



Systematic arrangement of calculations and neat drawings are essential.
 Any missing data should be reasonably assumed.

يسمح باستخدام كتيب جداول ومنحنيات مساعدات التصميم

Question (1) : (20%)

For the plan shown in Fig(1). it is required to :-
 a- Draw the load distribution.
 b- Calculate the loads acting on beam (G).

Given:-

- L.L = 3 kN/m²
- Weight of walls = 3 kN/m²
- Width of beams = 250 mm
- O.W of beams = 3 kN/m
- slab thickness = 100 mm
- covering = 1.5 kN/m²
- Height of walls = 3.0m

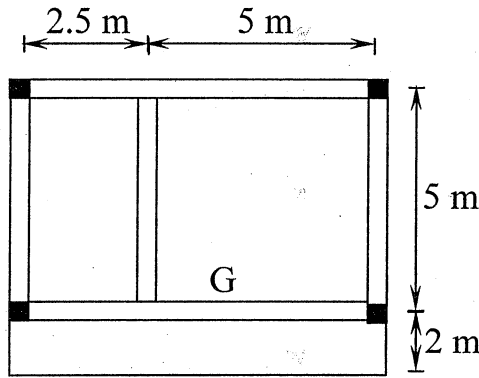


Fig.(1)

Question (2) : (20%)

For the beams shown in fig.(2), it is required to draw the bending moment (B.M.D) and shearing force diagrams (S.F.D).

Note:- the given loads at the working loads.

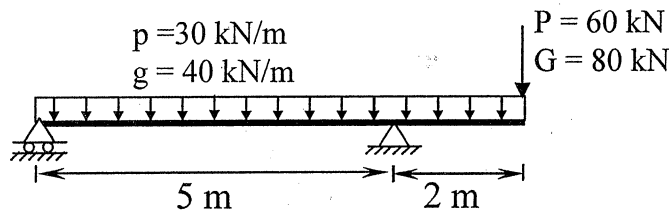


Fig.(2)

To next page 2

Question (2) : (40%)

For the straining action on the beam shown in Fig (3) .

It is required to:-

- Design the critical sections for both flexure and shear.
- Draw the details of the reinforcement to scale 1 : 25 and the critical section to scale 1 : 10.

Given:-

$$f_{cu} = 30 \text{ N/mm}^2 \quad \text{and} \quad f_y = 400 \text{ N/mm}^2$$

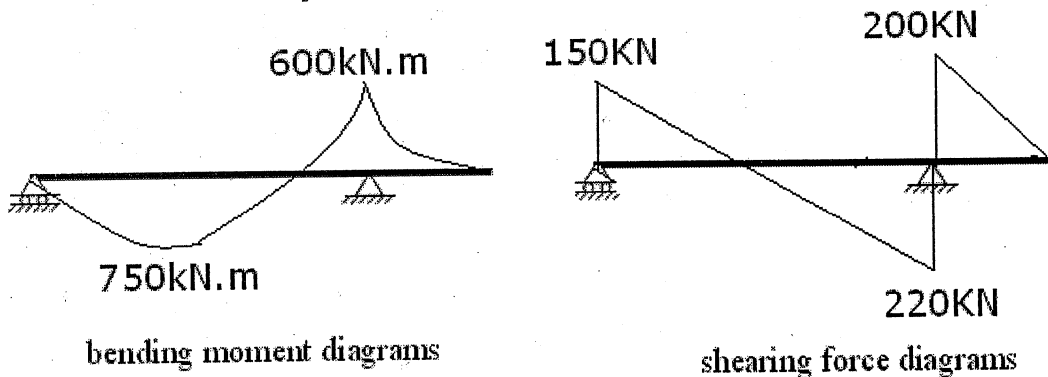


Fig.(3)

Question (4) : (20 %)

Design a rectangular column subjected to centric ultimate vertical load equal to 5000 KN . Materials are $f_{cu}=25 \text{ N/mm}^2$, steel 400/600 for longitudinal reinforcement and draw the details of the reinforcement to scale 1 : 10.

تم بحمد الله

GOOD LUCK

Dr. Ali M. A. Abouzaid