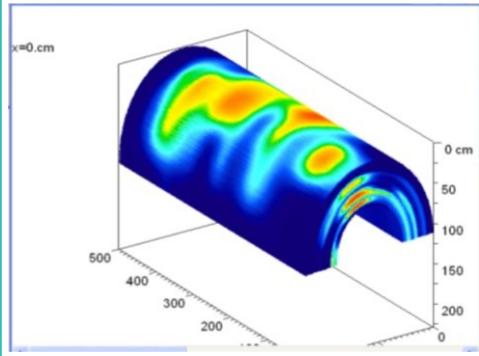
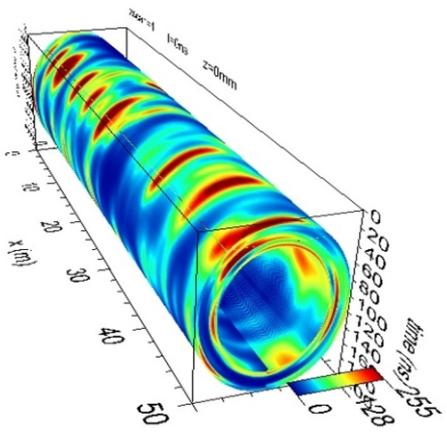




AF Academy & Dr. Dhawan Academy of Geologists
Present
3 Days Training Program

Advanced Investigation Tools for Tunnel Projects



April 22 - 24, 2020, New Delhi

In association with:



Central Board of irrigation & Power

Organised by:



AF Academy



Dr Dhawan Academy of Geologist

Introduction:

Tunnelling today is inconceivable without high-level investigations addressing subsurface excavation conditions. The study of diverse natural conditions at any tunnelling site requires application of a variety of available methods and tools for defining the engineering geological model. Geological, geotechnical and geophysical investigations, the fundamental investigation techniques are generally used in isolation resulting in information gaps for effective planning and execution of the project. This can easily be achieved if the geological, geotechnical and geophysical investigation tools are properly applied and integrated. In particular, the geophysical investigations provided very effective, expeditious and powerful tool optimizing conventional direct exploration methods, thereby aiding in accelerated and economic development of the project. The investigations also play a key role in quality checks during construction and non-destructive health checks during entire life cycle of the project.

The envisaged training program will focus on state-of-the-art geological, geotechnical and geophysical techniques for investigations in planning, pre-construction, construction and maintenance stages of tunnel projects. The training will be conducted by some of the renowned experts in the related fields.

Objectives:

The objective of this workshop is to familiarize participants with details of various available techniques and empower them with required knowledge to plan/ execute/ supervise investigation programs for tunnel projects. The program will also cover quality control and quality checks on data ensuring quality results.

Through a systematically structured approach, the program aims at imparting training in the following:

- Understand various investigations techniques available for planning, pre-construction, construction and maintenance stages of underground projects.
- Gaining understanding of Geological and Geotechnical tools for ground characterization and preparation of DPR for projects involving long Tunnels.
- Gaining understanding of various Geophysical methods and their application for investigations of tunnel projects.
- Development of technologies to determine the suitability of the proposed tunnel route and anticipate challenges there along.
- Empirical approaches for tunnel support design.
- Role of instrumentation and monitoring in modern tunnelling and NATM.

Who Should Attend?

This three-day program will help professionals, engineers, geotechnical engineers and geoscientists dealing with tunnelling projects. The program will also help project owners hiring services for geophysical surveys, enabling them understand capabilities and limitations of various methods and derive maximum return on their investment on a geophysical survey.

