

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



INTERNATIONAL ADVISORY BOARD

- *Dr. Anthony Meyers, AUSTRALIA*
- *Dr. Derek Martin, CANADA*
- *Prof. Xia-Ting Feng, CHINA*
- *Prof. Alvaro J. Gonzalez-Garcia, COLOMBIA*
- *Dr. Claus Erichsen, GERMANY*
- *Dr. T. Ramamurthy, INDIA*
- *Prof. Suseno Kramadibrata, INDONESIA*
- *Dr. Yossef H. Hatzor, ISRAEL*
- *Prof. Abdolhadi Ghazvinian, IRAN*
- *Prof. Jiro Yamatomi, JAPAN*
- *Prof. Hyung Sik Yang, KOREA*
- *Dr. Nuno Grossmann, PORTUGAL*
- *Prof. Yingxin Zhou, SINGAPORE*
- *Dr. Francois Malan, SOUTH AFRICA*
- *Prof. Jian Zhao, SWITZERLAND*
- *Dr. Pawel Nawrocki, UAE*
- *Prof. John A. Hudson, UK*



**Invitation to the
ISRM International Symposium 2010
and
6th Asian Rock Mechanics Symposium
23-27 October, 2010
New Delhi, India**

From Professor John A Hudson, President, ISRM



John A Hudson

We are now rapidly approaching the time when the ARMS6 Symposium is to be held on 23-27 October 2010. This Symposium is not only ARMS6 but also the ISRM International Symposium for 2010, i.e., the venue for the ISRM Board and Council meetings which will take place on the two days preceding the Symposium itself.

The Organising Committee of ARMS6 has already completed their advance work in terms of establishing the Keynote Lecturers and the papers to be presented. There will be 10 Keynote Lectures given by experts from Asia, Australia, Europe and North America. 286 abstracts have been received from 33 countries, with large numbers of abstracts having been submitted by China, India, Iran and Japan. Highlights of the Symposium will include the ISRM Rocha Medal Presentation by

Dr. Christer Andersson of Sweden on *in situ* stress studies, the First Annual ISRM Award Lecture and an associated Exhibition. The Symposium venue is the excellent India Habitat Centre (Convention Centre) in Lodi Road, New Delhi.

So I encourage you to take this opportunity to visit India, not only to participate in ARMS6 but also to experience the country with the largest democracy, a 3.3 million km road network, the second largest rail network in the world, the third largest production of coal, and with massive water transfer schemes and a planned addition of 475 hydroelectric projects in the coming years incorporating 2000 km length of hydro tunnels.

The ISRM is grateful to Professor K.G. Sharma, President of the Indian National Group of the ISRM, and his colleagues for organizing ARMS6 which I am sure will be successful. I encourage you to visit the extensive Symposium website, www.arms2010.org, where there is detailed information and an email contact link in case you have any inquiries.

I look forward to seeing you in India in October.

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



INVITATION FROM PRESIDENT, INDIAN NATIONAL GROUP OF ISRM

INVITATION



K.G. Sharma

Indian National Group of International Society for Rock Mechanics (ISRM) was given the honour to host the ISRM International Symposium and the 6th Asian Rock Mechanics Symposium on “**Advances in Rock Engineering**” during ISRM Council Meeting held in Tehran in November 2008.

Against our call for papers, we received an overwhelming response and more than 280 abstracts from 33 countries were received for consideration as to their presentations during the Symposium. The Technical Committee, of which I happen to be the Chairman, had a tough job of selection of papers as all the proposed presentations were of high standards. Keeping in view the response for the technical papers, it is proposed to have oral as well as poster presentations during the Symposium. Special emphasis is being laid on presentation of Keynote Lectures by renowned experts on each day of the Symposium.

Many exciting programmes are being planned for the accompanying persons, and pre and post Symposium tours for all the delegates, to provide glimpses of rich heritage and diversity of the country.

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 and petroleum purposes. Liberalisation of economy has further facilitated planning and execution of many large scale projects in India. It is hoped that the deliberations at the Symposium will help in formulating appropriate measures needed for successful execution of projects, related to civil, mining and petroleum engineering.

It is my great pleasure to welcome you to the Symposium. I also extend a cordial welcome to all the members of ISRM Board, National Groups of ISRM to the ISRM Council Meeting and to the Chairmen and Members of ISRM Commissions for the Commission Meetings being organised concurrently. I hope that your stay and experience here will be memorable.

Looking forward to meet you in New Delhi.

K.G. Sharma
President
Indian National Group of ISRM

Welcome to New Delhi, India

INDIA - THE HOST COUNTRY

India is an ancient land of archeological wonders that speak of cultural heritage of an ancient civilization. India, a Sub-Continent almost as large as Europe, is a land of silvery snow peaks, sun-drenched golden beaches, dense forests and arid deserts.

India is endowed with towering mountain ranges, rolling hills, lofty plateaus and extensive plains which have all played their role in shaping its cultural, economic and political history. The most outstanding characteristic 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 visitors 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 a vast area, where races and cultures have battled and blended, and creating sublime achievements in art, religion and philosophy.

India today is a young democracy at its vibrant best with a population of over 1.1 billion poised to achieve national targets for upward mobility. India has a rich cultural heritage spanning over 5000 years when one of its oldest civilization existed on the banks of the river Indus.

