

Benha University Benha Faculty of Engineering Semester: Spring 2020 No. of Pages: 6 Program: Construction Eng. Credit Hours System Subject: Design Project for RC Structures (1) Code: CMC304



Any data not given is to be reasonably assumed.

All calculations and sketches should be clear and neat

Material properties (f_{cu} = 250 kg/cm², f_y = 3600 kg/cm² for H.G.S, f_y = 2400 kg/mm² for Mild Steel)

MODEL 1 CMC304

 $= 200 \text{ kg/m}^2$

= 3 m

Figure (1) shows the typical floor building, with the following data: T_{i}

- There are walls for all beams - Wall thickness
- Wall thickness = 12 cm
 Density of brick walls (including plaster) = 1600 kg/m³
- All columns = 25x60 cm
- Live Load (L.L)
- Height of Floor (H)

It is required:

- 1- Design of RC slab and draw the reinforcement details on plan.
- 2- Design of B1 and B2 in the plan against bending moment and shear.
- 3- Give neat sketches of all reinforcement details for Beam B1, B2.



Figure (1)





For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

 $t_s = 100 \text{ mm}$ b=12 cm t=60cm As=10 cm²



Figure (2)



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MODEL 2 CMC304

Figure (1) shows the typical floor building, with the following data:

There are walls for all beams

- Wall thickness
- Density of brick walls (including plaster) = 1600 kg/m^3
- All columns

= 30x60 cm= 250 kg/m²

= 25 cm

- Live Load (L.L)

- Height of Floor (H)

= 3.5 m

It is required:

- 1- Design of RC slab and draw the reinforcement details on plan.
- 2- Design of B1 and B2 in the plan against bending moment and shear.
- 3- Give neat sketches of all reinforcement details for Beam B1, B2.







For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

 $t_s = 100 \text{ mm}$ b = 25 cm t = 60 cm $As = 15 \text{ cm}^2$ $A_s' = 0.2 \text{ A}_s$



Figure (2)



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MODEL 3 CMC304

Figure (1) shows the typical floor building, with the following data:

- There are walls for all beams
- Wall thickness
- Density of brick walls (including plaster) = 1600 kg/m^3
- All columns

 $= 30 \times 60 \text{ cm}$ = 400 kg/m²

= 25 cm

- Live Load (L.L)

- Height of Floor (H)

= 3.8 m

It is required:

- 1- Design of RC slab and draw the reinforcement details on plan.
- 2- Design of B1 and B2 in the plan against bending moment and shear.
- 3- Give neat sketches of all reinforcement details for Beam B1, B2.



Figure (1)





For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

 $t_s = 100 \text{ mm}$ b=25 cm t=70cm As=20 cm²



Figure (2)