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Pre-grouting for leakage control and rock improvement

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In underground construction, ground water inflow and rock mass stability has been a challenging problem. Especially the tunnels constructed below ground water table are often exposed to risk of ground water inflow. Protection of underground structures against water ingress is of paramount importance during construction as well as operation of the tunnel. Waterproofing measures such as sheet membrane and sprayed applied membrane are used in current practice to restrict the water ingress into the tunnel. In majority of cases, these waterproofing systems have had partial success to stop the water ingress, as they are adopted without due consideration to the rock mass around the excavation. Thus, reduction of rock mass permeability by means of pragmatic measures such as pre-grouting can restrict the water ingress to acceptable levels. The primary purpose of pre-grouting is to improve the rock mass strength and establish an impervious zone around the tunnel periphery, thus leading to reduced support system and permeability of rock mass. The aim of this article is to focus on the importance of pre-grouting as an effective waterproofing method whilst discussing the various nuances of the pre-grouting with respect to rock mass improvement.

Biography

T R Subash has completed his Post-graduation in Geotechnical Engineering from College of Engineering, Guindy, Chennai by the year 1994. He is currently Chief Engineering Manager at Heavy Civil Infrastructure Segment at L&T Construction, India. He is having more than 22 years of experience in design and construction of infrastructure projects. His domain of expertise encompasses Tunnel & Underground Engineering, Structural Engineering, Dam and Hydro power Engineering. He is a Chartered Engineer at Institution of Civil Engineers (UK). He is also an active member of Indian Society of Hydraulics and Indian Geotechnical Society.

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