India is a country where all the religions of the World are not only studied but practiced. Hinduism, Buddhism, Jainism and Sikhism had their origin in India. Today, India has contributed and given to the World Yoga, Meditation and Principles of Non-Violence.

It is their faith in the God and submission of the self to the eternal, which sustains the people of India.

NEW DELHI - THE HOST CITY

The city conceals within its bosom annals of civilizations that flourished for more than 3,000 years. Indraprastha, according to legends, the city founded by the Pandavas in the time of epic Mahabharata (Circa 1500 BC) was located near the old fort that stands on a large mound overlooking the river. Since those early days many dynasties and rulers flourished on its regal soil. The legacy of that past survives in the form of many monuments left behind by the regents, each a chronicle of the glory of its time and an imprint of the character of the ruler. Today, the city with more than 10 million inhabitants is a curious blend of traditional architectural marvels and the modern skyscrapers, spotted with beautiful gardens and joined by wide tree-lined avenues. Delhi blends within its folds the great cultural variety of India; an everlasting range of activity, a million ways of saying "YOU ARE WELCOME." Presently the entire city infrastructure is being spruced up for the Commonwealth Games scheduled to be held in October 2010.

Only 200 km from Delhi and a must to visit before or after the Symposium is the City of Agra, world-famous for the splendid Taj Mahal. Also not far away from Delhi and worth a visit is Jaipur popularly known as the Pink City, the Capital of the state of Rajasthan. With its rich and colourful past, resplendent with tales of valour and bravery, Jaipur is now one of the most important heritage cities in India.

SYMPOSIUM THEME

The main theme for the Symposium is “Advances in Rock Engineering.” Following are the Sub-themes of the 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
 - Modelling of Dynamic Phenomena in Rock
- **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



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

OFFICIAL LANGUAGE

English will be the sole official language of the Symposium.

KEYNOTE SPEAKERS

Sl. No.	Name of Speaker	TOPIC
1	Dr. Shinichi Akutagawa , Kobe University, Japan	On Site Visualization as a New Paradigm for Field Measurement in Rock Engineering
2	Prof. Giovanni Barla , Politecnico di Torino, Italy	Progress in the Understanding of Landslides from Massive Rock Slope Failure
3	Prof. Maurice Dusseault , University of Waterloo, Canada	Deep Disposal: Environmental Protection and Petroleum Geomechanics
4	Prof. Xia-Ting Feng , Institute of Rock and Soil Mechanics, China and ISRM Vice President at Large	Application of Artificial Intelligence to Rock Mechanics and Rock Engineering
5	Prof. Yossef H. Hatzor , Ben-Gurion University of Neger, Israel	Modelling Dynamic Deformation in Natural Rock Slopes and Underground Openings with the Numerical DDA
6	Prof. John A. Hudson , Imperial College, UK and President, ISRM	Underground Radioactive Waste Disposal - The Rock Mechanics Contribution.
7	Prof. Guowei Ma and Prof. Yingxing Zhou , Singapore	Rock Dynamics Research in Singapore: Fundamentals and Practices
8	Dr. John Read , CSIRO LOP Project, Australia	Large Open Pit Project
9	Prof. Herb Wang , University of Wisconsin, USA	Instrumentation and Monitoring

REGISTRATION

You may register for the Symposium on website www.arms2010.org. Participants can also send the registration form by post to the Symposium Secretariat alongwith payment.

Fee once paid will not be refunded, normally. In exceptional cases if the registrant is unable to attend the Symposium and claims refund by 15th September 2010, fee will be refunded after deducting a service charge of 30 percent. After this date, no request for refund will be entertained. However the registered delegates, who had paid the registration fee, but could not attend the Symposium and had not claimed refund, would be sent a complete set of proceedings and other related publications issued on the occasion of the Symposium.

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

* To avail the student concession in the registration fee, the registration form / request would have to be submitted alongwith proof of being a student.

The registration fee covers admission to all official functions, technical sessions, technical sessions, one set of proceedings papers, lunch and tea in between technical sessions and dinner on 26th October 2010

Accompanying person must be spouse or children.

The Registration fee for accompanying person will cover admission to all official lunches and dinner on 26th October 2010

