Any data not given is to be reasonably assumed.

All calculations and sketches should be clear and neat

Material properties (f_{cu} = 30 N/mm^2, f_y = 400 N/mm^2 for H.G.S, f_y = 280 N/mm^2 for Mild Steel)

Figure (1) shows the typical floor building, with the following data:
There are walls for all beams
- Wall thickness = 250 mm
- Density of brick walls (including plaster) = 18 kN/m^3
- All columns = 300x500 mm

Given:

Live Load (L.L) = 2.5 kN/m^2
Height of Floor (H) = 3500 mm

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- Write down the beam schedule for B1 and B2 in the plan.
4- Give neat sketches of all reinforcement details for Beam B1, (using the moment of resistance diagram).

All dimension millimeter

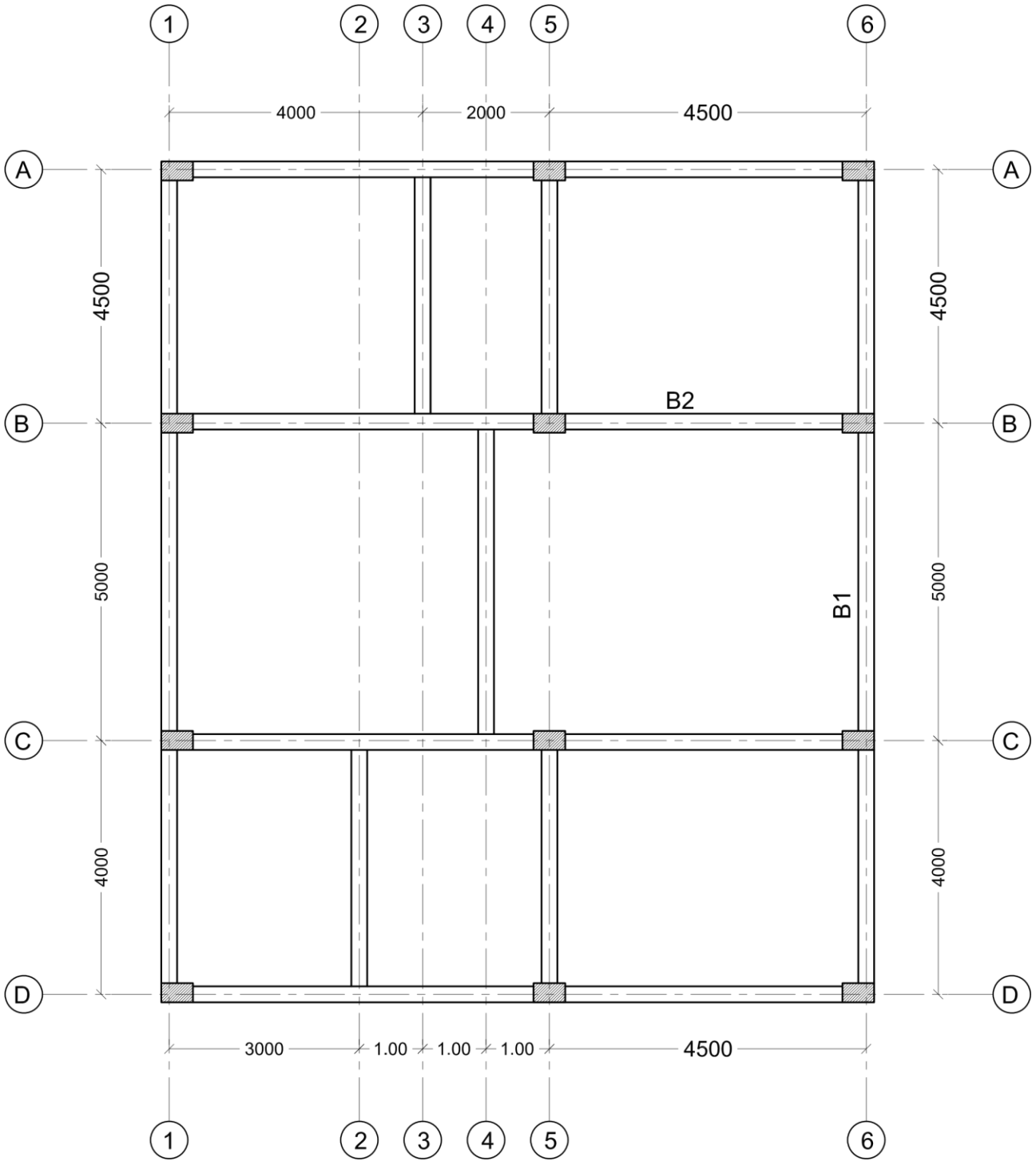
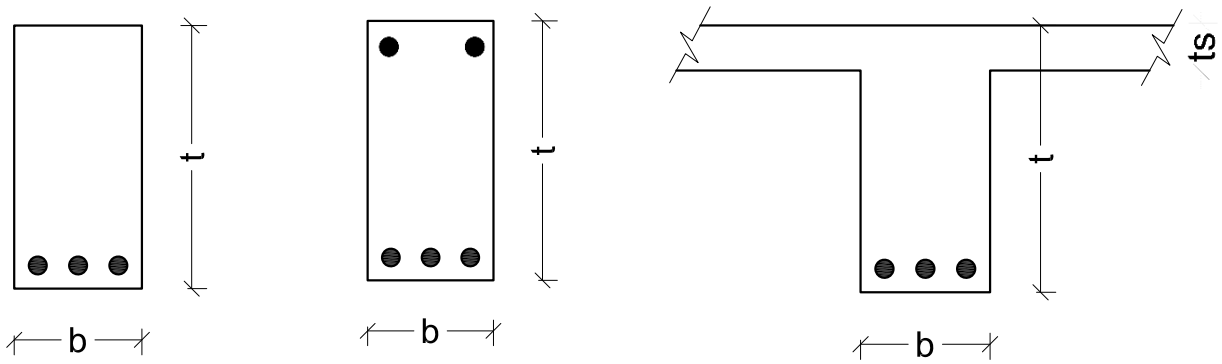


Figure (1)

For the cross-sections shown in Figure (2)

- Determine the Moment of Resistance of EACH section if
  t_s = 100 mm $A_s' = 0.2\ A_s$
- Determine the A_s balanced for EACH section with the following data:

  E_s = 210 GPa ε_c = 0.0035



Sec (A) Sec (B) Sec (C)

Figure (2)

Variables of Sections

b	t	f_{cu}	A_s
mm	mm	N/mm^2	mm^2
150	500	250	1000