

ISRM International Symposium 2010 and 6th Asian Rock Mechanics Symposium

Advances in **ROCK** **ENGINEERING**

23-27 October, 2010 @ New Delhi, India



Sponsored by:
International Society for Rock Mechanics
Organised by:
Indian National Group of International Society for Rock Mechanics
and
Central Board of Irrigation & Power



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International Society for Rock Mechanics

**Invitation to ARMS6 from the ISRM President,
Professor John A Hudson**

**ISRM International Symposium and the 6th
Asian Rock Mechanics Symposium, October 2010,
New Delhi, India**



John A Hudson

India has a long experience with rock mechanics and rock engineering and so I was really pleased when, during the ISRM Council meeting held in association with ARMS5 in Tehran, Iran, in 2008, the Indian National Group of ISRM (with its Secretariat at the Central Board of Irrigation & Power - CBIP) was given the honour of organizing the ISRM International Symposium for 2010, i.e. the 6th Asian Rock Mechanics Symposium, ARMS6, to be held on 23-27 October, 2010 in New Delhi.

The significance of the 'ISRM International Symposium' is that ARMS6 has been chosen as the venue for the main ISRM Board and Council meetings for 2010. Thus, and on behalf of the ISRM Board, I send Professor K G Sharma, President of the Indian National Group of the ISRM, and his colleagues all our best ISRM wishes for a successful ARMS6 organisation. I am sure that the Symposium will be a great triumph and I encourage all of you to submit abstracts and, in due course, to attend the Symposium itself.

For myself, I am looking forward to visiting India to relax in the company of Indian friends, to learn more of the rock engineering in progress, to increase my knowledge of Indian history and to enjoy the breathtaking scenery again.

John A Hudson
*Emeritus Professor,
Imperial College, UK
ISRM President*



INVITATION FROM PRESIDENT, INDIAN NATIONAL GROUP OF ISRM



K.G. Sharma

The study of rock mechanics has assumed considerable importance because of its wide application in civil and mining engineering, petroleum, underground caverns, and metro. Considerable activities in India in the field of rock mechanics are in progress, mainly due to the execution of projects for irrigation, flood control, hydropower generation, road tunnels in mountainous areas, sub-surface excavations for underground railway and storages, and also for mining purposes. Liberalisation of economy has further facilitated planning and execution of many large scale projects in India. World over, number of projects involving rock engineering, have either been completed or are under execution or under investigation.

It is planned to construct 475 hydroelectric projects in India in the coming years, to add hydro potential of about 16,000 MW by the end of 11th Plan ending March 2012 and another 30,000 MW by end of 12th Plan ending March 2017, which would involve construction of dams on comparatively weaker foundations as good sites in general are not available and also construction of about 2000 km length of hydro tunnels through rocks of variable nature.

Indian Railways is executing many projects in difficult terrain conditions. For providing rail connectivity to various states falling in north India, tunneling appears to be a necessity to cross many hilly regions. Ministry of Railway, Government of India, is at present executing various railway projects in North and North Eastern regions involving an annual expenditure of more than Indian Rupees



13000 millions
(USD 275
Million). Works

are spread in topographically difficult terrain.



A national project to link Jammu with Kashmir Valley by about 340 km broad gauge railway line has been undertaken by Ministry of Railways involving construction of about 63 tunnels, out of which 21 have already been completed in Jammu-Udhampur sector. Works on the remaining portion is also under implementation. For the

execution of this project, besides construction of tunnels in variable rock conditions, rock slope stability measures are also being given due importance.

Delhi, the national capital with the population of about 16 million ought to have had a metropolitan rapid transportation network long back as per the prevailing standards. Though late, its first phase covering 65.10 km has already been completed and the work in phase II (125 km) having a tunnel length of about 29 km is in progress. Phases III & IV have been planned for extending the metro network. Metros are also planned for other cities namely Bangalore, Hyderabad, Ahmedabad, Mumbai, Chennai etc. which would involve construction of no. of tunnels & underground works.



Thus there is a great opportunity for all agencies in India and abroad to get themselves actively involved in the development of tunnel and underground works in India. Rock engineering shall have a dominating role in the execution of these works.



It is hoped that the deliberations in the ISRM International Symposium 2010 and the 6th Asian Rock Mechanics Symposium on “Advances in Rock Engineering”, being held during 23-27 October 2010 in New Delhi, will help in formulating appropriate measures needed for successful execution of projects, related to civil and mining engineering, petroleum, underground cavern or metro.

On behalf of the organisers, I extend a cordial invitation to you all to participate and share your experiences, besides have exciting experience in this country.

Looking forward to meet you in New Delhi.

K.G. Sharma
President
Indian National Group of ISRM

ABOUT CENTRAL BOARD OF IRRIGATION & POWER

The Central Board of Irrigation & Power (CBIP), the Secretariat of Indian National Group of ISRM, is engaged in the dissemination of information regarding recent technological advancements in the twin disciplines of water resources and power, since its inception in 1927. Besides, it provides a forum for exchange of experiences, facilitating flow of technology through the organisation of symposia, seminars, workshops, training courses both at national as well international levels, in liaison with international organisations.

