However, the construction of the segmental box girder may increase the cost of construction significantly as compared to the precast beams. This is because the moulds for the box girders will always require modification. This is mainly due to the fact of the required depth of the segment. Also, proper skilled professionals are required to prepare each segment in the casting yard. ■

REPORT

Geotechnical Engineering Technical Division

Report on "IEM/REAM Workshop on Specifications for Geotechnical Works"

By : Engr. Neoh Cheng Aik, *F.I.E.M., P.Eng.*

A 1-day workshop about Works Specifications for Geotechnical Works was jointly organised by IEM and REAM (Road Engineering Association Malaysia) on 1 December 2005 in Subang Sheraton Hotel. The Workshop was officiated by Deputy Director-General 3 of PWD Malaysia cum Deputy President of REAM, Y Bhg Dato' Engr. Hj. Mohamad Razali bin Othman, who was accompanied by IEM President Datuk Engr. Prof. Dr Ow Chee Sheng and IEM Geotechnical Technical Division Chairman Engr. Tan Yean Chin during the opening ceremony. The workshop was attended by more than 260 participants, including wide spectrum of engineers and geologists from government departments, local authorities, universities, private consultant and construction firms, etc. Six speakers were invited to present the basis and various aspects of the geotechnical works specifications presented:

1. Piling by Ir. Engr. Dr Gue SS, Engr. Liew SS and Engr. Dr. Ooi LH
2. Soil Nailing and Guniting by Engr. Neoh CA
3. Hydroseeding by Engr. Tan ST and Engr. Neoh CA
4. Reinforced Earth Structures by Engr. Dr. Lee CH

The seminar was a success with active participation from the audience.

P.S. As Y. Bhg. Dato' Engr. Hj. Mohamad Razali bin Othman's opening speech is very enlightening and containing several important geotechnical design criteria / policy, there was a request to have the speech published separately, for the benefit of IEM members.

Opening Speech by Y. B. Dato' Engr. Hj. Mohamad Razali bin Othman at the IEM/REAM Workshop on Specification for Geotechnical Works

Good morning, ladies and gentlemen.

It is a great pleasure for me to be invited by the Organising Committee to give an opening address and to officiate this IEM-REAM workshop on Specification on Geotechnical Works.

Ladies and gentlemen, as has been stated in the IEM flyer, the main purposes of this workshop are:

1. *To introduce new standard works specifications for geotechnical works with standardised QC/QA requirements to ensure targeted design objectives are practically achieved.*
2. *To stimulate awareness amongst practicing engineers about details and good engineering practice and also to seek their feedback to improve the practice through practical works specification*

Ladies and gentlemen, as many like to say geotechnical design is a science as much as an art. This is because most of the geotechnical design such as piling, soil nailing or guniting, though is based on scientific principles, is always involved with a lot of variable parameters, rule of thumbs, empiricism, engineering judgment, etc. In fact, Prof. J. B. Burland of Imperial College, UK in his Nash lecture (1987), has rightly remarked that IT IS BOTH ARROGANT & DANGEROUS to believe that ground engineering can be carried out solely on the basis of numbers (theoretical calculations) given from SI coupled with code of practice. It is necessary to study case histories, learn about local experience, examine the soil and visit the site. Hence, to ensure geotechnical works will really perform and work, it is necessary that the geotechnical work is constructed according to good works specification, based on past local experience or past similar case histories plus necessary testing to verify the design parameters. In this respect, good geotechnical works specification plays a critical role to ensure success of geotechnical works. In brief, good works specification shall not only spell out clearly the works requirements with particular reference to materials, construction methods and sequence, QC; but also with particular emphasis on environment-friendly aspects, cost-effectiveness and practicality.

Ladies and gentlemen, as most of you may be aware, performance of geotechnical works such as piling, soil nailing, guniting, RE wall and hydroseeding depends very much on how they are executed at site in accordance with the specification and not just the design calculation and drawing. In fact, calculation alone in geotechnical engineering is not everything until and unless it is verified by testing. Also, testing is not everything unless it can be proven statistically that the test result is really representative for the untested ones. Hence, effective and quality supervision to ensure compliance of specification with particular reference to QC/QA requirements is also very important. In this respect, QC/QA requirements such as types and frequency of test or measurement or observation plus their respective acceptance criteria shall always be lucidly specified in the works specification.

