

Melbourne Metro Rail Project, VIC

Douglas Partners have a specialist team of analysts and engineers with relevant experience in rock mechanics, tunnel design and deep excavations.

The Melbourne Metro Rail Project – CBD North Early Works Package is part of the Victorian Government's commitment to alleviating congestion from the existing public transport system. The project aims to deliver 9 km long twin tunnels connecting Kensington and South Yarra. The CBD North Early Works Package includes the construction of two temporary access shafts to facilitate the construction of the north precinct station cavern.

Douglas Partners were the geotechnical consultant to the project alliance through a subcontract with KBR. The alliance included representatives of the State Government together with John Holland and KBR.

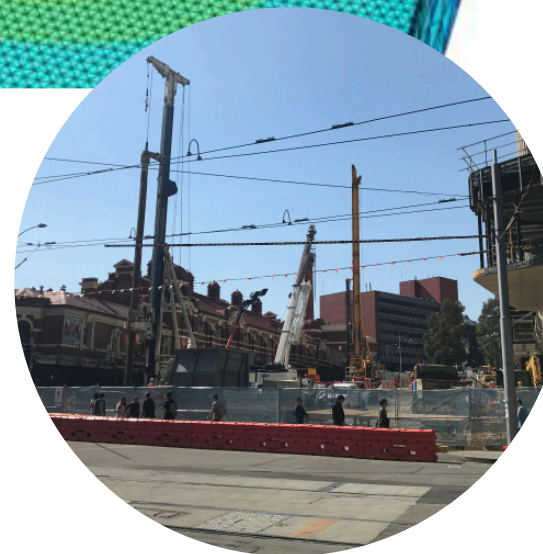
Design and construction of the temporary access shafts presented significant challenges due to time constraints, their location and the very complex nature of geology in the northern area of the Melbourne CBD. As a result, careful design, innovative analysis tools/ techniques and past experience were necessary to deliver a successful design. Douglas Partners addressed a range of geotechnical challenges which generally fell into one of three areas, construction, structures and groundwater.

The temporary shafts comprised bored soldier piles with internal propping as the retention measure to support the excavation. The design analysis was undertaken using the numerical software packages Plaxis 2D, Plaxis 3D and Flac3D, as well as established analytical methods. Geotechnical

challenges Douglas Partners addressed included modelling the complex behaviour of the Melbourne geology in the numerical software and developing sophisticated 3D geotechnical models to provide reliable assessments of the shaft excavation induced settlements.

Tight delivery time frames for the design were also a significant challenge but were managed by using Douglas Partners' VIP licence for the Plaxis Software suite. This enabled Douglas Partners to complete a large portion of the numerical analysis after hours, thus maximising the time available to perform the analysis and also minimising costs to our client.

Douglas Partners are also providing construction phase services to John Holland during pile installation and shaft excavation



CLIENT KBR

YEAR 2016 - Ongoing

SCOPE OF WORK

- Site investigation
- Soil-structure analysis
- Settlement analysis
- Geotechnical design
- Construction phase services

