

## APPLICATION OF GROUND IMPROVEMENT FOR LAUNCHING AND RECEIVING OF TBM SHIELD MACHINES ON MRT ORANGE LINE (EAST SECTION) PROJECT

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### *Abstract*

Ground stabilization and improvement techniques play a significant role in successful implementation of soft ground tunnelling in urban areas. Many methods have been recently utilized to solve geotechnical problems. However, jet grouting is the most typical one which commonly adopted in various manners in tunnelling works, particularly launching and receiving of tunnel boring machine (TBM) at underground stations, intervention shafts and transition between cut & cover tunnel and bored tunnel. The main purposes of jet grouting at these locations are to enhance strength of soil deposits, to ensure the stability at the face of the TBM, to avoid the inflow of groundwater inside the underground structures, and to limit the potential settlements on the surface. Moreover, a special operation of the TBM for break-in and break-out is required to avoid risk of instability and the excessive loads on diaphragm walls. Therefore, this paper aims to introduce design concepts and criteria of ground improvement techniques by jet grouting for TBM break-in and break-out in Bangkok subsoil conditions on the MRT Orange Line (East Section) project. In addition, verification of the effectiveness of the provided ground improvement, the main procedures in practice used for work operations and the major details for construction are also presented.

**Keywords:** *Ground improvement, Jet grouting, TBM, Launching, Receiving*