



المادة : خرسانه
نوع المحتوى : SHEET 1
المحاضر : د. فؤاد بخيت

الاسبوع الأول



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CANON
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
خزينة

OCTOBER 6 UNIVERSITY

FACULTY OF ENGINEERING
BUILDING AND CONSTRUCTION DEP.

THIRD YEAR (1st TERM)
RC STRUCTURES III

Assignment (1) Design of Solid Slabs and Beams

- * Systematic arrangement of calculations and complete detail drawings are essential.
- * $f_{cu} = 30$ MPa, f_y (main steel) = 360 MPa for $\Phi \geq 10$, f_y (stirrups) = 240 MPa for $\Phi \leq 8$, $\Phi \leq 25$
- * Any data not given is to be reasonably assumed according to Egyptian Code of Practice.
- * Drawing scale is 1:50 for structural plan and 1:25 for sectional elevation & X-sections.

Figure (1) shows the structural plan of five story-building. It is required to:

- 1- Design all slabs (Fig 1),
- 2- Draw complete reinforcement details for slabs in plan and in sectional elevations,
- 3- Design the main beams (250mm x 700mm section) for flexure, shear and torsion,
- 4- Draw complete reinforcement details for main beams in elevation and cross sections, and
- 5- Design and draw the sections of columns at the ground level (e_{min} , $e = 0.1t$)

The following data are given:

Floor cover	= 2 KN/m ²
Live loads	= 2 KN/m ²
Story height	= 3.2 m
Wall thickness on main beams	= 250 mm
Unit weight of wall	= 16 kN/m ³
Parapet wall height on cantilever slabs	= 1.2 m
Parapet wall thickness	= 120 mm

Design B_1, B_2
Draw complete
reinforcement
detail for B_1, B_2

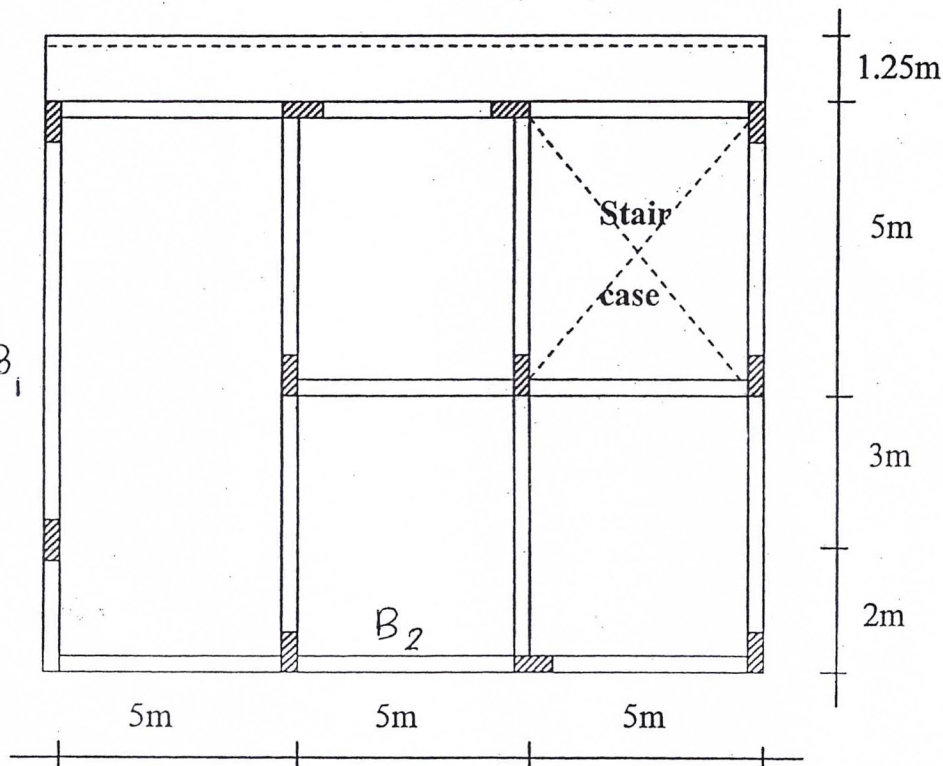


Fig. (1)

Assignment (2) Design of RC Stairs

- * Systematic arrangement of calculations and complete detail drawings are essential.
- * $f_{cu} = 30$ MPa, f_y (main steel) = 360 MPa for $\Phi \geq 10$, f_y (stirrups) = 240 MPa for $\Phi \leq 8$, $\Phi \leq 25$.
- * Any data not given is to be reasonably assumed according to Egyptian Code of Practice.
- * Drawing scale is 1:50 for structural plan and 1:25 for sectional elevation & X-sections.

