

Addis Ababa Institute of Technology
School of Civil and Environmental Engineering
FOUNDATION ENGINEERING I (CENG 3204) – Course Outline

Academic Year: 2012 E.C (2019/2020)

Semester: II

1. SITE EXPLORATION

- 1.1. Purpose of Site Exploration
- 1.2. Planning of Site Exploration
- 1.3. Methods of Site Investigations and Evaluation of Field Test Results
 - 1.3.1. Exploratory Boring
 - 1.3.2. Soil Sampling
 - 1.3.3. Cone Penetration Test
 - 1.3.4. Field Vane Shear Test
 - 1.3.5. Coring of Rocks
 - 1.3.6. Ground Water Table Location
- 1.4. Other Methods of Site Investigation
- 1.5. Soil Exploration Report

2. TYPES OF FOUNDATIONS AND THEIR SELECTION

3. DESIGN OF SHALLOW FOUNDATIONS

- 3.1. General
- 3.2. Bearing Capacity and Settlement of Foundations
- 3.3. Design of Isolated or Spread Footings
- 3.4. Design of Combined Footings
- 3.5. Design of Strap and Cantilevered Footings
- 3.6. Design of Mat Foundations

4. Analysis and Design of Retaining Walls

- 4.1. Types of Retaining Walls
- 4.2. Common Proportions of Retaining Walls
- 4.3. Forces on Retaining Walls
- 4.4. Design of Retaining Walls

References:

- 1. Reinforced Concrete Design to Euro code 2, Bill Mosely, 6th edition
- 2. Reinforced Concrete Design to Eurocodes: Design Theory and Examples, Prab Bhatt, Thomas J. MacGinley and Ban Seng Choo, fourth edition
- 3. Reinforced Concrete Design, W.H. Mosley and J.H. Bungey, third Edition
- 4. Eurocode 7: Geotechnical Design Worked examples
- 5. Foundation engineering by **Alemayehu Tefera**
- 6. Foundation Analysis and Design by **J.E. Bowels**
- 7. Foundation Design and construction by M.J, Tomlinson