



Abstract

Geotechnical engineering is a branch of civil engineering that focuses on the study and application of soil and rock mechanics to design and construct safe and efficient foundations, slopes, embankments, and other geotechnical systems. This field integrates principles from geology, physics, and engineering to address challenges related to the behavior of materials beneath the Earth's surface. Geotechnical engineers play a crucial role in ensuring the stability and safety of infrastructure projects. This article explores the core concepts of geotechnical engineering, its primary applications, and recent advancements that influence its future. The importance of site investigation, soil testing, and environmental considerations are also discussed.

Keywords:

Soil behavior and applying this knowledge to real-world construction challenges. This article provides an overview of

Slope stability and landslide prevention

Earthworks and embankments

Ground improvement

Soil mechanics:

Rock mechanics:

Site investigation:

Applications of geotechnical engineering

Foundation design:

*Corresponding author: Ambuj Shukla, Department of Civil Engineering, National Institute of Technology Patna, India, Email: ambuj@gmail.com

Received: 2-Nov-2024, Manuscript No: jpmm-24-154418, Editor assigned: 4-Nov-2024, Pre QC: jpmm-24-154418 (PQ), Reviewed: 18-Nov-2024, QC No: jpmm-24-154418, Revised: 23-Nov-2024, Manuscript No: jpmm-24-154418 (R), Published: 30-Nov-2024, DOI: 10.4172/2168-9806.1000447

Citation: Ambuj S (2024) Geotechnical Engineering: Principles, Applications, and Future Prospects. J Powder Metall Min 13: 447.

Copyright: © 2024 Ambuj S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Environmental geotechnics

The text in this section is extremely faint and illegible, appearing as a dense block of black marks. It likely contains the main body of the article's content, but the characters are not discernible.