

國立臺灣海洋大學 103 學年度研究所碩士班招生考試試題

考試科目：土壤力學與基礎工程

系所名稱：河海工程學系碩士班大地工程組（大地工程領域） *可使用計算器

1. 答案以橫式由左至右書寫。2. 請依題號順序作答。

1. a) Write down the equation of soil's shear strength .
b) What are the two parameters of soil's shear strength ? Explain briefly .
c) What are the two components of soil's shear strength ? Point out the differences between them . (30%)
2. Write down the most important 2 criteria for the design of foundations . (10%)
3. For the design of shallow foundation (Fig. 1)
a) Describe the concept of useful width .
b) On what situation , useful width should be considered ?
c) A 5 ft by 5 ft square footing is located 4 ft below the ground surface . The footing is subjected to an eccentric load of 75 kips . The subsoil consists of a thick deposit of cohesive soil with $q_u = 4.0$ kips/ft², and $\gamma = 130$ lb/ft³ . The water table is at a great depth . Calculate the factor of safety against bearing capacity failure by the concept of useful width . (30%) ($e_x = 0.6$ ft)
4. a) What is void ratio e ?
b) Describe the role of e for the design of foundation .
c) A compressible clay layer 10 m thick has an initial $e = 1.026$, after construction of a structure , $e_f = 0.978$. Determine the settlement of the structure . (30%)

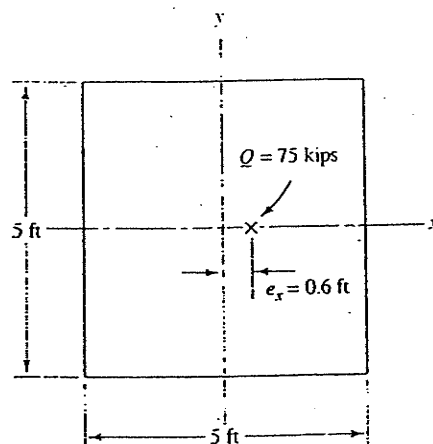


Fig. 1