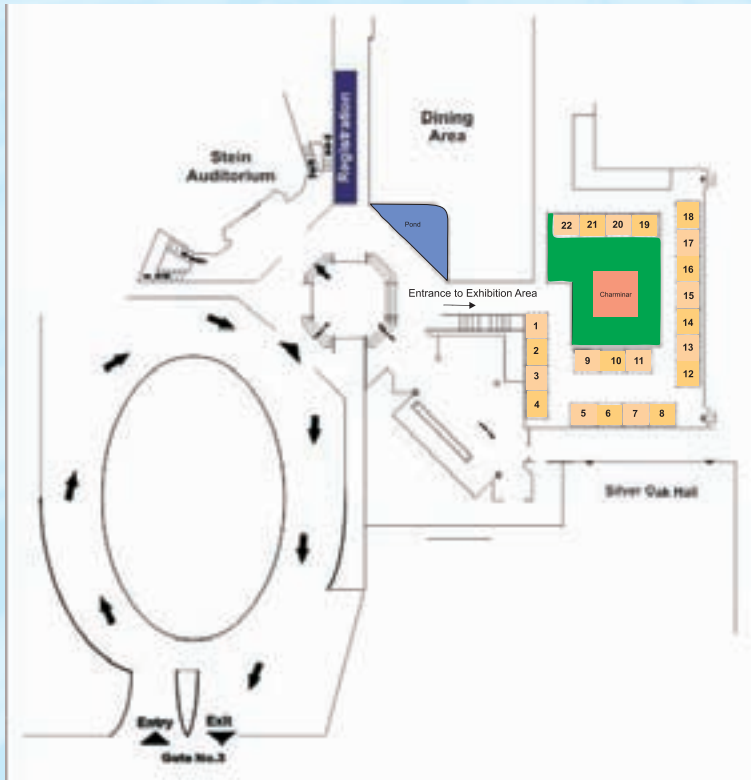
PROCEEDINGS

The proceedings of the Symposium containing the papers selected for oral and poster presentations will be provided to the participants on CD. Abstracts of the papers shall be provided in print.

EXHIBITION

An exhibition is planned as a technology showcase to meet the challenges of 21st century in the field of rock engineering related to water & energy resources, mining and underground works. 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. In total 22 stalls, each of size 3m x 3m, are planned during the Exhibition.

Exhibition Layout



Tariff & Facilities

The tariff for an exhibition stall of 3m x 3m size is as under:

Exhibitors from India	Exhibitors from other countries	Facilities
Rs. 54,000.00	USD 1,800.00	Fascia 1
		Chair 2
		Table 1
		Spotlight 3
		5, 15 Amp. Socket 1
		Waste Basket 1

One free nomination will be allowed to the exhibitor for participation in the Symposium. For additional nominations, registration fee shall be payable.

Terms and Conditions

The exhibition stalls will be made available on 25 October 2010 at 0800 Hrs. In case an exhibitor does not take over the allotted stall latest by 1100 Hrs. on 25 October 2010, the organizers shall have the right to re-allot the stall without any indemnity.

The exhibition may be postponed, shortened or cancelled due to any cause whatsoever beyond the control of the organizers. The organizers shall not be responsible for any loss sustained by the exhibitors directly or indirectly attributable to the elements of nature, events of force majeure, such as war, panic, mob action, strikes, civil disorders, fire, floods, etc., including orders or directives imposed by any government authorities. In all matters, not specially provided for, the decision of the organizers shall be final and binding.

SPONSORSHIP

The Symposium will provide excellent opportunities to national and international organizations; central/ state government organizations, public sector undertakings, industrial organizations, equipment manufacturers, entrepreneurs, financial and funding institutions, consulting organizations and construction organizations to publicize themselves by being a Platinum / Golden / Silver sponsors or Supporter of the Symposium. The sponsorship fees payable and benefits are mentioned below. Interested organizations may communicate their willingness to Symposium Secretariat.

Sponsorship Category	*Amount	Benefits
Platinum Sponsor	USD 10,000.00 Rs. 4,00,000.00	<ul style="list-style-type: none">● Full registration for seven delegates● Company name and logo on Symposium Web Page (linked to the company website), proceedings, banner/ signage, stationary items etc.● A full page advertisement in the Souvenir● Distribution of Literature/Brochures● One Exhibition Stall of 3m×3m
Golden Sponsor	USD 7,500.00 Rs. 3,00,000.00	<ul style="list-style-type: none">● Full registration for five delegates● Company name and logo on Symposium, Web Page (linked to the company website) promotion material like proceedings volume, banner/ signage, stationary items etc.● A full page advertisement in the Souvenir● Distribution of Literature/Brochures● One Exhibition Stall of 3m×3m
Silver Sponsor	USD 5,000.00 Rs. 2,00,000.00	<ul style="list-style-type: none">● Full registration for three delegates● Company name and logo on Symposium proceedings volume, banner/ signage, stationary items etc.● A full page advertisement in the Souvenir● Distribution of Literature/Brochures● One Exhibition Stall of 3m×3m
Supporter	USD 2,500.00 Rs. 1,00,000.00	<ul style="list-style-type: none">● Full registration for two delegates● Company name and logo on Symposium proceedings volume, banner/ signage, stationary items etc.● A full page advertisement in the Souvenir

Note : Request for availing the facility of Exhibition Stall need to be sent to the Symposium Secretariat in writing. In case of no such request in received by 15th September 2010, the allotment of stall would not be possible,

*Amount in Rs. is only for the organizations from India

ADVERTISEMENT OPPORTUNITIES

A limited space will be made available on first-come-first-served basis for coloured advertisement in the Souvenir (A4 size coloured) being brought out on the occasion of the Symposium. The interested organizations are required to send the advertisement material, i.e., Art Work/Negative/Positive along with payments as detailed below:

Inner Pages	* US\$ 500 / Rs. 20,000
2 nd & 3 rd Cover	* US\$ 1000 / Rs. 40,000
Back Cover	* US\$ 1500 / Rs. 60,000

*Amount in Rs. is only for the organizations from India

Pre Symposium Workshops/Courses

W-1 : Workshop on "Use of TBM/Road Header in Underground Works - Issues and Challenges"

