Deep Foundations of Mega Structures

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Overview

Demand has recently been increased for safe design of foundations for large-scale structures as well as mega foundations for grand bridges and high-rise buildings in geotechnical engineering. To cope with the fast construction pace, several heavy deep foundation types have been widely adopted with some prescribed design rules. All this requires a conscious knowledge of pile-excavation interaction, corner problems, niche problems, pile-pile interaction problems and soldier pile-soil interaction problems, amongst others. This course brings together fundamental concepts, recent developments as well as some of the Korean experience in the use of large and deep foundations amidst increasing demand of infrastructures in India and other Asian countries. This course is a platform to present new tools used in the design and construction of these mega foundations. Design and construction of large and deep foundation are essential facets of the construction industry which link geotechnical related professions with structural engineers as well as professionals in other areas of construction. The Asian region has witnessed tremendous development of infrastructure projects including construction of mega urban buildings and structures. Recent developments have been spurred by the increasing demand for high capacity deep foundations and deeper basement and underground structures particularly in the congestive urban environment. The owners, engineers and contractors are paying more attention to economic design and efficient construction methods. The objective of this course is to familiarize engineers using finite element and numerical software with the analysis and design of large and deep foundations, with reference to the simplified calculation method for piled raft, so that users acquire a clear understanding of the strengths and weaknesses of these methods and use them in a knowledgeable and competent fashion. The topics to be covered include:

- Equivalent raft, equivalent pier and PDR methods of piled raft with design and application
- Plasticity and elasto-plastic analysis using FEM, FDM and BEM
- Use of advanced soil models such as work-hardening plasticity and cap models and their advantages over Mohr-Coulomb
- The stiffness issue: non-linear stiffness and what modulus to use
- Comparison of design and analysis of pile foundation with commercial codes
- Current approaches to modelling large and deep foundations in South Korea

This course is being conducted as part of Continuing Education Programme (CEP), IIT Bombay (www.cep.iitb.ac.in).

Course Dates	**August 27 to September 01, 2018**
Host Institute	**IIT Bombay**
No. of Participants	**50 (maximum)**
You Should Attend If…	▪ You are a geotechnical engineer or research scientist interested in geotechnical analysis of critical structures including foundations of high-rise buildings. ▪ This course is intended for graduate students and Civil Engineering professionals who are pursuing specialties in either geotechnical engineering or structural engineering. The research scientists and engineers will have interest in geotechnical analysis of critical structures including foundations of high-rise buildings. The course deals with a class of problems in which the behaviour of both principal parts of the system (the geo-material and the structural foundation) must be considered. Several special soil-structure interaction problems will be analysed in depth. ▪ You are a student or faculty from academic institution interested in pursuing research on soil behaviour and its modelling.
Course Registration Fees	The participation fees # for taking the course is as follows: Student Participants: Rs. 3,500/- Faculty Participants: Rs. 12,500/- Government Organisations: Rs. 17,500/- Industry Participants: Rs. 22,500/- The above fee is towards participation in the course, course material, computer use for tutorials and assignments, and laboratory equipment usage charges. Mode of payment: Demand draft in favour of "Registrar, IIT Bombay" payable at Mumbai. # GST extra.
Accommodation	The participants will be provided with hostel accommodation on payment basis. Request for hostel accommodation may please be submitted at the time of registration.

The Faculty

Prof. Sangseom Jeong….

Dr. Sangseom Jeong was born in 1960 at Daejeon, Korea. He obtained his Master degree at University of California and PhD at Texas A&M University in 1992. He is currently a professor of Yonsei University, Vice-Chair of TC212 (Deep foundations) in ISSMGE, Chair of Asian TC-18 (Mega Foundations), Director of GIT4CC (Green Infrastructure Technology for Climate Change) Centre. The main field of expertise is mega foundation of long span bridges and high-rise buildings, LRFD, pile foundation, deep excavation, landslides, debris-flow and slope stability. Prof. Jeong is a passionate researcher of pile, drilled shafts deep foundation, landslide assessment and innovative engineer with proven leadership in management of a wide variety of deep foundation projects. He has authored or co-authored authored about 70 SCI articles in major reputable international journals, 130 national journals, 75 international conference papers, and he has delivered numerous invited lectures in many international conferences. In addition, he has maintained active links with industry and has published 80 technical consulting reports and 40 patents in deep and shallow foundations, excavation and landslide.

