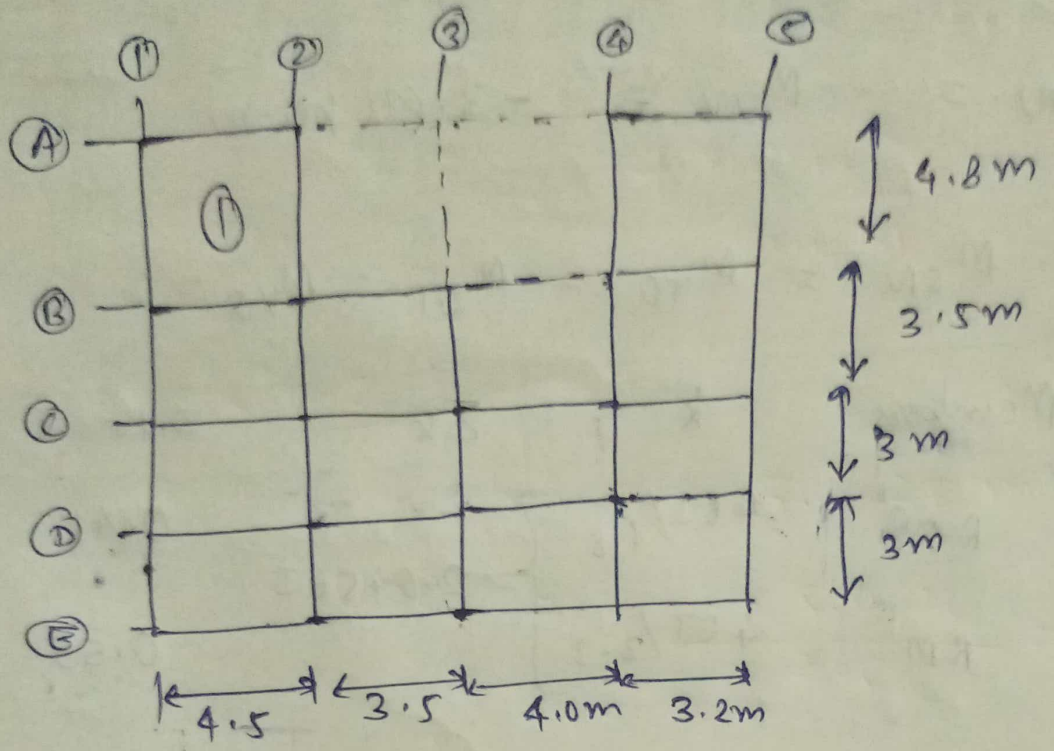
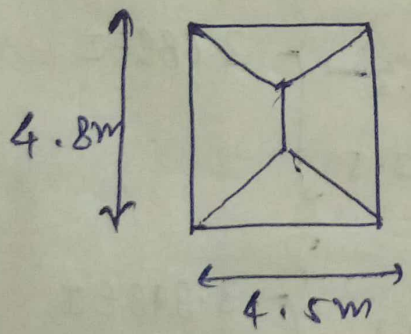
Load Calculations by Tributary Method.



- for slab (1) Dead load calculations:



Unit weight = 25 kN/m³

Thickness = 0.115 m

now, equivalent UDL on beam due to slab =

$$\frac{(\text{area}) \times 25\,kN/m^3 \times 0.115}{(\text{length})}$$

Area of triangle for slab I $= \frac{1}{2} \times \frac{4.5}{\sqrt{2}} \times \frac{4.5}{\sqrt{2}}$

$= \frac{1}{2} \times \frac{(4.5)^2}{2}$

$= 5.0625 \text{ m}^2$

$\therefore$ UDL on beams corresponding to triangle $=$

$$\frac{(5.0625) \times 25 \times 0.115}{4.5}$$

$= 3.234 \text{ kN/m}$

Area of trapezium for slab I $= \frac{1}{2} \times (4.8 + 0.3) \times 2.25$

$= 5.7375 \text{ m}^2$

$\therefore$ UDL on beams corresponding to triangle $=$

$$\frac{(5.7375) \times 25 \times 0.115}{4.8}$$

$= 3.436 \text{ kN/m}$

similarly we can calculate dead load on all the slabs.

If a frame member is connecting two slabs then we can add UDL due to both the slabs on it. This UDL will act in direction of gravity.

- Distributing Live load as UDL:

→ for all the floors LL = 4 kN/m²

∴ UDL = $\frac{4 \times (\text{area})}{(\text{length})}$

For slab I:

Area of triangle = 5.0625 m²

∴ UDL = $\frac{4 \times 5.0625}{4.5}$ = 4.5 kN/m

Area of trapezium = 5.7375 m²

∴ UDL = $\frac{4 \times 5.7375}{4.8}$ = 4.78125 kN/m

similarly LL can be calculated for each slab.