For the shown structural plans of stairs in Figure (1) & Figure (2), it is required to:

- 1- Design and give complete reinforcement details for stairs in plan and in sectional elevations,
- 2- Design the main beams (250mm x 700mm section) for flexure, shear and torsion (if any), and give complete reinforcement details for main beams in elevation and cross sections.

The following data are given:

Floor cover	= 2 KN/m ²
Live loads	= 3 KN/m ²
Story height	= 3.0 m
Wall thickness on main beams	= 250 mm
Unit weight of wall	= 16 KN/m ³
Beam width	= 250 mm
Step of stair	= 150 X 300 mm
Handrail load on cantilever slabs	= 1.5 KN/m

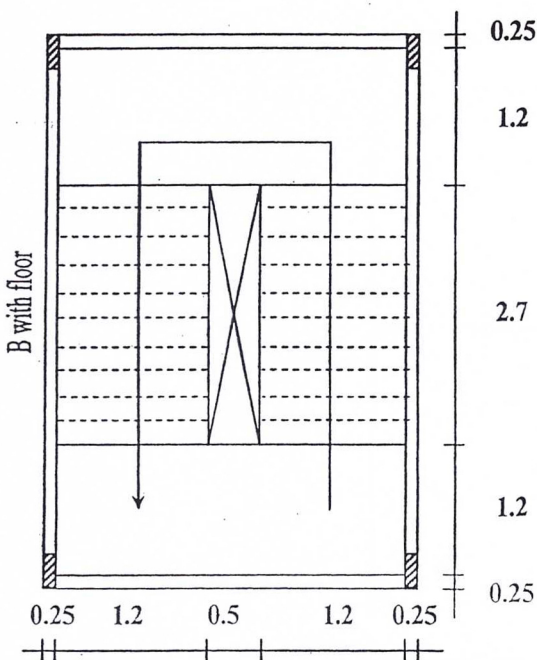


Fig. (1)

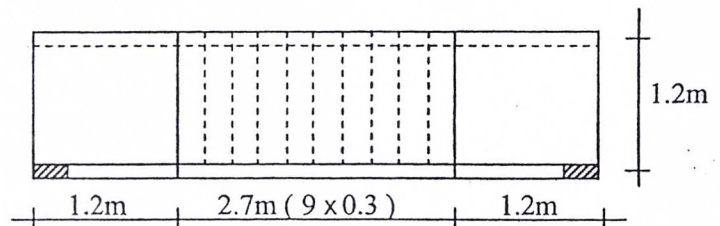


Figure (2)

Assignment (3) Design of Hollow Block Slabs

- * Systematic arrangement of calculations and complete detail drawings are essential.
- * $f_{cu} = 30$ MPa, f_y (main steel) = 400 MPa for $\Phi \geq 10$, f_y (stirrups) = 240 MPa for $\Phi \leq 8$, $\Phi \leq 25$
- * Any data not given is to be reasonably assumed according to Egyptian Code of Practice.
- * Drawing scale is 1:50 for structural plan and 1:25 for sectional elevation & X-sections.

1- Design and draw complete reinforcement details in plan and sections for an **intermediate slab panel** as **one-way ribbed slab** (Size= 6m*8m) and as **two-way ribbed slab** (Size= 8m*8m).

- 2- For the shown structural plans of six-story buildings in Fig. (1), it is required to
- a- Design and give complete reinforcement details for the slabs, in plan and in elevation & cross sections using one-way H.B.S. and two-way H.B.S.
 - b- Design and give complete reinforcement details for two beams (interior & exterior) and supporting columns (at the ground level) in elevation & cross sections.