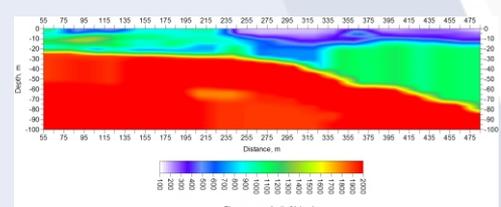
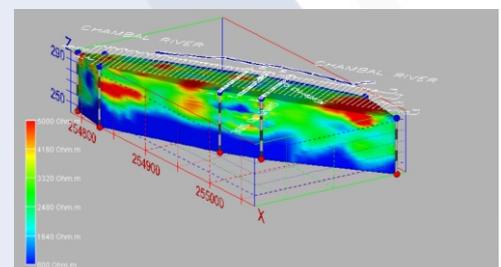
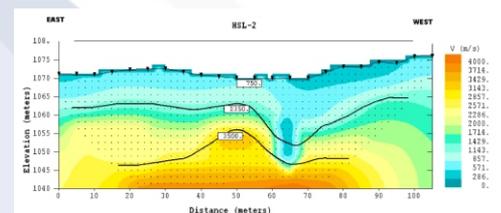
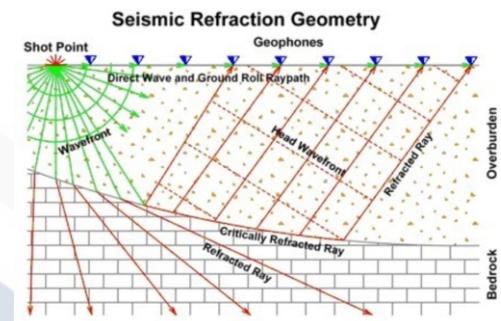
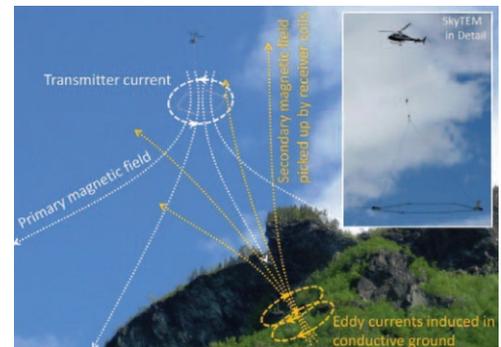
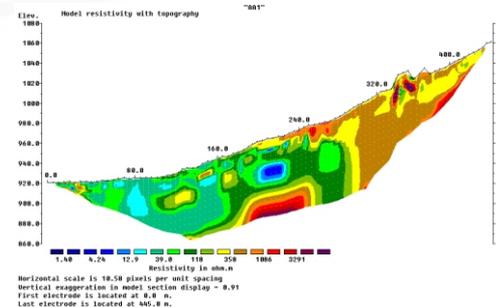
Benefits:

The program will enable the participant to derive maximum information from investigation program and help them design the right investigation program for a particular project requirement. It will also enable them to choose the right combination of techniques for varied geological conditions. Participants of the program will be able to contribute towards accelerated and economic development of projects.

Key Elements:

Geophysical Tools:

- Introduction to Geophysics
- Investigation requirement for tunnelling projects- Mapping of bedrock depth and topography, rock strength, detection of faults, fractures, water lenses, cavities, etc.
- Sub-surface characterization for depth of bedrock, type of rock, layers and fractures in rock, grounder water flow, water table, weak zones, and expansive clays.
- Finalization of most suitable tunnel alignment having least occurrence of 'difficult' zones like faults, fractures, water lenses etc.
- Engineering properties of earth materials like stiffness, density, electrical resistivity, porosity etc.
- Selecting borehole locations (optimising drilling) and obtain reliable information about the nature and variability of the subsurface between existing boreholes.
- To obtain subsurface information in environmentally sensitive areas, on contaminated ground, or on private property, where drilling is either not possible or extremely cumbersome.
- To conduct quality assessment of built tunnels, detecting delamination, void behind



concrete lining/ shotcrete, detection of anomalous zones leading to seepage in the tunnel etc.

- To check efficacy of rehabilitation methods (like grouting) by comparing pre and post rehabilitation results.
- Geophysical Techniques under focus will be
 - Heliborne Time Domain Electro-Magnetic Method (TDEM)
 - Seismic Reflection
 - Seismic Refraction
 - Electrical Resistivity Imaging/ tomography
 - Ground Penetrating Radar
 - MASW/ SASW/ ReMi
 - Crosshole/ downhole/ uphole
 - Cross Hole Seismic Tomography
 - Tunnel Seismic Prediction
 - Geo-electrical Real-time Ground Prediction While TBM-Boring
- Case studies

Geological & Geotechnical Tools:

- Engineering geological mapping, Geotechnical Investigations & remote sensing Studies for Tunnels
- Characterisation and engineering classification of rock masses & Preliminary Tunnel Design based on Empirical Methods
- Rock mechanics and tunnelling technology
- Use of software and computational geo-techniques for data analysis
- Instrumentation planning for NATM tunnelling projects
- Geological considerations for deciding TBM tunnelling
- Case studies – DPR preparation & successful execution of tunnelling projects

Facilitators:

The workshop will be conducted by world renowned experts in their respective fields:

Dr V. M. Sharma has completed M E Hons, from Water Resources Dept., University of Roorkee. He was awarded Ph.D. in Rock Mechanics, "Prediction of Rock Loads & Deformation in Tunnels" from IIT Delhi. He is Specialized in Geotechnical Engineering, Rock Mechanics, Water Resources, Field Instrumentation & Interpretation, Slope Stabilization & Reinforced Earth, Concrete Technology and Construction material, Numerical Modelling etc. He is affiliated by FNAE, FIGS, ISRM, INDSTT, MISEG, MIWRS, MISMG. He has more than 250 technical papers in National & International journals & edited 10 technical books. He has served as CWC New Delhi, Kerala Electricity Board, Director, CSMRS New Delhi. At present he is offering his services as Chief Consultant, Advanced Technology and Eng. Services, the consultancy division of Aimil Ltd.



