GEOTECHNIQUES FOR INFRASTRUCTRE

Course Code: 13CE2113

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Course Educational Objectives: :

1. To impart the knowledge on raft foundations and pile foundations.
2. To familiarize the student with the knowledge on foundations for transmission line towers and chimneys.

Course Outcome:

1. The students will demonstrate the understanding of foundation systems in weak soils.
2. To impart the students, with the knowledge of raft foundations.
3. To impart the students, with the knowledge of pile foundations
4. To impart the students, with the knowledge of foundations for transmission line towers & chimneys.

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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