

**ACCOMODATION**

Rooms at special rates have been arranged in the following budget category. Hotel on first cum first served basis which includes 1 meal breakfast + free wifi.

**Name of the Hotel**

**M/s. Hotel Swati & Swati Deluxe**

**Sudh/Suruchi Restraurent**

17A/32, WEA Gurdwara Road, Karol Bagh  
(Near Pusa Road Metro, Pillor No. 98/99),  
New Delhi 110025

**Room Rent**

Rs. 3500/- (single) + Service Tax

Rs. 4000/- (Double + Service Tax

Reservation: 45000325/26

Tel. No. 45000300

Fax No. 45000333

E-mail: amit.sharma@hotelswati.com;  
reservation@hotelswati.com

**SECRETARIAT**

**Central Board of Irrigation and Power**

Malcha Marg, Chanakyapuri, New Delhi-110 021

Phone: 91-11-26115984 / 26116567;

Fax : 91-11-26116347

E-Mail: sunil@cbip.org; cbip@cbip.org;

Web : http://www.cbip.org

**CONTACT PERSONS**

**Shri A.C. Gupta, Director** – Water Resources

(Mobile: 9871995996)

**Shri Sunil Sharma, Chief Manager** – Technical

(Mobile: 9811299136)

**Workshop on  
Best Practices for Safe Cross Passage –  
Investigation, Design and Construction**

**8-9 September 2016**

CBIP Conference Hall at New Delhi



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Best Practices for Safe Cross Passage –  
Investigation, Design and Construction**

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**REGISTRATION FORM**

1. Name \_\_\_\_\_  
(First Name) (Middle Name) (Surname)
2. Position \_\_\_\_\_
3. Organization \_\_\_\_\_
- Address \_\_\_\_\_
5. City \_\_\_\_\_ PIN \_\_\_\_\_
6. State \_\_\_\_\_
7. Mobile No. \_\_\_\_\_
8. E-mail ID \_\_\_\_\_
9. Bank Draft No. \_\_\_\_\_ dated \_\_\_\_\_ for Rs. \_\_\_\_\_ is enclosed.
10. I intend to participate in the deliberations of the Workshop.

\_\_\_\_\_  
(Signature)

Place: \_\_\_\_\_

Date : \_\_\_\_\_

**Key Speakers**



Dr. Herald Wagner



Ron Mickell



G.M. Volkmann



Dr. Florian Krenn



Sanjay Rana



Milon Mukhopadhyay

**Organized by**



TAI

Tunnelling Association of India



Central Board of Irrigation and Power

**Sponsored by**



## INTRODUCTION

In recent years, lots of soft ground tunnels, including metro tunnels and road tunnels, have been constructed in many cities. Nearly all tunnels have cross passages between two tubes.

Cross passage construction between twin tunnels is one of the most critical aspects of an underground metro tunnelling project. Tunnelling professionals often face a world of unpredictability. They do not need more unpleasant surprises that can arise during cross-passage construction. This includes soil, rock, water and gas conditions that are not as expected or accurately investigated.

Designer and contractors often prescribe significant temporary steel support systems within the mainline tunnels during cross passage construction to help support the estimated loads and minimize deformation during break-in and break-out. Such an approach is expensive and time-intensive. A significant improvement could be realized by incorporating the required support into the liner system. Further, Cross passage construction often requires expensive and time consuming dewatering and ground improvement to stabilize the soil. These processes require significant effort and are often a significant source of risk and cause of delay. Conventional dewatering via surface wells has been replaced in some instances by vacuum dewatering from the tunnel level and by ground freezing. Ground improvement is accomplished through jet grouting and fore poling.

One common way to add predictability into cross-passage construction is by modifying the ground conditions, to give tunnellers a better idea of what to expect. Often, this is achieved by drilling down from the surface and treating the ground at the location of the cross-passage or, in some other way that makes the ground easier to work. This can pose several kinds of problems.

- There is a need to reach the site from surface, which can cause conflicts with landowners regarding access, and concerns about possible impacts to their property.
- There is a large impact on public utilities as well as blocked off access to stores, roads, sidewalks and driveways.
- Cost involved in drilling and injection.
- Modifying the ground condition treatment may take days or even months to complete. Thereby adding uncertainty to the schedule.
- Even when the modifying treatment is established, there is no certainty regarding the conditions that the cross-passage builders will encounter.

There are many kind of methods to build in cross passages in soft ground such as, cut-and-cover, mining methods, and combined method, in which the most successful and popular one, mining method with ground improved by artificial ground freezing and its risk prevention and safety protection measures, are introduced.

There is a need to create awareness about the advance rational cross passage design and construction through improved understanding of soil arching, soil-liner interaction and liner load distribution, and through advances in dewatering and ground improvement. To focus on the best and new techniques, it is proposed to organize two days workshop on the above topic on 8-9 September 2016 at New Delhi. The other topics are to be deliberated during the two days deliberations are:

## OBJECTIVES

The objective of this workshop is to update the knowledge of tunneling professionals, i.e., Engineers, Geologists and tunnel technician to understand on various issues & challenges being faced during investigations, design, construction and how they can be newcomer.

