

Answer all questions

Q.1 (50%) Find the minimum thickness of a slab for an interior panel due to deflection control for the following: Use $f_y = 420 \text{ MPa}$. (60000 psi).

a- Flat slab with drop panels (6.2×5.5) m clear span.

b- Flat plate (3.8×3.2) m clear span.

c- Slab with beams (7.8×7.8) m clear span with $\alpha_m = 3.4$

d- Slab without drop panels (5.9×5.3) m clear span with $\alpha_m = 0.11$

e- Slab with beams (6.1×5.2) m clear span with $\alpha_m = 1.4$

Q.2 (50 %) For the the transverse exterior (Frame D) of the flat plate floor, without edge beams, shown in Figure, and by using the Direct Design Method, find:

a. Longitudinal distribution of the total static moment at factored loads.

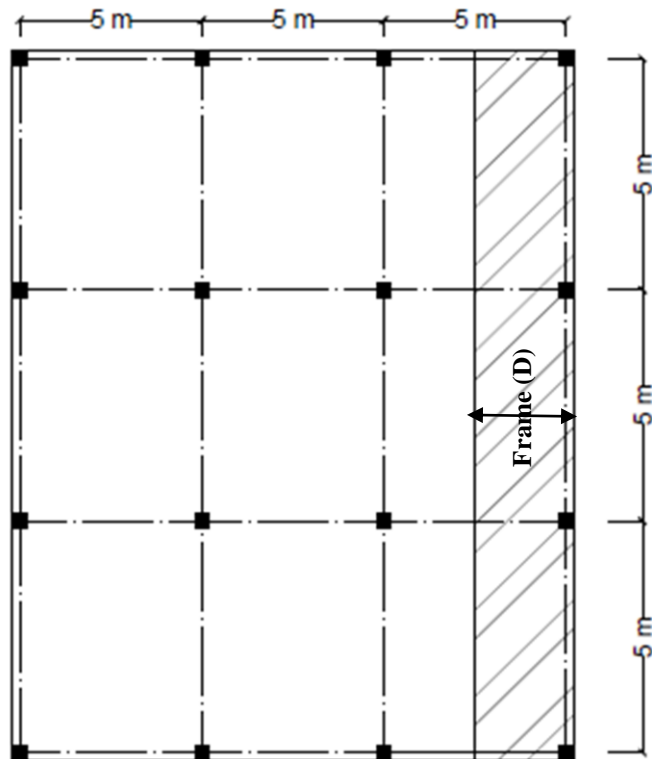
b. Lateral distribution of moment at interior and exterior panels (column and middle strip moments at negative and positive moments).

Slab thickness = 200 mm, $d = 165 \text{ mm}$

$q_u = 14 \text{ kN/m}^2$

All columns = $250 \times 250 \text{ mm}$

$f_c' = 25 \text{ MPa}$, $f_y = 400 \text{ MPa}$



Good Luck