GEOTECHNIQUES FOR INFRASTRUCTRE

Course Code: 13CE2113

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Course Outcomes:

At the end of the course, the student will be able to:

CO1 : Demonstrate an ability to understand the soil structure system under raft foundation.

CO2 : Estimate the lateral load capacity of piles and pile groups.

CO3 : Explain suitability of various foundation systems for towers and chimneys.

CO4 : Justify the various alternative foundation systems on weak soils.

CO5 : Analyse sheet piles and bulk heads

UNIT- I
RAFT FOUNDATIONS

Types, loads on rafts, stiffness / rigidity of soil structure system; allowable soil pressures for rafts in cohesion less & cohesive soils, calculation of bearing capacity of raft foundation.

UNIT – II
PILE FOUNDATIONS

Lateral load carrying capacity, introduction to p-y method and Evans & Duncan's methods. Effect of pile group on lateral load carrying capacity.

UNIT – III
FOUNDATIONS FOR TRANSMISSION LINE TOWERS & CHIMNEYS

Behavior of pad and chimney foundations, geotechnical design of chimney and pad foundation, geotechnical design of foundations for concrete towers and chimneys.

UNIT – IV
FOUNDATIONS ON WEAK SOILS

Soil improvement and foundation techniques for construction on weak and compressible soils. Foundation techniques on expansive soils, estimating heave typical structural distress patterns.

UNIT – V

SHEET PILE WALLS & ANCHORED BULKHEADS

Materials used types of sheet pile walls, analysis of cantilever sheet pile walls in cohesion less & cohesive soils, stability analysis of anchored bulkheads by free & fixed earth support methods.

TEXT BOOKS :

1. Varghese, P.C., "*Foundation Engineering",* 2nd Edition, Prentice Hall of India, 2009.

2. Bowles, J.E., *"Foundation Analysis and Design",* 5th Edition, Mc Graw Hill, 2006.

3. Dr.P. Purushotham Raj, "Soil Mechanics and Foundation Engineering", 2nd Edition, Pearson Education, 2008.

REFERENCES :

1. Dr.P.Purushotham Raj, *"Ground Improvement Techniques",* 1st Ed, Univ. Sci Press, 2006.

2. M.P. Mosely, K.Krish, *"Ground Improvement",* 1st Ed., Sponpress, 2004.

3. Swami Saran, "*Analysis and Design of substructures",* 3rd Ed., Oxford Publishers, 2006.

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