

Foundation Engineering - Video course

1. Soil Exploration and Geophysical Investigation (5 lectures)

- 1.9 Introduction
- 1.10 Planning for subsurface exploration
- 1.11 Methods of exploration
- 1.12 Geophysical exploration
- 1.13 Soil sampling and samplers
- 1.14 In-situ tests
- 1.15 Common soil tests
- 1.16 Soil investigation report

2. Theory of Lateral Earth Pressure (5 lectures)

- 2.10 Introduction
- 2.11 Types of earth pressures
- 2.12 Different theories of earth pressures
- 2.13 Displacement-related earth pressure
- 2.14 Rankine and Coulomb theory
- 2.15 Friction circle method
- 2.16 Terzaghi's analysis
- 2.17 Development of bearing capacity theory
- 2.18 Development of uplift capacity theory

3. Methods of Analyses (5 lectures)

- 3.7 Introduction
- 3.8 Different methods of analysis
- 3.9 Limit equilibrium
- 3.10 Limit analysis
- 3.11 Method of characteristics
- 3.12 Finite element method

4. Design of Shallow Foundations (5 lectures)

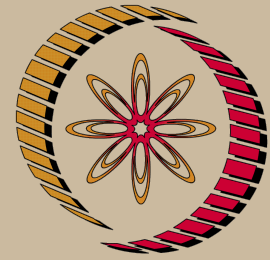
- 4.8 Introduction
- 4.9 Different types of foundations
- 4.10 Calculation of bearing capacity
- 4.11 Stresses in soil
- 4.12 Concept of contact pressure
- 4.13 Calculation of settlements
- 4.14 Codal provision

5. Design of Deep Foundations (5 lectures)

- 5.10 Introduction
- 5.11 Different types of foundations
- 5.12 Design methodology for piles
- 5.13 Calculation of pile capacity
- 5.14 Stresses in pile
- 5.15 Analysis of pile group
- 5.16 Settlement of pile group
- 5.17 Concept of negative skin friction
- 5.18 Piles subjected to lateral loads
- 5.19 Pile load test
- 5.20 Design and construction of well foundation, piers etc.

6. Design of Retaining Structures (5 lectures)

- 6.9 Introduction
- 6.10 Different types of retaining structures
- 6.11 Stability analysis of rigid walls
- 6.12 Design of cantilever sheet piles
- 6.13 Design of anchored sheet piles
- 6.14 Bracing system for underground construction
- 6.15 Failure analysis for bracing system



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6.16 Dewatering

7. Foundations in Difficult Grounds (5 lectures)

7.6 Introduction

7.7 Techniques of ground improvement

7.8 Foundations in swelling soil

7.9 Foundations in collapsible soil

7.10 Use of soil reinforcement

8. Design of Machine Foundations (5 lectures)

8.7 Introduction

8.8 Free and forced vibration

8.9 Lysmer's method

8.10 Dynamically loaded foundations

8.11 Dynamic soil properties

8.12 Vibration isolation

9. Design of Foundations under Earthquake Conditions (5 lectures)

9.5 Introduction

9.6 Different methods of analysis

9.7 Pseudo-static method of design

9.8 Effect of earthquake forces on various foundations