ASSIGNMENT ON FOUNDATION ENGINEERING

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Class: **B.E. Civil – A**

Question:

A 450 mm^2 section of concrete pile 15m long is driven in a deep deposit of uniform clay. The laboratory UCS test on undisturbed sample indicates an average value of UCS as 75kN/m^2. Calculate the ultimate load capacity of soil.

INPUT

```python
# Input values for the calculation

UCS = float(input("Enter the value of UCS of soil: "))

Cu = UCS / 2  # Calculating cohesion

B = float(input("Enter the value of dimension of pile: "))

L = float(input("Enter the length of pile: "))

Alpha = float(input("Enter the value of adhesion factor: "))

Nc = float(input("Enter the value of Nc: "))

# Calculating the base area of
the pile Ab = B * B print("The
Base area of footing is:", Ab)

# Calculating the surface area of the pile As =
4 * B * L print("The value of cohesion of soil
(Cu) is:", Cu)

# Calculating the ultimate end bearing capacity
(Qpu) Qpu = Cu * Nc * Ab print("Qpu (Ultimate
end bearing capacity):", Qpu)

# Calculating the skin friction resistance
(Qf) Qf = Alpha * Cu * As print("Qf (Skin
friction resistance):", Qf)

# Calculating the ultimate load carrying capacity (Qu) Qu = Qpu + Qf
print("The value of ultimate load carrying capacity of pile (Qu) is:", Qu)
```

OUTPUT

Enter the value of UCS of soil: 75

Enter the value of dimension of pile: 0.45

Enter the length of pile: 15

Enter the value of adhesion factor: 0.8

Enter the value of Nc: 9

The Base area of footing is: 0.2025

The value of cohesion of soil (Cu) is: 37.5

Qpu (Ultimate end bearing capacity): 68.34375

Qf (Skin friction resistance): 810.0

The value of ultimate load carrying capacity of pile (Qu) is: 878.34375