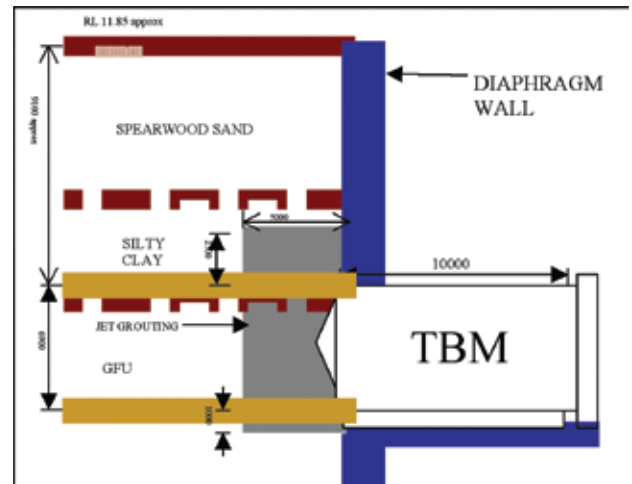


Jet Grouted Break-In Block for Tunnel Boring Machine - New MetroRail Project, Perth WA



To ensure the safe launch of a 6.9m diameter tunnel boring machine (TBM) a stabilized zone of soil was specified.

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Project

The New MetroRail City Project involves the construction of twin tunnels beneath the centre of Perth together with underground stations. To ensure the safe launch of the TBM a zone of stabilised soil was necessary outside of the new station's retaining walls.

Soil Conditions

The soils in which the stabilized zone was required consisted of the permeable silty sands and clays of the Guildford Formation. The sand layers were generally dense to very dense with a characteristic 'N' value of 40 to 50. Groundwater was generally 3m to 4m below ground level.

Solution

With the dimensions, strength and permeability specified by the designer, the treatment design; replacement ratio's, column diameters, spacing etc was carried out by Keller.

Construction

Having carried out Jet Grouting projects for over 20 years and with hundreds of successfully completed projects, Keller was able to provide the technical experience necessary to satisfy the interested parties.

The final design was based upon installing 1.6m diameter columns using Keller's twin fluid system of jet grouting. The large diameter of columns allowed contingency for drill string deviation at the base of the column ensuring continuous overlap of adjacent columns.

Post installation testing was carried out by coring of the treated zone together with water testing to ensure the permeability requirements were met.

Specialist Geotechnical Contractor:

Keller Ground Engineering Pty Ltd

Main Contractor:

Leighton Kumagai JV

Designer

Maunsell Australia Pty Ltd