Objective:

The location of various facilities underground will be the order of the day in the immediate future to ensure sustainable life for future societies by providing necessary infrastructure to accommodate transportation, communication utility networks and complexes for handling, processing and storage of many kinds of materials. Application of new technologies besides use of sophisticated equipment for underground construction works would be warranted for execution of works in a cost effective manner conforming to sustainable development. With rapid growth of underground structures anticipated, there will be tremendous scope for evolution of new technologies and innovative construction practices. However, to achieve the target for underground works besides maintaining quality of works, there is a need to create awareness amongst engineers, scientists, professionals, contractors etc. in the field of underground works. TBM/Road Headers have an important role to play during the execution of underground works. Use of those machines in various rock strata have to face various issues & challenges. To study and discuss these issues & challenges, it is necessary to have manufacturing view point, consultants and utilities experience and with that in view, this two days workshop is planned.

Topics:

- Tunnel Boring Machine - Manufacturer's View Point
- TBMs International Consultant Experience
- Utility Experience

Date	: 23-24 October 2010
Venue	: India Habitat Centre, Lodi Road, New Delhi
Time	: 0930-1730 Hrs.
*Registration Fee	: Delegates from India : Rs. 10,000.00
	: Delegates from Abroad : USD 300.00

*Members of CBIP and ISRM will be offered 10% discount.

W-2 : Short Course on “Carbon Sequestration in Sedimentary Basins”

Objective:

This one-day Short Course will introduce you to **deep carbon sequestration in porous, permeable strata**. Under some future C-tax regime, it may become economically feasible to take CO₂ from combustion gases and place it deep in the ground for permanent storage. This process, referred to as sequestration, requires understanding of the local and regional geology, of thermodynamics and reservoir engineering, and of geomechanics issues to allow design and safe implementation of projects. The whole process of capture and storage or use has come to be referred to as CCS – Carbon Capture and Sequestration.

In the near-term, CO₂ will be used for enhanced oil and gas recovery because sequestration and improved recovery can be simultaneously achieved, likely at a reasonable profit. However, there are other approaches such as human and animal biosolids injection, which solves the problem of waste treatment as well as achieving direct sequestration of carbon (rather than CO₂), with the attendant possibility of methane recovery for beneficial use, and co-injection of other waste streams (oily sludges for example).

The presentations will focus on the science and technology of C sequestration. Options include enhanced oil and gas recovery, storage in salt caverns (likely a temporary – 200 yr – expedient), biosolids injection, and CO₂ placement in deep porous and permeable strata. Of primary concern are issues such as the viscosity and behaviour of supercritical CO₂, the effects of other gases (flue gas from power plants contain only 13% CO₂), the formation of carbon dioxide hydrates in the presence of water, and other phenomena. For example, because supercritical CO₂ is fully miscible in water and conventional oil, capillary trapping phenomena are different compared to water-gas, oil-gas or water-oil systems which have strong interfacial tensions.

Application of the knowledge and practical expertise that we have developed over the last century of the oil industry should allow carbon sequestration to take place in an efficient and economical manner.

Topics:

- Deep Basin Sequestration of Carbon: The Concept and Methods
- CO₂ Properties, Use in Enhanced Oil Recovery and Placement Methods
- Other Methods for Carbon Sequestration, Case Histories
- Geomechanics of C-Sequestration and Screening Criteria

Date	:	23 October 2010
Venue	:	CBIP Conference Hall, Malcha Marg, Chanakyapuri, New Delhi
Time	:	0930-1730 Hrs.
*Registration Fee	:	Delegates from India : Rs. 5,000.00
		Delegates from Abroad : USD 150.00

*Members of CBIP and ISRM will be offered 10% discount.

Course Instructor: Dr. Maurice Dusseault, University of Waterloo, Canada

Dr. Maurice Dusseault, after five years of teaching at the University of Alberta in 1977-1982, now teaches Geological Engineering and Geomechanics at the University of Waterloo

in Canada. He carries out research in mathematical simulation, thermomechanical and hydromechanical coupling, and other areas related to the development of heavy oil resources, CO₂ sequestration, and deep waste injection. He is currently President of the International Society for Rock Mechanics Commission on Petroleum Geomechanics, with a mandate to improve and disseminate geomechanics knowledge as applied to oil and gas exploitation, deep injection of CO₂ and liquid and solid wastes, geothermal energy, and other technologies involving deep boreholes.

W-3 : Workshop on “Rock Mechanics Methods and Tools for Mining Applications”

Objective:

Educate the participants with advances in rock engineering as applied for mining applications. The training modules will cover critical areas of mining engineering where specialist intervention is required for a tangible solution. The training will empower the participants to solve some their mining problems at the mine level itself. The training will be imparted from recognized industry leaders having specialist knowledge in their respective working areas. Important aspects of the workshop are illustrations for induced stresses management, discontinuum non-linear FE modelling using advanced XFEM technique, special methods for blasting to control blast related hazards, and, demonstration of innovative rock mechanics instrumentation for applications to improve mines safety.

