THE ROCK ENGINEERING CHALLENGE

Philippe VASKOU[1] & Christophe VIBERT[2]

[1] Geologist, Independent Expert – Cergy-Paris University – France – philippe.vaskou@outlook.fr
[2] Expert Hydro Department, GRUNER STUCKY – Switzerland – christophe.vibert@gruner.ch

WHY A ROCK ENGINEERING CHALLENGE?

Nowadays rock engineering involves the use of ever more powerful and sophisticated softwares, significantly benefitting construction design and supervision. Nevertheless, the relevance of the results obtained from any software is directly linked to the representativeness of the input data, e.g. geotechnical parameters selected for the rock mass.

In this Challenge, you will be presented with different cases, in order to assess the soundness of your approach, from devising investigations you feel are required, to selecting geotechnical parameters, and outlining additional steps required for typical projects.

This workshop will not focus on teaching you about computer modelling, a tool usually well-mastered by rock engineers. The goal will be to make you appreciate the importance of selecting the right parameters and appropriate decision-making at each stage of your project.

RULES AND OBJECTIVES OF THE CHALLENGE

The Challenge is organised in an informal manner, attendees being invited to compete either individually, or in groups of maximum 3 to 4 attendees, for the development of rock engineering projects across different geological environments (e.g. tunnels, slopes, large underground excavations). Marks are given to the groups according to the quality and relevance of their proposals. A final score is used to identify the overall winner of the Challenge.

You are expected to be motivated and actively participate, with a good sense of humour and can-do attitude. Competing and potentially winning should be fun, the ultimate objective being to make you appreciate the different issues to-be-addressed in the interpretation of geological and geotechnical data for modelling. In doing so, you can be expected to increase your knowledge and technical skills.

The Challenge follows a step-by-step approach, very similar to how you may approach each problem or milestone of are'. The steps include in-situ site investigations, laboratory tests, validation of site results, rock mass classifications, and monitoring during construction.

At each step, the following procedure is applied:

- Tutors outline the *objectives* of the project or project phase, as well as its constraints
- Attendees define the **best investigation methodology to-be-applied** for relevant objectives
- Tutors share **a real scenario and/or a real set of data** and results (a laptop is required)
- Attendees **analyse the data** collected and test results
- All groups debrief together and discuss on results
- Tutors close the workshop with recommendations and best practice procedures.

Emphasis is given to appropriate selection and analysis, including:

- how to select the best method depending according to the desired outcome
- how to process data and group it appropriately
- how to select data to-be-used in models
- how to keep only the most reliable sources of data, with most use for the project in question.

DATA USED

All sites presented and data/results are inspired or come directly from real-life international projects encountered by the Tutors throughout their work in the field of dams, tunnelling activities and rock caverns.

NB: a laptop is required to download the sets of data for each site to be studied