

Seminar on Practical Tunnel Design and Construction

By : Engr. Dr Ooi Teik Aun, F.I.E.M., P.Eng.



Mr. Rolf Stadelmann and Mr. Michael Rehbock with the Chairman of "Tunnelling and Underground Space Technical Division" of "The Institution of Engineers, Malaysia" (IEM), Dr Ooi Teik Aun

The half day Seminar on Practical Tunnel Design and Construction organised by the Tunnelling and Underground Space Technical Division of The Institution of Engineers, Malaysia (IEM) was held on 1 July 2006 at the IEM Lecture Hall with about 90 participants. The lecture was supported by Amberg Engineering and Amberg and TTI in organising the Lectures and the soft copies of the notes within very short notice in order to make this seminar a reality. This is the first time that such a Seminar on the Practical Tunnel Design and Construction using three case histories of mega tunnel projects to illustrate the practical aspects of how tunnel design and construction are managed in different conditions, i.e. soil and rock conditions, high and shallow overburden, as well as presence of groundwater. The three tunnels are namely The Gotthard Base Rail Tunnel, The Uetliberg Tunnel and The Zurich Airport PTS Tunnel.

The Gotthard Base Rail Tunnel is one of the two new trans-Alpine rail routes in

Switzerland that connects the city of Zurich and the city of Milan benefiting an approximately 20 million people in Germany, Switzerland and Italy. It is one of the world's longest Tunnels with a tunnel length of 57km.

The Uetliberg Tunnel is located on the Zurich Western Bypass and is a landmark tunnel in the creation of an environmentally acceptable, safe and convenient freeway bypass around the City of Zurich. It is one of the world's largest road tunnels. Drill and Blast method with steel support and shotcrete was chosen in preference to the TBM.

The Zurich Airport PTS Tunnel is a passenger transport system tunnel to enable the transfers of passengers to and from Midfield Terminal to the existing airport through the underground airport metro style mover system that transfers passengers to and from Midfield Terminal in two minutes. A four lane road tunnel is also incorporated. Details of using Hydro shield TBM for the excavation of fully saturated soft ground



Mr. Rolf Stadelmann presenting his talk at IEM



Both Mr. Rehbock and Mr. Stadelmann addressing the questions asked by the participants



General view of the Seminar at IEM



Technical Books containing the lecture notes



Mr. Rehbock and Mr. Stadelmann, respectively receiving a token of appreciation from Engr. Dr Ooi Teik Aun

is discussed together with the views of the contractor.

The seminar has brought together the experiences of the design and construction of the three mega tunnel projects in Switzerland for the benefit of engineers in the practice of tunnel design and construction in Malaysia and will give immense benefit to the Malaysian engineering community in their future undertaking in tunnelling works. The seminar is a great success

judging from the active discussions during the lectures.

The tunnelling works are on going and a site visit can be arranged if there are enough self paying participants. The estimated cost is about RM6000.00 per person for a week visit including travelling time. Those interested should register their interest with IEM secretariat.

The Organization of this Seminar was made possible with the help of Ir. Tang Sek Kwan, a Council member of the



Mr. Thomas Tang, MD of Amberg Singapore, receiving a token of appreciation on behalf of the company

Southeast Asia Geotechnical Society, a Council member of the Singapore Tunnelling Society and Managing Director of Amberg Engineering and Amberg and TTI in Singapore.

The support of the Tunnelling and Underground Space Technical Division Committee Members and the IEM secretariat for their tireless effort to make this seminar a success despite the very short notice, is gratefully acknowledged. ■