DIGITAL EDUCATION
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CIVIL ENGINEERING

Design of Axially Loaded Pad Footing (Square)

E-TABS & STAAD FILE

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Covered Topic

1. Size of footing
2. Depth of Foundation
3. Net upward soil pressure
4. Bending moment
5. Check for effective depth
6. Reinforcement
7. Check for cracking
8. Check for one way shear
9. Check for Two -way shear
10. Check for load transfer at base of column
11. Check for development length
12. Check for self weight of footing

Foundation Design – Axially loaded pad footings (square)

DESIGN OF AXIALLY LOADED PAD FOOTING (SQUARE)

Data :-

Load on column = 800 KN

Column size =350 x 350 mm

SBC of soil =200 KN /m^2

Concrete Mix =M25

Steel Grade = Fe 500

Clear cover of bottom slab =50 mm

Design :-

1. **Size of footing** :

Load on column P = 800 KN

Self weight of footing 5% = 40 KN

Total load on soil P1 = 840 KN

SBC of soil = 200 KN/m^2

Area of footing required = 840 / 200 =4.2 m^2

Provide 2.10 x 2.10 m square footing.

Area provided =4.41 m^2 > 4.20 m^2

2. **Depth of Foundation :**

As per Rankine's theory

Minimum depth of foundation =p/w (1-sin Φ /1+sin Φ) ^{2}

where p=gross bearing capacity =200 KN/m^2