An Unprecedented Cut-and-Cover Station
Uskudar Station / Marmaray Project / Turkey

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The Marmaray Project is a modern fast rail-track transportation scheme of 76.3 km connecting the European and Asian sides of Istanbul City underneath the Bosphorus at a depth of 58 m. The objective of the project is to increase the transportation capacity from 20,000 to 150,000 passengers per hour in both directions and reduce the present traveling time of 185 minutes to 104 minutes for the total route of 76.3 km.

The Immersed Tube Tunnels of the Railway Bosphorus Crossing are shored at the Sirkeci and Üsküdar Stations respectively on the European and Anatolian coasts of the Bosphorus. The Üsküdar (Scutari) Station itself is a huge structure of 278 m by 32 m extending down to a depth of 30 m below the sea water level and it is the biggest cut-and-cover station building ever constructed to such a depth below the sea water level. This station, along with the other components of the Project, is to have a design life of 100 years without any deterioration in the specified level of use of the rail system. Construction of Üsküdar Station involves very special engineering applications that include a sea wall, diaphragm wall with a temporary support system, foundation treatment by jet grouting and a permanent structure with no early-age crack concrete. The complex engineering aspects of this unprecedented cut-and-cover station structure will be discussed in this presentation.

Biographical Sketch:

Nurettin Demir, born in 1951 in Turkey, is a Civil Engineer, graduated from METU-Turkey (BSc: 1975 and MSc: 1978) and Southampton University-England (MSc: 1979). He served as a Design Engineer for large scale irrigation schemes, Planning Engineer for land reclamation and construction works, Deputy and Acting Project Manager for Engineering Services of Atatürk Dam and 2400 MW HEPP, 2X26 km Irrigation Tunnels, 2X27 MW HEPP, Deputy Site Manager for construction of Birecik Dam and 672 MW HEPP, Executive Committee Member for construction of a Motorway Project in Ireland.

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