Topics:

- **Rock Mechanics Challenges for Mining under Higher Stress Magnitudes**
- **Non Linear Discontinuum FE Modelling for Mining**
- **Rock Reinforcement using Resin Grouted Rock Bolts**
- **Rock Mechanics Aspects of Ore Dilution in Mining**
- **Rock Mechanics Instrumentation for Mines Safety**
- **Engineering Blasting for Wall Break, Dust, Noise and Fly Rock Control**
- **Rock Mass Characterization and Design of Coal Mines**

Date : 24 October 2010

Venue : CBIP Conference Hall, Malcha Marg, Chanakyapuri, New Delhi

Time : 0930-1730 Hrs.

***Registration Fee : Delegates from India : Rs. 5,000.00**

Delegates from Abroad : USD 150.00

***Members of CBIP and ISRM will be offered 10% discount.**

Note : The non-member (CBIP and ISRM) participants who are participating in the 6th Asian Rock Mechanics Symposium (25-27 October 2010) will be offered 10% discount in the Registration Fee of the Pre Symposium Workshops/Courses.

PAYMENTS

All payments except hotel advance and tours, shall be made by the following methods:

Bank Transfer

Name of Bank	HDFC Bank Limited
Address	Surya Kiran Building 19, Kasturba Gandhi, New Delhi-110 001
Account No.	00031110004411
MICR Code No.	110240001
Account Holder's Name	CENTRAL BOARD OF IRRIGATION AND POWER
Swift Code	HDFCINBBDE
	Payment : Via USD A/c No. 001-1-406717 with JP Morgan Chase Bank New York, Swift : CHASUS33 Routing : CHIPS ABA 0002 or FEDWIRE ABA 021000021 CHIPS UID No. : 354459

Credit Card : Only visa and mastercards are accepted.

Please note that the payment by credit card will incur a bank service charge @ 2.5% which shall be paid along with the registration fee.

Bank Draft/Banker's Cheque

Payable at par at New Delhi (India) in favour of "CENTRAL BOARD OF IRRIGATION AND POWER".

In case of bank transfer please clearly inform the purpose of payment (registration fee, exhibition fee, advertisement, etc.), name of the organization/individual, and send the swift advise to Symposium Secretariat to liaise with the Bank.

HOTEL ACCOMMODATION

Hotel Name	Category	Approx. Distance from India Habitat Centre (in Kms)	Tariff/day (in INR)	
			Single	Double
The Oberoi	5 Star	2.5	16055	17000
Le - Meridien	5 Star	7.0	13500	13500
The Claridges	5 Star	3.0	11000	11000
The Park, New Delhi	5 Star	7.0	9800	9800
Ramada Plaza	4 Star	7.0	10450	11000
Park Land - Defence Colony	Budget	4.0	6500	6500
Park Land - Safdarjung	Budget	6.0	6500	6500
Park Land - Nehru Place	Budget	10.0	6500	6500
Clarks Inn -Kailash Colony	Budget	7.0	4800	4800
Clarks Inn - Lajpat Nagar	Budget	4.5	4800	4800
Clarks Inn - Kalka Ji	Budget	10.0	4800	4800
Blue Stone- Nehru Place	Budget	10.0	4000	4000

* The above rates are inclusive of breakfast and applicable luxury taxes. 2.58% Govt. service tax will be levied extra

LOCAL TOURS

LT-1 : New Delhi

Date and Time

25 October 2010 / 0930 Hrs.

26 October 2010 / 1400 Hrs.

Duration: 04 Hrs

Per person cost – USD 28



New Delhi, is often described as the soul of the country. It is a bustling metropolis that has an amazing mixture of modernisation and carefully preserved antiquity. Sprawled over the west bank of the river Yamuna, the Victorian architecture intermingles with the city's high rise buildings. Concrete highways built to ease the growing traffic are interspersed with well laid gardens, Mughal tombs, forts and monuments.

The tour includes visits to **Qutab Minar**, 72 metres high and one of the perfect towers of the Persian world. Nearby, amidst the ruins of the Quwut-ul-Islam Mosque stands the Iron Pillar (6.7 metres weighing more than 6 tons) which has withstood the vagaries of weather and has not rusted for 1600 years. It is a testament to the high level of skill achieved by ancient Indian iron smiths in the extraction and processing of iron. Next visit the **Humayun's Tomb** aptly called the predecessor of the Taj Mahal; India Gate, a war memorial of 30000 soldiers who laid down their lives during the First World War. The tour drives past the President Estate and the Parliament House.

LT-2 : Cooking Demonstration

Date and Time

25 October 2010 / 1000 Hrs.

Duration : 04 Hrs

Per person cost – USD 70

The cuisine of India is characterized by its sophisticated and subtle use of many spices and herbs grown across the Indian subcontinent and also for the widespread practice of vegetarianism across its society. Considered by some to be one of the world's most diverse cuisines, each family of this cuisine is characterized by a wide assortment of dishes and cooking techniques. As a consequence, Indian cuisine varies from region to region, reflecting the varied demographics of the ethnically diverse subcontinent. Indian cuisine is generally divided into two main categories: North Indian cuisine and South Indian cuisine. Both of these cuisines vary significantly on the usage of the types of spices and food preparation; however both also share several other commonalities.