The following data are given:

Floor cover	= 1.5 KN/m ²
Live loads	= 3 KN/m ²
Story height	= 3.5 m
Wall thickness (positioned on exterior beams)	= 250 mm
Unit weight of wall	= 12 kN/m ³
Parapet wall height on cantilever slabs	= 1.2 m
Parapet wall thickness	= 120 mm

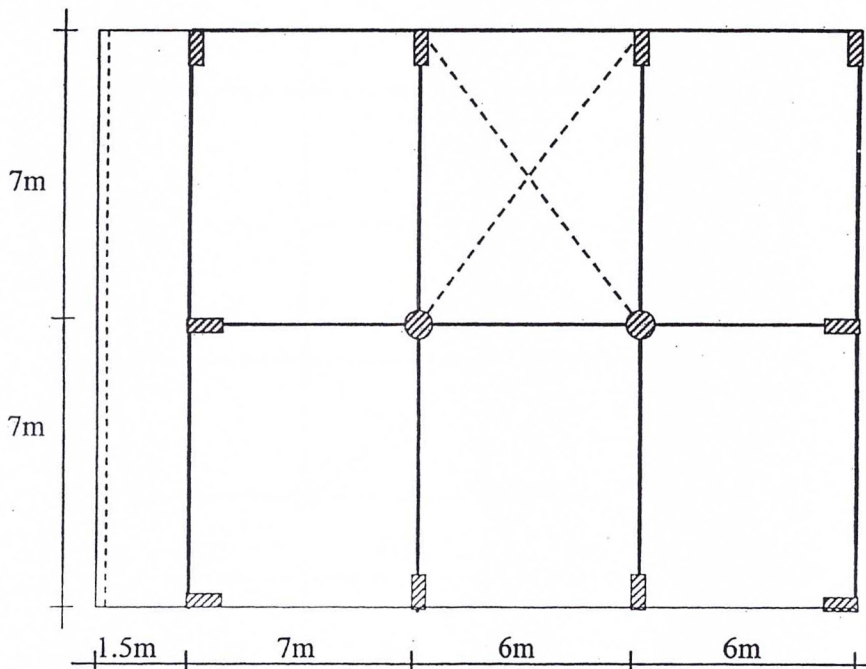


Fig. (1)

Assignment (4) Design of Paneled Beams

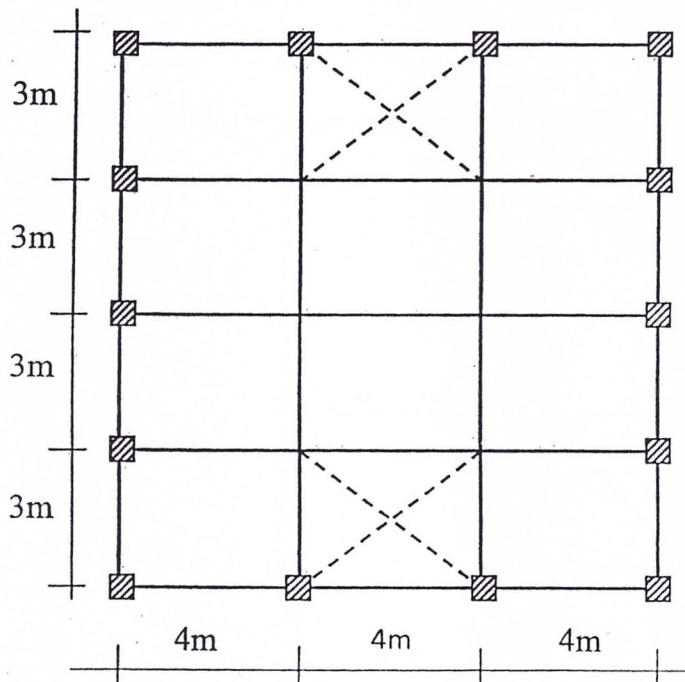
- * Systematic arrangement of calculations and complete detail drawings are essential.
- * $f_{cu} = 30$ MPa, f_y (main steel) = 400 MPa for $\Phi \geq 10$, f_y (stirrups) = 240 MPa for $\Phi \leq 8$, $\Phi \leq 25$
- * Any data not given is to be reasonably assumed according to Egyptian Code of Practice.
- * Drawing scale is 1:50 for structural plan and 1:25 for sectional elevation & X-sections.

For the shown structural plan, it is required to :

- 1- Design and give complete reinforcement details for slabs in plan,
- 2- Design the paneled beams system for flexure, shear and torsion (if any), and give complete reinforcement details for beams in elevation and cross sections, and
- 3- Design and draw reinforcement details for columns at foundation level due to 7 stories.

The following data are given:

Floor cover	= 1.5 kN/m ²
Live loads	= 3 kN/m ²
Equivalent wall load	= 2.5 kN/m ²
Beam width	≥ 300 mm

**Fig. (1)**