

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

9-10 February 2023

New Delhi



Organized by



Tunnelling Association of India



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INTRODUCTION

In recent years, no. of soft ground tunnels, including metro tunnels and road tunnels, have been constructed in many cities. Nearly all tunnels have cross passages between two tunnels.

Cross passage construction between twin tunnels is one of the most critical aspects of an underground metro tunnelling project. Tunnelling professionals often face unpredictability, uncertainty and unpleasant surprises during cross-passage construction. This includes soil, rock, water and gas conditions that are not expected as per initial investigation.

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 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 besides there is a need to take measures for risk prevention and safety protection.

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 9-10 February 2023, at New Delhi.

OBJECTIVES

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

TOPICS

The following topics are to be deliberated during the two days deliberations are:

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 decide 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 SPEAKERS

The resource speakers for the workshop are national and international experts having considerable experience on the design and construction issues and challenges. The softcopy of the PowerPoint presentation made by experts will be given to the participants for their reference.

DATES & VENUE

The Workshop will be held on 9-10 February 2023 at 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 GST @18% per participant. There

would be 10% discount applicable to Members of TAI & ISRM India.

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.

PAYMENT

Kindly arrange to remit the payment by cheque to be drawn in favour of "Adhering Committee of International Tunnelling Association (India)" or by bank transfer to the following account:

- Name of Bank: Canara Bank, Delhi Diplomatic Enclave, 7/48, Malcha Marg, Chanakyapuri, New Delhi 110021
- Account No. 0157101031496
- MICR Code No. 110015007
- Account Holder Name: "ADHERING COMM OF ITA"
- IFSC Code: CNRB0000157
- Swift Code: CNRBINBDDFS

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

Last date of receipt of nominations is 31st January 2023. Spot registration facility will also be available provided prior information is received.

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 ten 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 four 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 softcopy of the advertisement material, in A4 size, i.e., Pdf File or in Coraldraw File along with payments as detailed below by 20th January 2023.

- Inner Pages US\$ 500 / INR 30,000
 - 2nd & 3rd Cover US\$ 1000 / INR 50,000
 - Back Cover US\$ 1500 / INR 75,000
- * GST extra @ 18%. GST No : 07AAAJC0237F1ZU

SECRETARIAT

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CONTACT PERSONS

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

9-10 February 2023, New Delhi

REGISTRATION FORM

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

(Signature)

Place: _____

Date : _____