SHORT COURSE AND WORKSHOP ON DESIGN OF MACHINE FOUNDATIONS

Marriott Hotel
110 – 9th Avenue S.E., Calgary, Alberta
May 25-26, 2009

Dr. M. Hesham El Naggar, P. Eng.
Geotechnical Research Centre, Faculty of Engineering
University of Western Ontario, London, Ontario, Canada N6A 5B9

INTRODUCTION

The short course and workshop should be of interest to geotechnical engineers and civil engineers who wish to have a better understanding of the current state-of-the-art with respect to the analysis and design of flexible, rigid and pile foundations subjected to all types of dynamic loads. All key concepts and terminology will be explained and emphasis will be placed on the practical application of the information provided.

DESCRIPTION

Soil dynamics is the branch of soil mechanics that deals with the behaviour of soil under dynamic loads. Different types of foundations are used to support structures subjected to dynamic loads or vibration producing machines. This course will focus on the analysis and design of these foundations. Topics to be discussed include:

1. Introduction
Design objectives, design procedure, basic notions, mathematical models, DOFs, types of dynamic loads, foundation types, excitation forces of machines, dynamic soil properties.

2. Shallow Foundations
Definition of stiffness, damping and inertia, circular shallow foundation, non-circular foundation, embedded footings, impedance functions of a layer on half-space.

3. Pile Foundations
Pile applications, mathematical models for pile analysis, stiffness and damping of piles, pile groups, interaction factors, impedance functions of pile groups, pile batter.

4. Dynamic Response of Machine Foundations
Response of rigid foundations in 1 DOF, effects of vibration, response of rigid foundations in 2 DOF and 6 DOF, response of structures on flexible foundations.

5. Dynamic Response of Hammer Foundations
Types of hammers and hammer foundations, design criteria, mathematical models, impact forces, response of one and two mass foundations, impact eccentricity.

6. Vibration Damage and Remedial Measures
Damage and disturbance, problem assessment and evaluation, remedial principles, examples from different industries, sources of error.

7. Computer Workshop – DYNA5
Types of foundations, types of soil models, types of load, types of analysis and types of output, practical considerations, computer work on DYNA5.

PROGRAMME

Day 1 (Monday, May 25)

8:30 - 9:30 a.m.	Basic notions, mathematical models, types of dynamic loads, types of foundations, excitation forces of machines, design objectives, design procedure.
9:30-9:45 a.m.	Break and Discussion
9:45-10:45 a.m	Site characterization and dynamic soil properties
10:45- 11:00 p.m.	Break and Discussion
11:00- 12:00 p.m.	Shallow Foundations: Stiffness and damping of circular and noncircular foundations, embedded footings, effect of inhomogeneity, impedance functions of a layer on half-space.
12:00-1:00 p.m.	Lunch
1:00- 2: 45 p.m.	Shallow Foundations: Effect of inhomogeneity, impedance functions of a shallow layer or layer on half-space, modelling.
2:45- 3:00 p.m.	Break and Discussion
3:00- 5:00 p.m.	Pile Foundations: Mathematical models for pile analysis, stiffness and damping of single piles, pile groups, interaction factors, impedance functions of pile groups.

Day 2 (Tuesday, May 26)

8:00- 10:00 a.m.	Dynamic Response of Machine Foundations: Response of rigid foundation in 1 DOF, 2 DOF and 6 DOF, Design checklist.
10:00- 10:15 a.m.	Break and Discussion.
10:15- 12:00 p.m.	Dynamic Response to Impact loads: Design criteria, mahematical models, impact forces, response of one mass foundation, response of two mass foundation.
12:00- 1:00 p.m.	Lunch
1:00- 2:00 p.m.	Vibration Damage and Remedial Measures: Problem assessment and evaluation, remedial principles, examples from different industries, sources of error.
2:00- 2:45 p.m.	DYNA5 Introduction: Types of foundations, types of soil models, types of load, types of analysis, and types of output, practical considerations.
2:45- 3:00 p.m.	Break and Discussion
3:00- 4:30 p.m.	DYNA5 Workshop: Computer work on DYNA5

SHORT COURSE AND WORKSHOP ON

DESIGN OF MACHINE FOUNDATIONS

Instructor: Prof. M. Hesham El Naggar, Ph.D., P. Eng.

Geotechnical Research Centre
Department of Civil and Environmental Engineering
The University of Western Ontario
London, Ontario N6A 5B9

Email: naggar@uwo.ca FAX: 519-661-3942 Tel: 519-661-4219

Friday and Saturday
Marriott Hotel
110 – 9th Avenue S.E.
403-266-7331

Calgary, Alberta

Early Registration Fee (till May 1, 2009): $750.00 plus GST (5%)
Registration Fee after May 1, 2009: $850.00 plus GST

This short course and workshop should be of interest to geotechnical engineers and civil engineers who wish to have a better understanding of the current state-of-the-art with respect to the analysis and design of flexible, rigid and pile foundations subjected to all types of dynamic loads. All key concepts and terminology will be explained and emphasis will be placed on the practical application of the information provided.

REGISTRATION FORM

SHORT COURSE AND WORKSHOP ON

DESIGN OF MACHINE FOUNDATIONS

May 25 – 26, 2009
Marriott Hotel
110 – 9th Avenue S.E.
Calgary, Alberta

Please print or type:

Your Name Mr. Ms. Dr.

_____ _____ _____ _____
First Name Middle Initial Last Name

_____ _____
Your Title

_____
Company

_____
Street Address

_____
City State/Province Zip/Postal Code

_____
Country

E-mail address:

_____
Fax Area Code Number

_____ _____
Phone Area Code Number

- ○ Payment enclosed (Cheque for $787.5)
- ○ Payment will be made on site (Cheque for $892.5)