→ for roof LL = 1.5 kN/m²

∴ UDL = $\frac{1.5 \times (\text{area})}{(\text{length})}$

For slab-I:

Area of triangle = 5.0625 m²

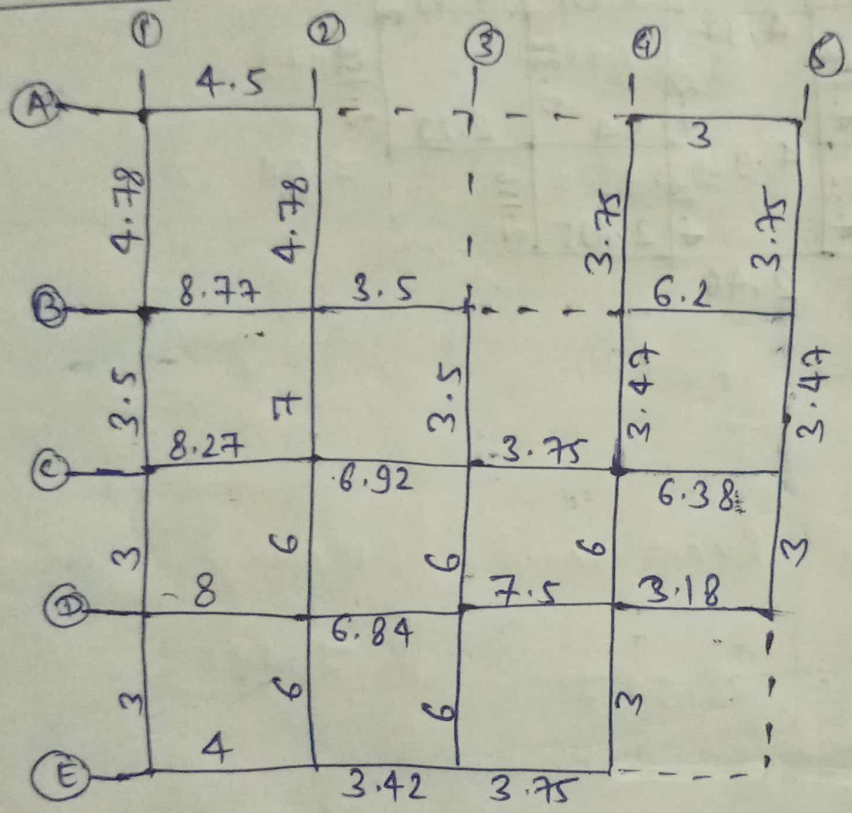
∴ UDL = $\frac{1.5 \times 5.0625}{4.5}$ = 1.6875 kN/m

Area of trapazeum = 5.7375 m²

$$\therefore UDL = \frac{1.5 \times 5.7375}{4.8} = 1.7929 \text{ kN/m}$$

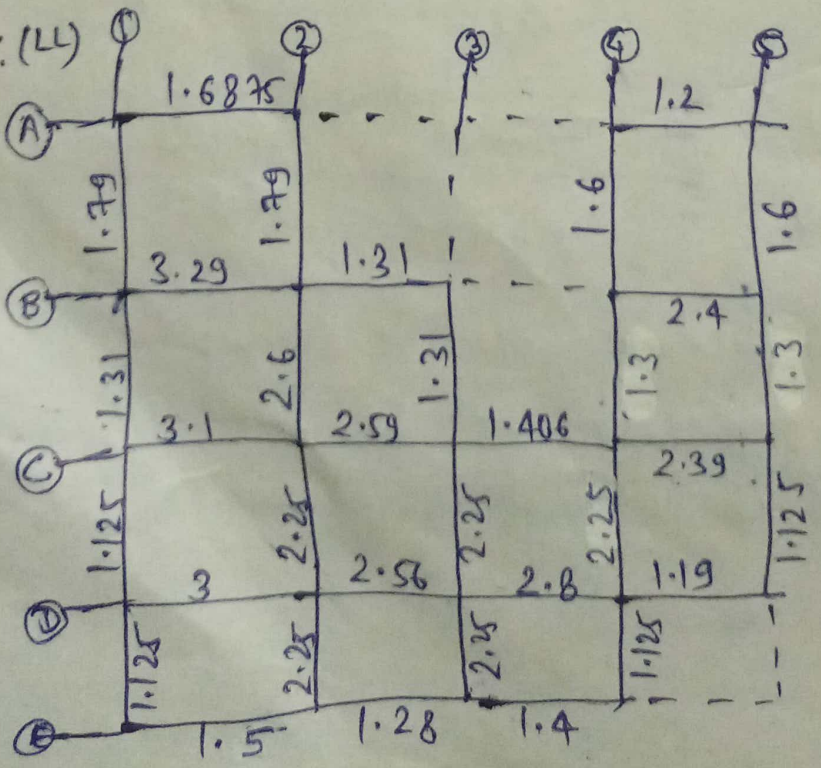
similarly LL can be calculated for all the slabs of the roof.

For floors : (LL)



all units in kN/m

For roof : (LL)



(DL) for floors :