Prof. Satyanarayana Murty Dasaka….

Dr. Satyanarayana Murty Dasaka is Associate Professor at the Department of Civil Engineering, IIT Bombay. He obtained his M.Tech. from IIT Madras, and Ph.D. from Indian Institute of Science, Bangalore. Before joining IIT Bombay, he worked with the Hong Kong University of Science and Technology for his Post-Doctoral research during 2006-2007. He has developed Advanced Geotechnical Engineering Laboratory at IIT Bombay. His current research interests are: Reduction of earth pressure on retaining walls, Deep excavation supporting system, Rock-socked Pile foundations, Negative Skin Friction on Piles and geotechnical uncertainty and Risk Assessment. He has so far guided 4 Ph.D. students and several M.Tech. students. He has filed two patent applications with the Indian Patent Office. He bagged two best paper awards from the Indian Geotechnical Society for his research work. He has received research grants from IIT Bombay, Department of Science and Technology, and Ministry of Earth Sciences, Govt. of India.

Prof. Ashish Juneja….

Dr. Ashish Juneja is Professor at Indian Institute of Technology Bombay. He earned his doctorate from NUS, Singapore (2002), Master degree from IIT Delhi (1996) and Bachelor degree from University of Roorkee 1993 (now IIT Roorkee). Dr. Juneja worked intermittently in the industry for over 6 years in India and the UK, before returning to the academia in 2005. His research interests are in dynamic soil behaviour, numerical and physical modelling of underground structures and ground improvement works. He has published over 40 journal and conference publications and two book chapters. He has received research grant from DST, MoES, DRDO, Railways and a number of private organisations. He also serves as a consultant to Konkan Railways, Tehri Hydro Development Corporation, Samsung Engineering, Jan De Nul and John Deer. He is also a Reviewer for many International Journals. Dr. Juneja's teaching performance has consistently been evaluated as one of the best. Some of his popular courses have been transmitted live through ISRO's satellite to remote centres and other engineering colleges across India.

Course Co-ordinator

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R E G I S T R A T I O N F O R M

GIAN COURSE ON:

DEEP FOUNDATIONS OF MEGA STRUCTURES

August 27 to September 01, 2018

Your GIAN Registration/ Reference No.: _____

NAME (BLOCK LETTERS): _____ Gender: M / F _____

POSITION/ DESIGNATION: _____

ORGANISATION: _____

MAILING ADDRESS: _____

_____

TELEPHONE: _____ (LANDLINE) _____ (MOBILE)

EMAIL: _____

QUALIFICATION: _____ EXPERIENCE: _____ YEARS

PAYMENT DETAILS (TICK ONE OF THE FOLLOWING):

☐ PAYMENT AT THE PORTAL https://portal.iitb.ac.in/ceqipapp

[*You will have to first create a login ID. Then look up for this course and fill the Registration Form. Once your form is approved by the Faculty Co-ordinator, you will be able to pay the registration fees]*

☐ DEMAND DRAFT IN FAVOUR OF "THE REGISTRAR, IIT BOMBAY-CEP ACCOUNT" PAYABLE AT MUMBAI IS ENCLOSED.

(DD NUMBER AND DATE _____)

ACCOMMODATION: YES/ NO _____ ☐ IIT HOSTEL ☐ GUEST HOUSE

APPROXIMATE CHARGES FOR ACCOMMODATION (PER DAY) (not included in registration fee)[#]: HOSTEL ₹ 500/- GUEST HOUSE ₹ 2000/- *[#] GST EXTRA*
(PLEASE NOTE THAT ACCOMMODATION IS VERY LIMITED IN IIT GUEST HOUSE. IN CASE OF UNAVAILABILITY, ALTERNATIVE GUEST HOUSE ACCOMMODATION WILL BE ARRANGED NEAR IIT).

PLEASE SCAN AND EMAIL THIS FORM TO ajuneja@iitb.ac.in. YOU MAY ALSO MAIL HARD COPY OF THIS FORM (VIA SPEED POST) TO: DR. ASHISH JUNEJA, PROFESSOR, DEPARTMENT OF CIVIL ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY BOMBAY, POWAI, MUMBAI 400 0076