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 ( $f_{\mathrm{cu}}=\mathbf{2 5 0} \mathbf{~ k g} / \mathrm{cm}^{2}, \mathrm{f}_{\mathrm{y}}=\mathbf{3 6 0 0} \mathbf{~ k g} / \mathrm{cm}^{2}$ for H.G.S, $\mathrm{f}_{\mathrm{y}}=\mathbf{2 4 0 0} \mathbf{~ k g} / \mathrm{mm}^{2}$ for Mild Steel)

## MODEL 1 CMC304

Figure (1) shows the typical floor building, with the following data:
There are walls for all beams

- Wall thickness $=12 \mathrm{~cm}$
- Density of brick walls (including plaster) $=1600 \mathrm{~kg} / \mathrm{m}^{3}$
- All columns

$$
=25 \times 60 \mathrm{~cm}
$$

- Live Load (L.L)
- Height of Floor (H)

$$
\begin{gathered}
=200 \mathrm{~kg} / \mathrm{m}^{2} \\
=3 \mathrm{~m}
\end{gathered}
$$

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)
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For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

$$
\mathrm{t}_{\mathrm{s}}=100 \mathrm{~mm} \quad \mathrm{~b}=12 \mathrm{~cm} \quad \mathrm{t}=60 \mathrm{~cm} \quad \mathrm{As}=10 \mathrm{~cm}^{2}
$$



Figure (2)

## MODEL 2 CMC304

Figure (1) shows the typical floor building, with the following data:
There are walls for all beams

- Wall thickness

$$
=25 \mathrm{~cm}
$$

- Density of brick walls (including plaster) $=1600 \mathrm{~kg} / \mathrm{m}^{3}$
- All columns

$$
\begin{aligned}
&= 30 \times 60 \mathrm{~cm} \\
&= 250 \mathrm{~kg} / \mathrm{m}^{2} \\
&=3.5 \mathrm{~m}
\end{aligned}
$$

- 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)

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For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

$$
\mathrm{t}_{\mathrm{s}}=100 \mathrm{~mm} \quad \mathrm{~b}=25 \mathrm{~cm} \quad \mathrm{t}=60 \mathrm{~cm} \quad \mathrm{As}=15 \mathrm{~cm}^{2} \quad \mathrm{~A}_{\mathrm{s}^{\prime}}=0.2 \mathrm{~A}_{\mathrm{s}}
$$



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 $\quad=25 \mathrm{~cm}$
- Density of brick walls (including plaster) $=1600 \mathrm{~kg} / \mathrm{m}^{3}$
- All columns

$$
\begin{aligned}
= & 30 \times 60 \mathrm{~cm} \\
= & 400 \mathrm{~kg} / \mathrm{m}^{2} \\
= & 3.8 \mathrm{~m}
\end{aligned}
$$

- 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)

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For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of the section if

$$
\mathrm{t}_{\mathrm{s}}=100 \mathrm{~mm} \quad \mathrm{~b}=25 \mathrm{~cm} \quad \mathrm{t}=70 \mathrm{~cm} \quad \mathrm{As}=20 \mathrm{~cm}^{2}
$$



Figure (2)

