GSW5988: Geological Complexity and Engineering Solutions: India's Unique Rock Mass Classification Approach

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Abstract

Rock mass classification systems play a pivotal role in evaluating rock formations for geotechnical purposes. India has tailored its own rock mass classification system, uniquely designed to suit its diverse geological landscape. This abstract aims to provide an overview of rock mass classification systems, with a specific emphasis on India's distinctive approach. These systems incorporate methodologies and parameters that assess rock mass quality, stability, and engineering properties. In India, the Geological Society of India (GSI) has developed a comprehensive system integrating geological, geomechanical, and engineering aspects. Notably, the GSI's Rock Mass Rating (RMR) and Rock Quality Designation (RQD) are integral components, enabling effective evaluation of rock masses for construction and excavation purposes. This abstract highlights the key components and factors considered in India's rock mass classification system, showcasing its relevance in civil engineering, tunneling, mining, and infrastructure development. It underscores the importance of comprehending geological complexities and structural characteristics to mitigate risks associated with engineering endeavors. Additionally, the abstract discusses practical applications and limitations of India's rock mass classification system in infrastructure projects within the country.It emphasizes the continual need for refinement and adaptation of classification systems to address evolving geological challenges and technological advancements in geotechnical engineering. In conclusion, this abstract sheds light on the significance of rock mass classification systems, with a specific focus on India's distinctive approach. Understanding and effectively utilizing these systems are critical for ensuring the safety, stability, and sustainability of infrastructure projects amidst diverse geological conditions prevalent in India and globally.

Keywords: Rock Mass Classification, Rock Mass Rating (RMR), Rock Quality Designation (RQD), Geological Risk Mitigation, Rock Stability Assessment