



Tunnelling Association of India

C/o CBIP Building, Plot No.4, Institutional Area
Malcha Marg, Chanakyapuri, New Delhi 110 021

Press Release

1. Workshop on Segmental Lining – Issues and Challenges, 26th February 2014 at New Delhi



Precast segmental tunnel linings are used in circular tunnels that are drilled using a Tunnel Boring Machine (TBM) both in soft and hard ground. Precast segmental linings can be used as initial ground support followed by a cast-in-place concrete lining (the "two-pass" system) or can serve as both the initial ground support and final lining (the "one-pass" system) straight out of the tail end of the TBM. Over the last few years, there has been a considerable advancement in the use TBM and other related technologies for tunneling methods. Most of the

metro tunnelling projects and some prestigious hydro projects in India are going for precast segmental tunnel linings. To focus on some of the important challenges to be considered for precast segmental tunnel linings, organized this workshop by Tunnelling Association of India (TAI), Central Board of Irrigation and Power (CBIP) and Indian Committee on Large Dams (INCOLD). The workshop was sponsored by M/s Herrenknecht, Form ESRUBBER and Bakaert Industries Ltd.



1President ITA lighting the lamp

The conference was inaugurated by Mr. Jitendra Tyagi, Director – Works, Delhi Metro Rail Corporation Limited. The other dignitaries who graced the inaugural session and addressed the participants were Mr. Søren Degn Eskesen, *President*, International Tunnelling and Underground Space Association (ITA), Dr. D.V. Thareja, Director – Technical, SNC Lavalin Ltd, Dr. Florian Krenn, Managing Director, Geoconsult India Limited, Mr. V.K. Kanjlia, Secretary General, TAI &

Secretary, CBIP and Mr. A.C. Gupta, Treasurer, TAI and Director – Water Resources, CBIP. During the course of

one day deliberations many national and international resource speakers shared their experiences on the different aspects of Segmental lining as per the details given below which ultimate benefited 80 participants from different agencies, like Metros, Central Public Sector Organizations hydropower corporations, Border Road Organization, National Highways Authority of India, Northern railways, contractors, and other agencies who are involved with the construction of tunnel and underground works in different parts of the country.

Technical Session I – Overview and Applications

- Overview and applications of segmental lining – Mr. Sehdeva Singh, *Executive Director*, Delhi Metro Rail Corporation Limited
- Use of steel fibre for segmental lining, requirement and testing – Prof. Rabindra Gettu, IIT Madras
- Elastomer Rubber Gaskets for Segmental Liners - Dr.-Ing. Werner Grabe, ES Rubber, Germany



Mr. Søren Degn Eskesen, President ITA addressing the

Technical Session – II: Design and construction aspects

- Precast tunnel segment made in concrete reinforced with high strength steel fibers Testing and case studies - – *Mr. Benoit de Rivaz, Global Tunnelling Manager – Building products, NV Bekaert*
- Customized state-of-the-art segment production – *Jorg Riechers, Product Manager, Herrenknecht Formwork Technology GmbH, Germany*
- An overview of Design, Quality assurance for segmental lining (Including quality plans, testing methods, frequency of sampling etc.) and Testing schemes for Steel Fibre Reinforced Concrete Precast Segmental Tunnel Linings - *Mr. Navneet Narayan, Technical Manager, Bekaert Industries Pvt. Limited*
- Segmental lining projects for small diameter – *Mr. Anand Dwarkanath, Herrenknecht AG*



View of audience



Group photograph during the inaugural session