

MICROBIAL GEOTECHNOLOGY AND GROUND IMPROVEMENT

Introduction - Engineering properties of weak soil – problems associated with weak soil – Requirements of ground improvements – introduction to engineering ground modification, need and objectives.

Soil Stabilization - Mechanical modification – Hydraulic modification – Dewatering systems – Chemical modification – Modification by admixtures like lime, Cement, Bitumen etc. – Grouting – Deep jet mixing methods.

Recent Ground improvement techniques stabilization using industrial waste – modification by inclusion and confinement – soil nailing – stone column – compaction piles – dynamic compaction – prefabricated vertical drains – preloading – electro – osmosis – soil freezing vacuum consolidation – deep explosion – dry powdered polymers – enzymes.

Introduction of microbial technology-applications-suitable microorganisms - factors affecting applications of microorganisms.

Bio logging - introduction - suitable microorganisms- application – Bio enzymes - Biocementation – Introduction - suitable microorganisms - applications. Limitations - screening of microorganism – Biosafety

References

1. Hausmann, M.R., *Engineering Principles of Ground Modification*, McGraw – Hill International Editions, 1990.
2. Purushotham Raj, *Ground Improvement Techniques*, Second Edition, Laxmi Publications, New Delhi, 2016
3. Tortora. G.J, B.R. Furke, and C.L.Case, *Microbiology- An introduction (4th Ed.)*, Benjamin/Cummings publ.Co.,Inc., California, 1992.
4. Pelczar, M.J., Chan E.C.S. and Krieg, N.R. *Microbiology*, Tata McGraw Hill, New Delhi, 1993

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