This tour includes a special demonstration of cooking Indian cuisine in an Indian home explaining how the famous Indian curries, tandoori dishes and other tasty recipes are made.

LT-3 : Akshardham Temple

Date and Time

26 October 2010 / 0930 Hrs.

27 October 2010 / 0930 Hrs.

Duration : 04 Hrs

Per person cost - USD 22



Akshardham means the eternal, divine abode of the supreme God, the abode of eternal values and virtues of Akshar as defined in the Vedas and Upanishads where divine prayer, purity and peace forever pervades.

Here you witness the heritage of India in all its facets, insights and beauty at the Swaminarayan Akshardham temple through its monument, exhibitions, verdant gardens and other attractions.

LT-4 : Old Delhi

Date and Time

25 October 2010 / 1400 Hrs.

26 October 2010 / 0930 Hrs.

Duration : 04 Hrs

Per person cost - USD 20

Old Delhi was built by Shah Jahan during the 17th century and is considered today as an epitome of Indo-Islamic architecture. Savor the sights, smells and sounds of the fabled streets of Old Delhi.

Tours are full of legends and unfold tales of Old Delhi, which go back thousands of years. The tour takes you through **Jama Masjid**, the largest mosque in India. This sandstone & white marble mosque is said to hold 20,000 people.



Post visit to Jama Masjid drive past **Raj Ghat**, The Gandhi Memorial and **Red Fort (Lal Qila)** Built during the reign of Emperor Shah Jahan was a residence to the royal family, however during the British Raj it was used as a cantonment by the Britishers, Here is from where the Prime Minister of India addresses the nation on 15th August.

EXCURSION TOUR

E-1 City of Romance - Agra (Daily)

Duration:- Full Day

Per person cost:- USD 100

Delhi -Agra 205 kms (4.30 – 5.00 Hrs)

Lord Robert wrote, quote “Neither words nor pencil could give to the most imaginative reader the slightest idea of the all satisfying beauty and purity of this glorious conception. To those who have not already seen it, I would say - go to India. The Taj alone is worth the Journey” Unquote.

The city of Agra, the quintessence of the grand Mughal era, reigns to this day in the public mind as the embodiment of Royal Grace, imposing architecture and power.

Early this morning drive to the city of Taj, Agra. Also known as the city of romance , Agra is famous for its superb white marble tomb known as the **Taj Mahal**. The epitome of love, the elegy in marble, Taj Mahal is one of the most graceful and extravagant monuments in India. The seventh wonder of the world, is symbol of



endless love and devotion of Emperor ShahJehan to his beloved queen Mumtaz Mahal. The Taj is a befitting tribute to so romantic-a-love story and so divine an emotion that binds two souls forever. It is rightly said that the Taj

has been designed like a palace and finished like a Jewel.

After the visit to the breathtaking monument ,head to a hotel for a scrumptious lunch. After lunch drive to the great fort of Agra – **The Agra Fort**. Whose silent walls are witness to the rise and fall of the Mughal Empire. Agra Fort is among the finest examples of the fusion architecture that has dominated the Mogul period some of the important buildings inside the Agra Fort include Jahangir Mahal, Divan-e-Aam, Divan-e-Khash, Khas Mahal, Anguri Bagh, Musamman Burj, Moti Masjid, Mina Masjid and Shish Mahal among others. Your tour comes to an end with your drive back to Delhi.

Exclusive Tour by AC Car :-

Per Person Cost:- USD 190 (for 02 Pax)

Per Person Cost:- USD 220 (for 01 Pax)

Tour Cost Inclusions for Local and Excursion Tours:

- Travel by an Air-conditioned coach
- Accompanying English speaking guide
- All applicable entrance fee
- Mineral Water on board

Tour Cost Exclusions for Local and Excursion Tours:

- 2.58% Govt. Service tax on the tour cost
- Any item which is not mentioned in the Tour cost inclusions

Terms and Condition:

- The above cost is based on minimum of 10 people taking the tour
- In case of less than 10 people there shall be a supplement charge of US\$20 per person per local tour, except for Agra tour, where supplement cost is mentioned separately.

* On special request exclusive tours can be arranged by Official Travel Agent “Cox & Kings (I) Limited”.

PRE/POST SYMPOSIUM TOURS



T-1 : Golden Triangle (Delhi-Agra-Jaipur-Delhi) (04 Days /03 Nights)

Pre Symposium Tour Dates : 21 - 24 October 2010

Post Symposium Tour Dates : 28-31 October 2010

Per person cost on twin sharing

USD 625

Per person cost on Single occupancy

USD 1175



T-2 : Golden Sand (Delhi-Goa-Delhi) (05 Days /04 Nights)

Pre Symposium Tour Dates : 20 - 24 October 2010

Post Symposium Tour Dates : 28 October - 01 November 2010

Per person cost on twin sharing

USD 595

Per person cost on Single occupancy

USD 1125

Airfare per person (Economy) Delhi-Goa-Delhi

USD 416



T-3 : Temple Tour (Delhi-Khajuraho-Varanasi-Delhi)
(04 Days /03 Nights)

Pre Symposium Tour Dates : 21 - 24 October 2010

Post Symposium Tour Dates : 28-31 October 2010

Per person cost on twin sharing

USD 517

Per person cost on Single occupancy

USD 845

Airfare per person (Economy)