THEMES OF SYMPOSIUM

- **Testing and Modelling of Rocks & Rock Masses**

- Laboratory and Field Testing
- Physical Modelling
- Constitutive Modelling
- Site Investigation

- **Slope Stability: Analysis & Design**

- Natural Slopes
- Landslides
- Surface Excavations

- **Foundations**

- Dams
- Other Large Structures



- **Underground Structures: Analysis, Design & Construction**

- Tunnels & Caverns
- Energy Storage
- Nuclear Waste Storage

- **Artificial Intelligence**

- Neural Networks
- Expert Systems
- Risk Analysis
- Data-mining

- **Flow and Contaminant Transport**

- Seepage
- Contaminant Transport
- Fractured Media

- **Rock Dynamics**

- Rock Bursting
- Rock Blasting & Fragmentation

- **Case Histories**

- Performance Evaluation
- Forensic Studies
- Back Analysis- Pre-failure & Failure

- **Techniques for Improvement of Quality of Rock Mass**

- **Instrumentation and Monitoring**

DATES AND VENUE

OFFICIAL LANGUAGE

English will be the sole official language of the Symposium.

CALL FOR PAPERS

All concerned wishing to present paper(s) on one or more of the above-mentioned themes/allied themes are requested to send the synopsis(es) of their proposed paper(s) in about 800-850 words, typed in double space, on A4 size (210 mm x 297 mm) paper, in English to the Symposium secretariat.

Only original contributions that have not been published, or presented at other events, need be submitted.

Synopsis should contain:

- A descriptive but brief title
- Name(s) and affiliation(s) of the author(s)
- Address for correspondence (including FAX No. and e-mail address)
- Detailed information about the contents and conclusions of the paper

DATES TO REMEMBER

- Deadline for submission of synopses
 - Notification of acceptance of synopses
 - Submission of full texts of the accepted presentations
- Modelling of Dynamic Phenomena in Rock

31 December 2009

31 March 2010

31 July 2010



The Symposium will be held during 23-27 October 2010 at India Habitat Centre (Convention Centre), Lodi Road, New Delhi (India).

TENTATIVE PROGRAMME

	23 October 2010	24 October 2010	25 October 2010	26 October 2010	27 October 2010
	Saturday	Sunday	Monday	Tuesday	Wednesday
Forenoon	ISRM Board Meeting	Commission Meetings	Opening Ceremony Keynotes	Parallel Sessions	Parallel Sessions
		Regional Council Meetings			
		Short Course/Workshop	Keynote		
Afternoon	ISRM Board Meeting	ISRM Council Meeting	Parallel Sessions	Parallel Sessions	Parallel Sessions
		Short Course/Workshop	Parallel Sessions	Parallel Sessions	Closing Ceremony
				Banquet	Farewell Dinner

REGISTRATION

The registration fee payable by the delegates, including authors of papers, for participation in the Symposium is as follows:

	ISRM members	Non-members	Students	Accompanying persons
Delegates/ Authors from India	Indian Rs. 8,000	Indian Rs. 10,000	Indian Rs. 5000	Indian Rs. 4000
Delegates/ Authors from other countries	US\$ 600	US\$ 750	US\$ 300	US\$ 250

For payment procedure, please refer the website

EXHIBITION

An exhibition is planned as a technology showcase to meet the challenges of 21st century for the development and management of rock formations in various engineering activities of Water and Energy Resources. The strategic location of this event in India which is the largest democracy and the fifth largest economy in the world, will be a key factor for the exhibitors who are looking for a gateway to this region with a great potential.

Apart from the extensive international exposure to prospective exhibitor's products and services under one roof, exhibitors have a unique opportunity to spread their network in this region, find new joint ventures and profit from the growing business in this emerging and technologically important area.

ACCOMPANYING PERSONS PROGRAMME

Interesting programmes, including local sightseeing, will be organised for accompanying persons, on payment. The details of the programme will be made available in the Second Bulletin.

OFFICIAL INVITATION

The invitation contained in this Bulletin should generally suffice to plan travel formalities. However, should an official invitation is needed, the same can be sent to the participants on request.

TRAVEL AND VISA

The participants will have to make their own arrangement for travel and are advised to obtain the requisite visa from the Indian Embassy/High Commission in their respective countries.

GENERAL INFORMATION

INDIA - THE HOST COUNTRY

India is endowed with towering mountain ranges, rolling hills, lofty plateaus and extensive plains, which have played their role in shaping its cultural, economic and political history. The most outstanding characteristics of India, and probably one of its greatest charms, is undeniably, its diversity. India is a country with a sense of individuality and rich heritage; its civilization is unique in vitality and antiquity. It offers the visitor something special everywhere, and in everything. It is a land of treasures, temples, palaces, forts and magnificent scenery. Those seeking footprints of history will find that India has been a vast arena, where races and cultures have battled and blended, creating sublime achievements in art, religion and philosophy.



New Delhi, the capital city of modern India, has behind it over thirty centuries of history which has enriched its culture. Delhi finds prominent reference in pre-historic times, right from the epic Mahabharat. Later, Delhi went on passing from one kingdom to another. New Delhi has, in fact emerged as a significant and often visited venue for International Conferences and Conventions, with



the complete infrastructure and amenities in one place. For a traveler keen to discover the rest of India, New Delhi makes the ideal base.

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