## TOPICS

1. Advancement in Cross Passage Construction
2. Geological investigation and geotechnical interpretation for underground works
3. Construction Methodology - Drill & Blast/TBM tunnels
4. CTM Cross Passages in Conventional Tunnelling
  - (a) Structural Interfaces in Design and Construction
  - (b) NATM and Tunnel Support System
  - (c) Pre-support for cross passages
  - (d) Construction equipment
  - (e) Impact on time schedule and cost
5. CTM Cross Passages - Connections with Segmental Lined Tunnels
  - Structural Interfaces in Design and Construction
6. Geotechnical Requirements, Ground Improvements,
7. Risk Assessment & Mitigation,
8. Water proofing of cross passage during construction – Materials for support, water proofing including construction chemicals
9. Insurer's perspective
10. Safety issues during cross passage construction
11. Case histories

## WORKSHOP BENEFITS

The Workshop will introduce to the participants to develop their skills so as to:

- Select suitable investigation techniques and interpretation of geotechnical data;
- To analyze ground conditions to devise the construction methodology;
- Assist in making informed decisions regarding pre support and support system required;
- Select and specify the most suitable equipment for construction;
- Develop a better understanding of the application and use of innovative techniques;
- Develop techniques to mitigate anticipated and unanticipated problems;
- Develop construction schedules more accurately;
- Manage cross passage construction projects more successfully and safely;

- Develop an awareness for the advancement in cross passage construction

## WHO SHOULD ATTEND

The Workshop programme is designed for professionals working in public or private sector organizations dealing with the design and construction of tunnel and underground works. The workshop is of interest to tunnel designer and operators, construction and project managers, engineers (both field and design office), construction supervisory personnel, construction cost estimators, geotechnical engineers and individuals in the construction industry wanting a better grounding in modern tunnelling techniques and practices, geologists, regulatory bodies. Government Departments, Tunnel Building Contractors & Consultants. Suppliers of Products & Services for Tunnelling Construction. Fire Authorities dealing with Infrastructure Tunnels, Technical and Research Institutes, Universities dealing with Tunnelling. Organization & associations active in the Tunnelling World and Funding Agencies.

## RESOURCE SPEAKER

The resource speakers for the workshop are national and international experts having considerable experience on the design and construction issues and challenges, who will be delivering lectures. The CD containing the PowerPoint presentation made by experts will be given to the participants for their reference.

## DATES & VENUE

The Workshop will be held on 8-9 September 2016 in the Conference Hall of Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi

## OFFICIAL LANGUAGE

The official language of the workshop will be English.

## REGISTRATION FEE

The registration fee for participation in the workshop is Rs.10,000/- plus service tax 15% per participant by cash / cheque at par / demand draft drawn in favour of 'Central Board of Irrigation and Power', payable at New Delhi. There would be 10% discount applicable to Members of CBIP & TAI.

The registration fee includes working lunch, tea during the workshop. Registration fee does not include payment for hotel accommodation or meals except those specifically indicated in the Workshop Programme. The participants will have to make their own arrangement for boarding and lodging, transport, etc. at New Delhi. Registration fee once paid will not be refunded.

## SPONSORSHIP

Scope exists for organizations to be the Golden Sponsor or Silver Sponsor on lumpsum payment with following attendant benefits:

## Golden Sponsor – Rs. 2,00,000/-

- Name of the organization in the list of Sponsors
- Organization may nominate six delegates
- Time slot for making presentation
- One full-page black & white advertisement in the proceedings volume
- Distribution of literature/brochures

## Silver Sponsor – Rs. 1,00,000/-

- Name of the organization in the list of Sponsors
- Organization may nominate three delegates
- One full-page black & white advertisement in the proceedings volume
- Distribution of literature/brochures

## ADVERTISEMENT OPPORTUNITIES

A limited space will be made available on first-come-first-served basis, for coloured advertisement to the organizations, involved in the concerned field, in the proceedings volume of the workshop. The interested organizations are required to send the CD of the advertisement material, in A4 size, i.e., Pdf File or in Coraldraw File along with payments as detailed below by 31st August 2016.

- Inner Pages US\$ 500 / INR 30,000
  - 2nd & 3rd Cover US\$ 1000 / INR 50,000
  - Back Cover US\$ 1500 / INR 75,000
- \* Service tax extra @ 15%. Service Tax Registration No : AAAJC0237FST001

## PAYMENT

1. All payments are to be made by the following methods. No other methods of payment are acceptable.

Registrations/ Sponsorships/ Advertisements

- Cash
- Banker's Cheque payable to : Central Board of Irrigation and Power, New Delhi
- Bank Transfer :

Name of Bank : HDFC Bank Ltd., 209-214, Kailash Building, 26 Kasturba Gandhi Marg, New Delhi - 1

Beneficiary Details

Organization : Central Board of Irrigation and Power  
Account No. : 00031110004411 MICR Code No. : 110240001

Swift Code : HDFCINBBDEL IFSC : HDFC0000003

Bank charges if any, must be borne by the participants and should not be deducted from the amount remitted to the Workshop Secretariat.

2. Participants will have to make their own arrangement for Travel, Boarding and Lodging etc.
3. Last date of receipt of nominations is 31st August 2016. Spot registration facility will also be available provided prior information is received.
4. Last date for sponsorship and advertisement is 31st August 2016