Sustainable Construction of Underground Transport Infrastructures (SCOUT)

Observational Method

The Observational Method (OM) is “a continuous, managed, integrated, process of design, construction control, monitoring and review, which enables previously defined modifications to be incorporated during or after construction as appropriate. The objective being to achieve greater overall economy without compromising safety.”

In the SCOUT project, the design of retaining wall using the OM approach under the framework of Eurocode has been considered.

Some of the benefits design under the OM approach are:
- Optimises the amount of temporary works, construction programme and costs.
- Control of construction risks

For the OM implementation, the following elements are considered necessary:
- Agreement and commitment between all the parties to adopt the OM approach.
- Knowledge and experience on the derivation of characteristic and most probable soil parameters.
- Understanding of soil-structure behaviour through back analyses of case histories of field observations.
- Comprehensive and active monitoring system that provides reliable field data.
- Integrated contingency measures as part of the management and reviewing structure of the project.
- Close interaction between designer and constructor under the “OM culture” where full commitment and willingness at senior management to see through the OM project.

OM approach allowed construction of a 15m deep basement with only one level temporary prop (photo courtesy of Sir Robert McAlpine)

Four main ingredients in the application of the OM and its elements

OM application showing elimination of two props, together with trigger values based on lateral wall movement

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