Based on the workshop program given, geotechnical specifications that have been completed by REAM TC 5 (Geotechnics) and ready to be discussed today are piling, soil nailing, guniting, hydroseeding and RE wall construction works. The existing piling specification in JKR Standard Specification for Road Works published in 1988 will be discussed and updated with extensive deliberations on bored piling, micropiling and testing based on latest developments and research findings. Specific requirements of good engineering practice for soil nailing, guniting and hydroseeding will also be presented with good and bad practice at site. Basis of to this and to do that as specified in the works specifications will be explained with particular emphasis on QC/QA requirements. Minimum requirements for facing panels, reinforcement, backfill and performance of Reinforced Earth Wall construction will also be presented with detail justifications. Participants are strongly encouraged to participate actively in the workshop to share, to exchange and to contribute their valuable knowledge, experience to ensure success for this workshop.

Ladies and gentlemen, as all of you may be aware, all projects implemented by Government through JKR always place high emphasis on environment consideration. Piling works shall be implemented by environment-friendly methods such as bored piling, micropiling, jacked piling or piling by hydraulic hammers, etc., to reduce ground vibration, noise and air pollution. Gunited slope finishes shall be minimised or replaced by hydroseeding on HDPE geocell plus underlain membrane if infiltration is critical or other suitable and cost-effective methods. If gunited slope is really necessary due to very steep slope conditions or other technical reasons, inclusion of some creepers or plants to enhance green impact and to ensure some pleasing visual green impact to road users shall be considered.

The draft specifications for geotechnical works are prepared by REAM TC 5 (Geotechnics) based on many local engineers' experiences. Shared and exchanged formation, knowledge and practical experience from more than 260 participants today in this workshop will certainly make the specifications more practical and useful.

Akhir sekali, saya ingin mengambil kesempatan ini untuk mengucapkan tahniah kepada Ahli-ahli Jawatankuasa Penganjur, penceramah-penceramah dan lain-lain yang turut menyumbangkan tenaga mereka bagi menjayakan bengkel ini. ■

CALL FOR NOMINATIONS

IEM LADY ENGINEER AWARD 2007

The Lady Engineer's Sub-Committee under the auspices of the Welfare Committee is proud to invite nominations for the Lady Engineer Award 2007.

The primary objective of the Award is to recognise the contributions by lady engineers. This Award may also incidentally encourage interest in engineering among ladies and encourage them to strive towards greater excellence. The Award will be presented to the lady engineer who has shown outstanding ability and leadership qualities, or has been a pioneer in any one or more of the following areas:

- In the design and/or construction of an engineering device or system, structural system, planned development, environmental improvements or,
- In the research and development of engineering device, systems, processes and/ or materials, publication of paper or,
- In the teaching of engineering or,
- In the management of engineering projects,
- Entrepreneurship in the commercial sector.

In making the selection, the following criteria will be given special consideration:

- Contribution to the well-being of people and communities
- Resourcefulness in planning and in the solution of design problems
- Pioneering in use of materials and methods
- Innovations in planning, design and construction
- Unusual aspects and aesthetic values

The Award is opened to candidates who are:

- Registered members of the Board of Engineers, Malaysia,
- Malaysian citizens or permanent residents of Malaysia,
- Graduate or corporate members of The Institution of Engineers, Malaysia.

The closing date for nominations is October 2006. Please submit nomination to:

Chairperson
Sub-Committee on Ladies Engineers,
The Institution of Engineers,
Malaysia, Bangunan Ingenieur,
Lots 60/62, Jalan 52/4,
P.O. Box 223, Jalan Sultan
46720 Petaling Jaya, Selangor D. E.

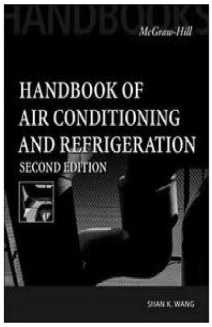
The Proposer may or not be a member of IEM or BEM, or an engineer. However, each nomination shall be supported by a brief recommendation from two Referees who are Graduate or Corporate member of IEM. If the Proposer is herself either a Corporate or Graduate member of IEM (or higher), then she may also act as one of the two required Referees.

Nomination forms can be downloaded from the IEM website. For further details, kindly contact En. Mizi at 03-7968 4001/2.

BOOK one

SELECTION OF THE MONTH

FOR IEM MEMBERS



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