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Editorial

ROCK MASS CLASSIFICATION SYSTEM IN TERMS OF PRACTICAL TUNNELING

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Nowadays, infrastructure investments are accelerating; construction methods and techniques are rapidly developing and diversifying, similarly tunneling activities are also developing remarkably. Tunneling (the most common definition of underground space creation work); should be perceived not only as a whole of practical applications used to create a void in the desired geometry just under a topographic obstacle like a mountain and/or hillside, but also as a whole of other theoretical processes that have evolved up to this practical process and are constantly developed during this practical process.

Rock mass classification is one of the most important of these theoretical processes. It is one of the most important criteria used both in the tunnel's design and tender stage, and construction phase. Although rock mass classification systems are seen as systems of theoretical information emerging as a result of practical needs, they have the most intensive use as a part of everyday work in tunneling practice. The rock mass classification systems are the basement of many tunneling applications such as an excavation systems and methods of tunnels, selection of support elements and their application, preparation of contracts, deduction of costs, construction of payments, etc.

The experience of the technical staff involved in the selection of the project location, the projecting stage and the excavation work in selecting these methods, which have different advantages and disadvantages according to each other, play a decisive role for the applicability, cost and security of the project. Since every method developed for determining rock mass properties has characteristics originally developed in the country and the project, it is a fact that when applied in a different project, the same methods do not always give the same yield and result.

The basic condition for the modeling of the tunneled geological environments, the discovery of the geomechanical behaviors and parameters of different geological environments and the consequent tunnel design is a good field research work. However, even if quality of the research work of the area to be constructed is considered to be at the highest level, all the parameters and factors that affect an underground construction and conditions can not be fully elucidated. In this case, an appearance of uncertainty situation should be considered as a preliminary acceptance during the process of making the final project as a result of both the field research and the associated geological and geomechanical modeling and design processes. This uncertainty situations needs to be addressed through a risk analysis and it is necessary to determine at what rates which risks can arise. The distribution of these risks between the employer and the contractor will play an important role both in reducing costs and in reducing technical and legal problems that may arise during and after construction.

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It is necessary to determine the settlements on the floor surface, monitoring of horizontal and vertical displacements, anchor loads, bending of tunnel cover, possible swells in tunnel base, loose zone expansion in tunnel, measurement of tangential and radial stresses in the tunnel, water pressure on the coating, inclination measurements and explosion related vibrations during tunneling activities. Information's on the construction stage are required for correct interpretation of the different measurement data. That information's are used for estimation of real rock conditions, determination of rock class, excavation rate and excavation method, monitoring of temporary support, placement order and time of deformation measuring instruments, monitoring of additional ground movements, observation of tunnel mirror status and extraordinary events.

There are many rock mass classification systems that are widely used in the world, and new systems are emerging as existing systems are watched and developed in each experience light. However, in terms of tunneling practice, rock mass classification systems are seen as "result numbers" or "graphics for support selection" and their use in this way leads to problems during tunnel construction. Large costs are being spent to solve these problems and rock mass classification systems are held responsible for these negative results. Thus, all other influences such as time, macro-scale geology, knowledge of measuring technician and evaluator, psychological impact, use of existing equipment, environment etc. should be taken into consideration in practical use of rock mass classification systems.