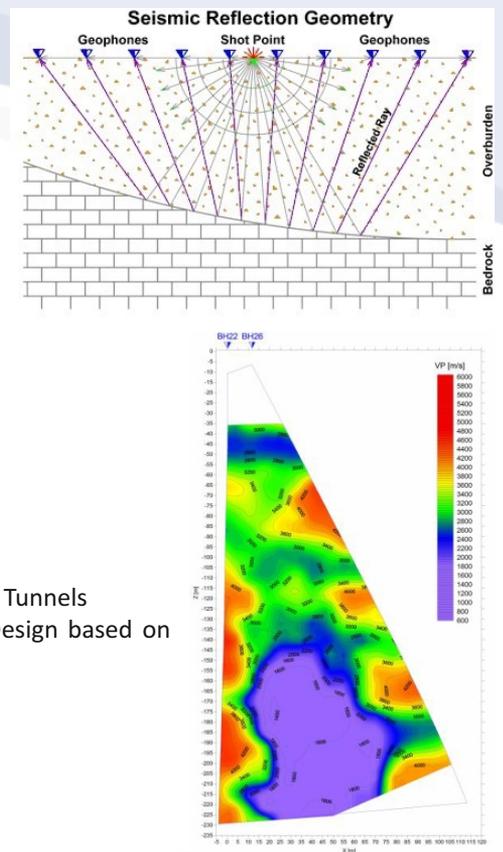
Dr. Gopal Dhawan is a versatile Engineering Geologist who had been actively associated with investigation, planning, design and construction of several Hydro Power and Infrastructure projects in Indian Subcontinent in a career spanning over 40 years. He superannuated as CMD, MECL. Presently, he is Member Panel of Experts with NTPC and working as Senior Consulting Engineering Geologist with SMEC, AFCONS, DMR Hydroengineering & Infrastructure Ltd. and Tunneling Association of India (TAI). He is alumnus of three distinguished Institutes, namely, University of Lucknow, University of Roorkee (Now IIT) and ISM Dhanbad (Now IIT). He has contributed more than 30 Technical Papers in National & International Journals/ Conferences. He is Life Member of Geological Society of India, Past-President of Indian Geological Congress and Past-President of Indian Society of Engineering Geology (ISEG). At the prestigious 36th International Geological Congress, 2020, he is the Coordinator of Symposia 33.1 on "Recent Advances in Engineering Geology".



Shri Yogendra Deva, a consulting Engineering Geologist for over 42 years and currently Head-Geology at ICCS Ltd. and Senior Consultant at SMEC India. A 1974 Post-graduate in Applied Geology from University of Delhi, and voluntary retired formerly Director, Geological Survey of India, Shri Yogendra has served the International Association for Engineering Geology and the Environment (IAEG) as Vice President for Asia, and Indian Society of Engineering Geology as Secretary and Editor for long durations. Shri Yogendra has carried out and supervised feasibility, DPR and construction stage engineering geological investigations of over hundred hydropower, irrigation and communication projects in India (entire Himalayan belt, Northeast and Peninsular area), Nepal, Bhutan, Myanmar, DR Congo, Burundi, Indonesia, Rwanda, Tanzania and Papua New Guinea.



Dr. Sanjay Rana is a geophysicist by profession. He has been working in the field of engineering geophysics for last 29 years. Dr Rana graduated in 1990 from University of Roorkee, now IIT Roorkee, in M Tech (Applied Geophysics), as Gold Medallist. He did his MBA from IGNOU and Doctorate from Aberdeen. Dr Rana started his career with UP State Government and also worked briefly as Scientist 'C' with Department of Atomic Energy. He became an entrepreneur in 1995, starting first ever engineering geophysics company in private sector in India. He has been instrumental in starting full-fledged operations in private sector providing services like seismic refraction, ground penetrating radar, electrical tomography, seismic tomography, Microgravity, magnetic etc. He has carried out geophysical investigations for more than 2000 projects including projects in India, Afghanistan, Bahrain, Singapore, Qatar, Saudi Arabia, Nepal, Bhutan, Kuwait etc.



