

PROGRAMS **Bachelor of Construction Management & Economics**
Graduate Certificate in Building and Planning

COURSES **10286 Structures 2 *Substructure Component***
02602 Building Structures 6 *Substructure Component*

EXAMINATION: **Semester 2, 2002**

DURATION: 1.5 hours of exam time, preceded by 10 minutes of Reading time, a total of 1 hour and 40 minutes

For ENTENT students 10 minutes of Reading time, plus 1 hour and 45 minutes exam time, a total of 1 hour 55 minutes.

INSTRUCTIONS TO CANDIDATES:

- Answer all questions
 - All questions are of equal value
 - **No reference material is allowed**
 - State any assumptions made
-

Question 1:

- (a) Outline typical geotechnical engineering problems that can be encountered on sites with clay soils, sand soils, and sites containing rock.
- (b) Outline the actions geotechnical engineers can follow to better define the soil conditions at a building site.

Question 2:

- (a) Explain what a Static Cone Test (or Cone Penetrometer Test) is, and the application of the test in geotechnical engineering.
- (b) Outline typical footings that can be used for domestic construction in Adelaide, and their application for different soil types.

Question 3:

- (a) Define a displacement and non-displacement pile, and give examples of each pile type.
- (b) Outline where a shallow spread footing would be used, and where a piled footing be used for a multi-storey building. Support your answer with illustrations.

Question 4:

- (a) Outline different types of retaining walls that are commonly used in civil engineering.
- (b) Describe the various modes of failure of common retaining structure systems.

Question 5:

- (a) Why does the ingress of water increases the potential for a slope to become unstable?
- (b) Explain the shape of the dry density-moisture content relationship curve for a typical soil subjected to compaction.

End of Questions