USD 541

(Delhi-Khajuraho-Varanasi-Delhi)



T-4 : Silver Beach Tour (Delhi-Thiruvananthapuram-Kovalam-Delhi)
(06 Days /05 Nights)

Pre Symposium Tour Dates : 19 - 24 October 2010

Post Symposium Tour Dates : 28 October - 02 November 2010

Per person cost on twin sharing

USD 760

Per person cost on Single occupancy

USD 1370

Airfare per person (Economy) Delhi - Thiruvananthapuram -Delhi

USD 510

Tour cost include:

- Hotel Accommodation in superior Hotels inclusive of breakfast and taxes as per itinerary
- All applicable entrance fee to the monument for one visit.
- Services of an English Speaking Guide
- Travel & Sightseeing by an air-conditioned vehicle
- Mineral Water on board

Tour cost does not include:

- Any item of personal nature like laundry, telephone, alcohol etc.
- Any item which is not mentioned in tour cost inclusion
- Present 2.58% Govt. Service Tax on gross billing. However this is subject to change and will be applicable as per the existing tax structure
- Airfare (mentioned separately) and flight timings are subject to change.

For detailed itinerary, please visit : www.arms2010.org

PAYMENT & CANCELLATION POLICY FOR TOURS

Full payment will be required at the time of confirmation of the tour.

CANCELLATION POLICY

60 Days Prior to the Commencement of the tour	:	No cancellation charges
60-45 Days Prior to Date of Travel	:	25% (Total Tour Cost)
45-30 Days Prior to Date of Travel	:	50% (Total Tour Cost)
Less than 30 days	:	No refund

PAYMENT MODE:

Bank Transfer

Intermediary Bank Name	:	Bankers Trust Company, PO Box:318, Church Street Station New York, NY 1000 0318
Swift Code	:	BKTRUS33
Beneficiary Bank	:	Deutsche Bank AG Mumbai Branch
Swift Code	:	DEUTINBBXXX
Beneficiary Name	:	Cox & Kings (I) Ltd.
Beneficiary Account No.	:	0531285 – 00 – 4
Purpose of Remittance	:	M10109001CI27DE
Account Title	:	Cox & Kings (I) Ltd.

OFFICIAL TRAVEL AGENTS

For tours and hotel accommodation please contact at the following address:

M/s Cox & Kings (I) Limited

Indra Place, H-Block

Connaught Circus,

New Delhi-110 001 (India)

Contact Persons	:	Mr. Vikas Khanna, General Manager - MICE & Deep Kumar Yadav
Tel	:	+91-11-4129 7922/ 4129 7940
Fax	:	+91-11-4151 3920/ 2331 7373
E-mail	:	vikaskhanna@coxandkings.com, deepkumar.yadav@coxandkings.com
Web	:	www.coxandkings.com

SYMPOSIUM SECRETARIAT

Central Board of Irrigation & Power

Malcha Marg, Chanakyapuri

New Delhi 110 021, India

Contact Person: Mr. V.K. Kanjlia, Member Secretary, Indian National Group of ISRM

Phone : +91-11- 2611 5984/2688 2866/2410 1591, Ext. 114

Fax : +91-11- 2611 6347

E-mail : uday@cbip.org; cbip@cbip.org

Web : www.arms2010.org

GENERAL INFORMATIONS

WEATHER: The climate in New Delhi will be pleasant in the month of October. The maximum temperature at Delhi in October, ranges between 20-35° C.

ELECTRIC CURRENT: Voltage is 220 volts (50Hz) AC

CURRENCY REGULATIONS: The currency is the Rupee., abbreviated as Rs. Monetary unit: US\$ and Euro are the easiest to change, however any money NOT exchanged via a bank is an offence.

CHANGING MONEY: Foreign currency regulations are strict. Only change money at banks or legal foreign exchange dealers. Keep and look after your transaction receipts as you may be required to provide proof that you obtained your rupees legally.

CREDIT CARDS: A growing number of hotels, restaurants and shops in the major cities are beginning to accept credit cards, the well known and more accepted ones being American Express, Master Card, Diners Club and Visa.

ENTRY/EXIT REQUIREMENTS: A passport and visa are required for entry into India. All visitors must obtain visas at an Indian Embassy or Consulate abroad prior to entering the country. There are no provisions for visas upon arrival, and those arriving in India without visas bearing the correct validity dates and number of entries are subject to deportation.

DUTY FREE: Duty free items which you may bring to India include personal effects like clothing and other articles but not if this is commercial merchandise. All expensive electronic equipments must be declared at the customs which will be rechecked on departure.

BANKING AND COMMUNICATION FACILITIES: Foreign exchange facilities, fax and phone service are available at the hotels.

WATER: It is advisable to drink only mineral water, which is widely available.

VISA AND CUSTOM REQUIREMENTS: All visitors to India require a visa, except visitors from Nepal and Bhutan. The best place to get your visa is at Indian Embassy and High Commissions in your country of residence. Please check your nearest Embassy, Consulate to High Commission for all the details for getting visa. Keep your passport with you at all the time.

TELEPHONE : The international direct dialing code for India is 91 and New Delhi code is 11. Telephone booths are available in all towns/villages. (24 hr. service is available in large hotels).