Shri Sharique Khan is an expert geotechnical engineer specialized in the field of rock mechanics. He has a master's degree in Geotechnical Engineering from IIT Roorkee (2008). He is currently working as a joint manager (Geotechnical) in ATES division of Aimil. He has dedicated his professional career of about 12 years in working extensively in field of geotechnical engineering projects. His area of expertise includes Numerical modelling in Geotechnics, Geotechnical and rock investigations, slope stability, underground excavation, Tunneling technology and instrumentation monitoring. His contributions have been well acknowledged by the geotechnical fraternity. He has been recognized by IGS Delhi chapter for Young Geotechnical Engineer Award in 2014. He has published several technical papers in conferences, seminars and journals. One of his papers was selected for best paper award in landslide and slope stability category in IGC 2014



About Dr. Dhawan Academy of Geologists:

Dr. Dhawan Academy of Geologists has been established to provide a learning platform for young geologists, and consulting services for geological and geotechnical aspects of infrastructure projects. The Academy has been organising professional development programs and contemplates commencing mentoring for students aiming competitive examinations.

About AF Academy:

AF Academy is an entity of Aqua Foundation, registered under Societies act in year 1998. AFA provides training & knowledge sharing platform to decision & policy makers, working professionals, operating level personnel and aspiring students willing to specialize in technical sector. Specialized trainings/ workshops and courses are offered by AFA on subjects like Water, Geophysics and Land Survey.

Venue:

The Hans Hotel is situated in the heart of New Delhi, minutes from American Library and close to Red Fort. This 4-star hotel is within close proximity of Palika Bazaar and Jantar Mantar.

Date:

22-24 April, 2020

Fee Structure:

Government Departments, Ministries: INR 12,000 per participant
 Private, PSUs, Boards: INR 18,000 per participant
 Students, Research Scholars: INR 8,000 per participant

GST@18% is extra as applicable.

The fee is inclusive of training notes, morning & evening tea & lunch. A discount of 10% on group booking of 04 or more participants from a single organization is applicable.

Registration Process:

Prior registration is must by sending email to praggya@tunnelling.in. Fee to be deposited in the following account:

Name of the Bank: ICICI Bank Ltd

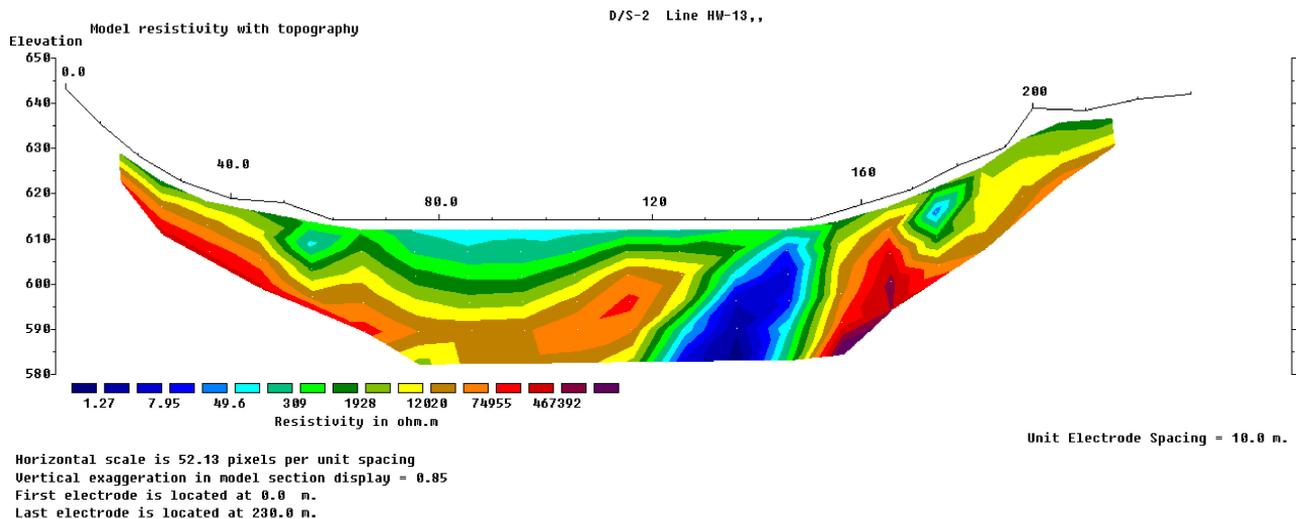
Address of the Bank: ICICI Bank, 9 A, Phelps Building, Connaught Place, New Delhi- 110001

Name of the Account holder: AQUA FOUNDATION

A/C No.: 000701260885

IFSC Code: ICIC0000007

Swift code: ICICI NBB CTS



Contact Details:

Ms. Praggya Sharmaa, Secretary General

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