

WORKSHOP CONTENTS

Geological and Geophysical Investigation

Site investigation, ground characterisation, evaluation of core logs & bore hole logs

Engineering Behaviour of Rock

Laboratory tests on rock cores, strength of rock and rock mass, shape and size effect on tunnelling, stress around tunnel boundary

Tunnel Excavation Methods

Drill and blast method, TBM tunnelling, blast induced damage on rock mass and structures

Tunnelling Technique and Design of Support

NATM, NMT, rock mass classification approaches, support estimation and selection of support, rockmass support interaction

Numerical Modelling

Application of numerical techniques in tunnel engineering, analysis of induced stresses and its effect on rock mass behaviour and support requirement

Geotechnical Instrumentation

Types of instruments, standard installation techniques, analysis of data and ground reaction and support reaction curves

Case Histories

Success story of Chenani-Nashri Highway Tunnel (Longest Bi-directional Highway Tunnel in Asia)

Open Forum Panel Discussion

Trouble shooting in tunnel construction

Technical Site Visit

Depending upon the number of willing participants, a technical visit to nearby construction site will be arranged on 13th Oct. 2018.

REGISTRATION FEE

The participants are requested to register themselves by filling and mailing the registration form at the earliest as the seats are limited. The registration fee is as follows:

- ◆ Individual: Rs. 10,000/- plus GST@18%
- ◆ Research scholar/Student: Rs. 6,000/- plus GST@18%
- ◆ Individual member (I.E.) - Rs. 9000 + GST
- ◆ Institutional registration: A discount of 20% in registration fee will be given to institutional registration for each group of minimum five participants.
- ◆ Optional one day technical site visit: Rs. 2500/- plus GST@18%

The fee includes charges towards registration kit, refreshment and lunch/dinner. The amount may be deposited in favour of The Institution of Engineers (India) Roorkee Local Centre, SB

A/c No. 10660281610, IFSC SBIN0010635, SBI, CBRI Branch, Roorkee, GSTIN: 05AAATT3439Q2ZZ. The payment receipt and transaction details of the amount along with registration forms shall be sent to email address tunneling.tech@gmail.com for confirmation.

VENUE

The programme will be organised at the auditorium of The Institution of Engineers, Roorkee Local Centre, IIT Roorkee Campus, Roorkee, Uttarakhand.

ACCOMMODATION AND TRANSPORT

Limited accommodation will be made available by organisers in the guest houses of CBRI, IIT, NIH etc. on payment and sharing basis for participants on request in advance on first come first serve basis. Alternatively, hotels may be booked by the participants themselves nearby the venue. Local transport can be arranged for the participants on payment basis if requested.

ORGANISING TEAM

Patron

Dr. P. K. Singh, Director,
CSIR- CIMFR, Dhanbad

Chairman

Dr. R. K. Goel,
Chief Scientist & Scientist-in-Charge,
CSIR-CIMFR Research Centre Roorkee

Co-Chairmen

Dr. J. K. Mohnot, Chief Scientist, CIMFR
Er. Malvinder Singh, Chairman, IEI (RLC)

Co-ordinators

Mr. Anil Swarup, Sr. Pr. Scientist, CIMFR
Dr. R. D. Dwivedi, Principal Scientist, CIMFR

Organising Secretaries

Dr. Harsh kr. Verma, Pr. Scientist, CIMFR
Dr. Achal Mittal, Hon. Secretary, IEI (RLC)

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National Workshop

on

TUNNEL ENGINEERING

October 10 -12, 2018



ORGANISED BY



CSIR-CIMFR RESEARCH CENTRE ROORKEE
(Geotechnical Engg. & Underground Space Technology Group)

in association with

THE INSTITUTION OF ENGINEERS (ROORKEE CENTRE)
&
INDIAN SOCIETY OF ROCK MECHANICS & TUNNELING
TECHNOLOGY (ROORKEE CHAPTER)

ABOUT THE PROGRAM

In view of increasing trend of construction of tunnels for roadways and railways, metros and hydro-projects, continuous refinement of knowledge with recent advances in tunnel engineering is necessary. Flagship projects such as Chardham highway project, Z-Morh & Zojila tunnel highway projects in J&K, Rishikesh-Karnaprayag rail link project in Himalaya, Uttarakhand and metro projects in urban environment further push for the requirement of skilled tunnel engineers in difficult tunnel construction environment.