NEAREST INTERNATIONAL AIRPORT: Indira Gandhi International Airport (Delhi)

INVITATION LETTER: An official invitation letter will be issued by the Organizing Committee. This will be provided upon request after receiving your registration form. However, the official invitation letter will not guarantee the payment of any expenses such as registration, travel or hotel accommodation for the Symposium.

LIABILITY: The Organizing Committee shall not be liable for personal accidents or losses or damage to private property of registered participants of the symposium. Participants should make their own arrangements with the respect to personal insurance.

DISCLAIMER: Whilst every attempt will be made that all features of the symposium mentioned in this announcement will take place as scheduled, the Organizing Committee reserves the rights to make last minute changes should there be need arise.

**ISRM International Symposium 2010
and
6th Asian Rock Mechanics Symposium
23-27 October 2010, New Delhi (India)**

REGISTRATION FORM

1. DELEGATE

Title: [] Mr. [] Ms. [] Dr. [] Others (Please specify)

First Name : _____ Last Name _____

Position : _____ Date of Birth (dd/mm/yy) _____

Organization : _____

Address : _____

City : _____ State _____

Country _____ Zip _____

Tel _____ Fax: _____

E-mail : _____ Web: _____

2. ACCOMPANYING PERSON (s): Prof/Dr./Mr./Ms. (only spouse or children)

1. Last name _____ First name _____

2. Last name _____ First name _____

3. PASSPORT DETAILS (only for foreign delegates)

Name	Passport No.	Date of Issue	Valid till date	Place of Issue	Nationality
1.					
2.					
3.					

4. ARRIVAL/ DEPARTURE FLIGHT DETAILS

Arrival Date ___/___/___ Time _____ Flight No. _____ From City _____

Departure Date ___/___/___ Time _____ Flight No. _____ To City _____

5. REGISTRATION FEE

	ISRM members	Non-members	Students	Accompanying persons
Delegate/ Authors from India	Rs. 8,000	Rs. 10,000	Rs. 5,000	Rs. 4,000
Delegates/ Authors from other countries	US\$ 600	US\$ 750	US\$ 300	US\$ 250

6. Whether Member of ISRM/Student Member Non-member Student

7. No. of Accompanying persons 1 2 None

8. I would like participate in Pre Symposium Workshops/Courses

W1

W2

W3

Total payable amount USD/Rs.

9. Mode of Payment

- Bank Draft/ Bankers/ Cheque No.____ Dated _____ for USD/ Rs. _____ drawn on Bank _____ and payable to “Central Board of Irrigation & Power” at New Delhi, India.
- Transfer (Through Swift Code:)
- Credit Card. (Online Registration only).

In case of bank transfer, please clearly inform the purpose of payment (registration fee, exhibition fee, sponsorship, etc.), name of organisation/individual, and send the swift advice to the Symposium Secretariat to liaise with Bank.

Date: _____

Signature: _____

Secretary

CENTRAL BOARD OF IRRIGATION AND POWER

Malcha Marg, Chanakyapuri

New Delhi - 110 021, India

Phone: 91-11-26115984 / 26882866 / 26116567, Extn. 114

Fax: 91-11-26116347

Email: uday@cbip.org, cbip@cbip.org

Web: <http://www.arms2010.org>

PROVISIONAL PROGRAMME AT A GLANCE

Date	Time	Activity		
23 October 2010 (Saturday)	1000 – 1730 Hrs.	Registration		
	0930 – 1800 Hrs.	ISRM Board Meeting		
	0900 – 1800 Hrs.	Short Course/Workshop		
24 October 2010 (Sunday)	0900 – 1730 Hrs.	Registration		
	0900 – 1800 Hrs.	Short Course/Workshop		
	0930 – 1300 Hrs.	ISRM Commission Meetings/Regional Meetings		
	1400 – 1830 Hrs.	ISRM Council Meeting		
25 October 2010 (Monday)	0800 – 1730 Hrs.	Registration		
	0930 – 1030 Hrs.	Inaugural Session of ARMS 2010		
	1100 – 1300 Hrs.	Rocha Medal Presentation and Keynote Lectures, including First Annual ISRM Award Lecture		
	1400 – 1530 Hrs.	Technical Session-I	Technical Session-II	Technical Session-III
	1600 – 1730 Hrs.	Keynote Lectures		
26 October 2010	0930 – 1100 Hrs.	Keynote Lectures		
	1130 – 1300 Hrs.	Technical Session-IV	Technical Session-V	Technical Session-VI
	1400 – 1530 Hrs.	Technical Session-VII	Technical Session-VIII	Technical Session-IX
	1600 – 1730 Hrs.	Keynote Lectures		
27 October 2010	0930 – 1100 Hrs.	Keynote Lectures		
	1130 – 1300 Hrs.	Technical Session-X	Technical Session-XI	Technical Session-XII
	1400 – 1530 Hrs.	Technical Session-XIII	Technical Session-XIV	Technical Session-XV
	1600 – 1730 Hrs.	Concluding Session		

1100 - 1130 Hrs. Tea
 1300 - 1400 Hrs. Lunch
 1530 - 1600 Hrs. Tea

