APRIL 2013 MEETING

Wednesday, April 10, 2013 (1.5 PDH)

TECHNICAL PROGRAM

Forensic Evaluation and Condition Assessment of Geo Structures using Non-Destructive Testing

Speaker: Dr. Sahadat Hossain, P.E., is as Associate Professor of Civil Engineering Department at the University of Texas at Arlington, Arlington, TX 76019. Tel: 817-272-3577

Dr. Sahadat Hossain, P.E., is as Associate Professor of Civil Engineering Department at the University of Texas at Arlington. Dr. Hossain has completed his B.S. degree in Civil Engineering from the Indian Institute of Technology (IIT), Bombay, India, Master of Engineering in Geotechnical Engineering from Asian Institute of Technology (AIT), Bangkok, Thailand, and Ph.D. from North Carolina State University (NCSU) at Raleigh, NC, USA. He is a licensed professional engineer in Texas, Maryland and Ohio.

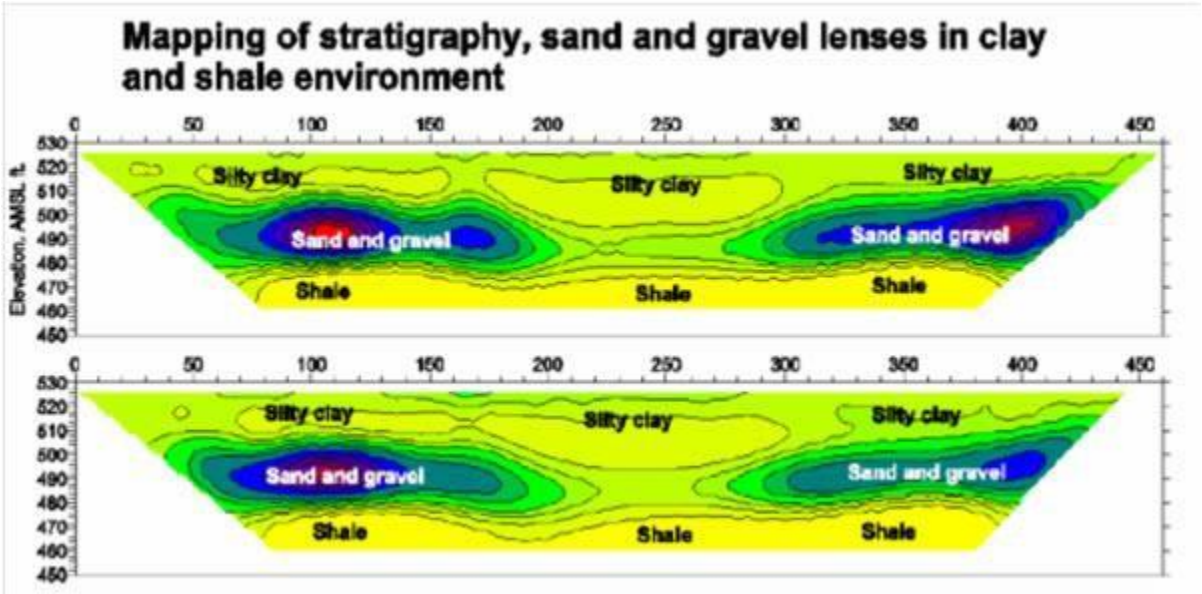
Dr. Hossain has more than 15 (fifteen) years of professional and research experience in geotechnical and geo-environmental engineering. He has been working on forensic investigations of failed slopes, MSE wall, levee and other geostructures for the last 10 (ten) years using resistivity imaging and non-destructive testing. Dr. Hossain has experience in the design, instrumentation, construction and performance monitoring of excavation support system design for building foundations, cut and cover tunnel for underpass, retaining walls, walls, and temporary and permanent excavation support system for transportation related projects. Dr. Hossain had worked on more than 80 (eighty) geotechnical and geo-environmental design and construction projects in Bangladesh, Singapore, Hong Kong, Malaysia, Thailand and USA. His experience also includes working with various numerical analysis and design tools including the Finite Element Program PLAXIS, the Finite Difference Program FLAC, L-PILE, DRIVEN, ct-SHORING, gINT, STABL, MODFLOW, HELP, and few other programs.

At present, Dr. Hossain is working with the Texas Department of Transportation (TxDOT) on different geotechnical engineering projects. He is working on a new technique for slope stabilization for shallow slides using recycled plastic pins. Dr. Hossain is using Resistivity Imaging (RI) and NDE techniques for subsurface investigations and failure analyses of geostructures.

PRESENTATION SUMMARY

To a crowd of about 60, Dr. Hossain presented information on the Forensic Evaluation and Condition Assessment of Geo Structures using Non-Destructive Testing.

The use of



non-destructive testing and geophysical methods for the failure analyses and evaluations of geohazard potential of a

site is increasingly becoming popular all over the world. During failure analyses, several parameters are investigated by geologists and geotechnical engineers. However, they can only obtain information at certain points, not a general “view” of site conditions. Geophysical methods have the possibility to give an “image” of the subsurface. Also, with the development of new software for the interpretation of resistivity measurements, 2D and 3D “resistivity imaging” or “resistivity tomography” is extensively used today in shallow geophysical investigation and especially for geohazard study.

Three Non-Destructive Evaluation (NDE) test techniques have been extensively utilized by the UTA Research team, led by Dr. Sahadat Hossain: (1) Parallel Seismic (PS), (2) Sonic Echo (SE) & (3) Resistivity Imaging (RI). The main objective of these studies was to determine the suitability of NDE techniques for failure analyses of MSE Wall, Soil Slope, and to determine unknown foundation depths. Case studies on related projects completed for Texas Department of Transportation (TxDOT) were presented.

The NDE and geophysical methods are expected to improve the evaluation of geohazard potential and will allow mitigation technique required for the associated hazards. Finally, this may lead to development of reliable and cost-effective alternatives and geohazard mitigation strategies.

PAST PRESENTATIONS (click here)