Tectonically active Himalayan region poses difficult tunnelling problems due to high in situ stresses. Problem of squeezing behavior in poor rock masses and rock bursts in hard and brittle rock masses are commonly encountered. Similarly, large amount of rock excavation works using drill and blast method need to be carried out scientifically to prevent any damage to surrounding rock mass and structures along the tunnel alignment. Selection of TBM in frequently changing geology and other rockmass conditions is very critical and sometimes becomes detrimental in success of project.

In order to make tunnelling safer and economical, such **Tunnel Engineering Workshop** is necessary for the engineers, geologists and management professionals involved with the investigation, design and construction of tunnels and underground works. The workshop has been planned to disseminate the tunnelling knowledge by the eminent experts from CSIR-CIMFR and IIT Roorkee and experienced construction field managers for maximum benefit of the participants. One day technical visit to nearby construction site to further enrich knowledge of participants, is also planned.

ABOUT CSIR-CIMFR

CSIR-Central Institute of Mining and Fuel Research (HQ at Dhanbad) is a premier constituent laboratory of Council of Scientific and Industrial Research (CSIR), New Delhi under Ministry of Science and Technology, Govt of India. The mandate of the institute includes a world class technological solution for growth

of mining and civil construction industry. The Institute provides technological solutions to the entire mining-energy chain through world class in house and collaborative research works. Underground engineering is an integral part of mining engineering with extended application in design and construction of tunnels for highway and railways, metro and hydropower engineering projects.



A view of Chenani - Nashri highway tunnel project under construction in J&K, NHAI

CIMFR Regional Research Centre Roorkee, a designated Centre of excellence in Geotechnical Engineering and Underground Space Utilisation Research, was established in the year 1974 to provide catalytic geotechnical inputs to the infrastructural project in north



Ghat-ki-Guni highway tunnel project of NHAI, Rajasthan

India. Presently CSIR-CIMFR Roorkee boasts highly dedicated scientists having diverse expertise with pan India presence.

CSIR-CIMFR Roorkee Centre takes pride in accomplished national projects for design and construction of underground structures in the area of strategic petroleum reserve, nuclear repositories, tunnels for roads, railway and hydro projects, metro tunnelling to name a few. CSIR-CIMFR Roorkee has rendered services to various state government departments, Indian Railways, NHPC, NTPC, KRCL, RITES, IRCON, IL&FS, RVNL, BARC, Defence and number of private companies.



Saranda new railway tunnel in Mumbai-Howrah Railway Line (RVNL)

CSIR-CIMFR Roorkee Centre consultancy and translational technical support is backed by field-oriented R&D activities with globally recognized and accepted contributions in tunnelling and underground space use. CIMFR Roorkee Research



Butterfly Valve Chamber of THDC PSP project, Tehri

Centre is a proud partner in development and construction of flagship projects of Government of India. Some of important national and strategic projects includes Indian Strategic Petroleum Reserve (ISPRL), Vishakhapatnam, Nuclear Waste Repositories for Bhabha Atomic Research Centre (BARC), Mumbai, Delhi Metro, Chenani-Nashri highway tunnel, Z-Morh & Zojila tunnel highway projects in J&K, Rishikesh-Karnaprayag rail link project in Uttarakhand Himalaya, Saranda railway tunnel on Mumbai-Howrah Section, Tunnels in 5th and 6th rail line of Mumbai suburban train of MRVC, Mumbai. CIMFR have its footprints in all mega hydro power structures which includes Sardar Sarovar project, Gujarat, Koyna project, Maharashtra, Nathpa-Jhakari project and Koldam project, Himachal Pradesh, Loharinagpala and Tapovan Vishnugaad Hydro project of NTPC in Uttarakhand, Tehri PSP project of THDC etc.

REGISTRATION FORM

National Workshop

on

TUNNEL ENGINEERING

10-12 October, 2018

CSIR-CIMFR Research Centre Roorkee

(Geotechnical Engg and Underground Space Technology Group)

Registration category (Use separate form for each member in case of institutional participation)

Individual Institutional No. of Participant(s)

Name of the Participant.....

Designation.....

Organization.....

Mailing address.....

Email

Tel./Mobile.....

Technical Site Visit (Y/N).....

(If yes, please add site visit charges in Registration fee)

Payment details: Amount ₹.....

Cheque/DD No./Transaction ID.....

.....Date.....

GST No.....

Guesthouse accomodation required (Yes/No).....

Arrival Date.....Time.....

Departure Date..... Time.....

Signature of participant