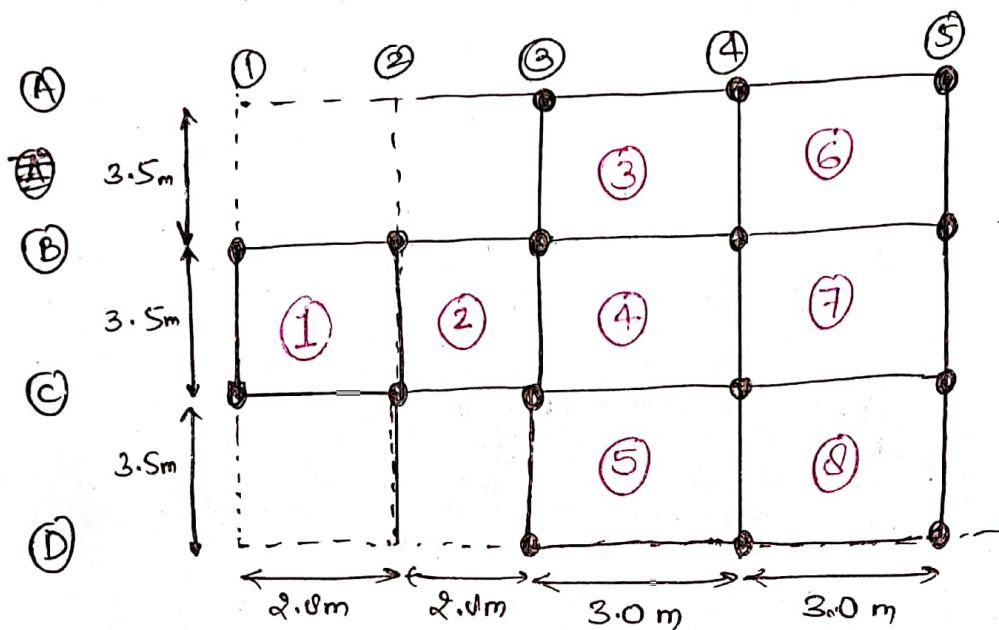


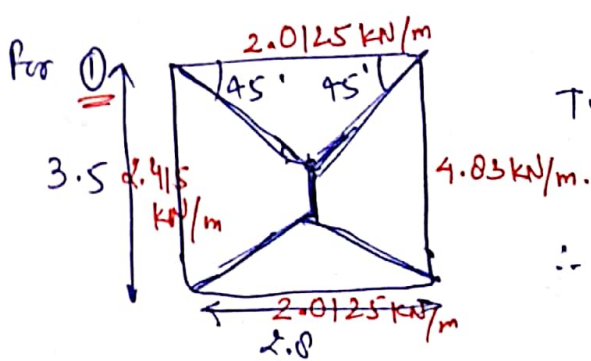
2.0125 kN/m

LOAD CALCULATIONS BY 'TRIBUTARY METHOD'



Tributary Area is a loaded area that contributes to the (T.A.) load on the member supporting that area.

eg: The area from the centre b/w 2 beams to the centre of the next two beams for the full span is the load on the centre beam.



$$T.A. \text{ of } \Delta = \frac{1}{2} \times 2.0125 \times 1.4 = 1.96 \text{ m}^2$$

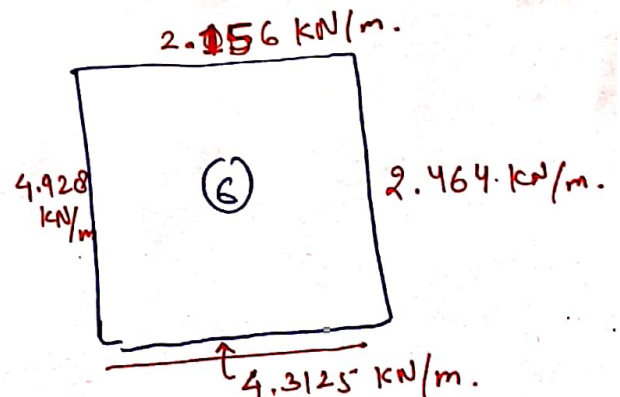
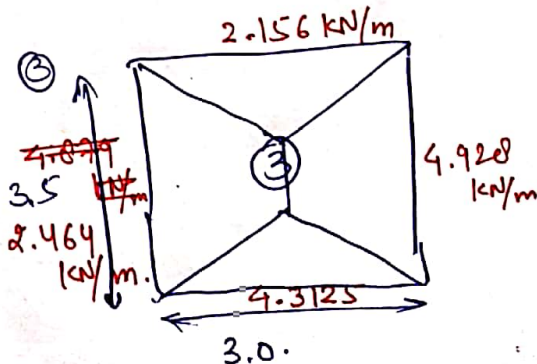
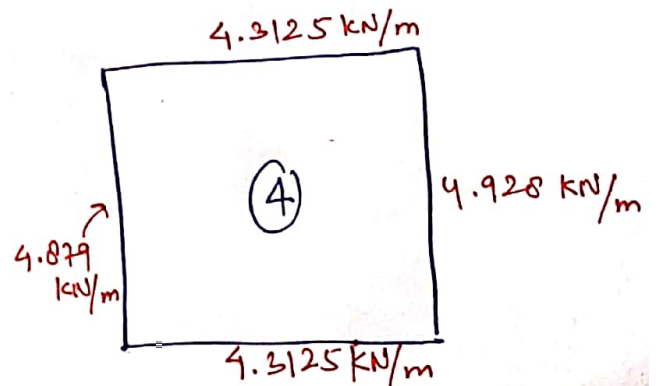
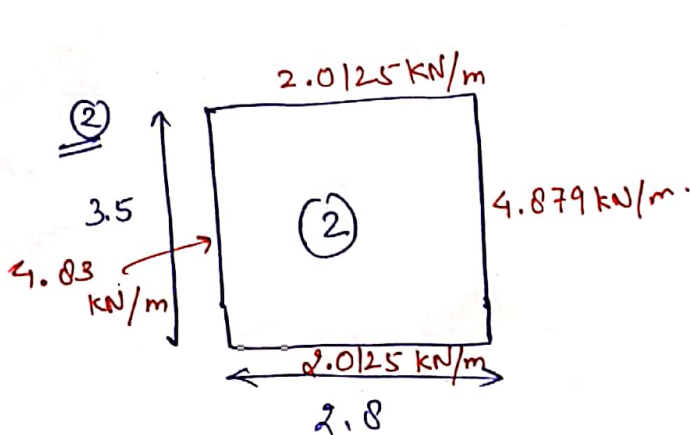
$$\therefore udl = \frac{25 \times 1.96 \times 0.115}{2.8} \rightarrow \text{thickness of slab.}$$

$$= 2.0125 \text{ kN/m}$$

$$T.A. \text{ of } \Delta = \frac{1}{2} \times (0.7 + 3.5) \times 1.4 = 2.94$$

Using symmetry:

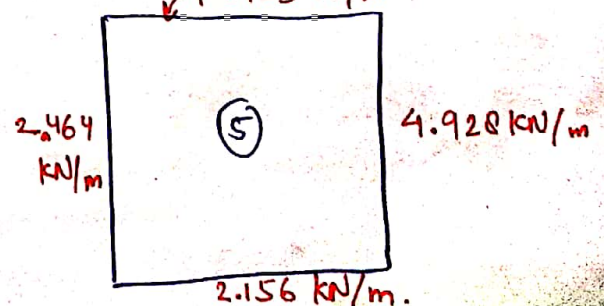
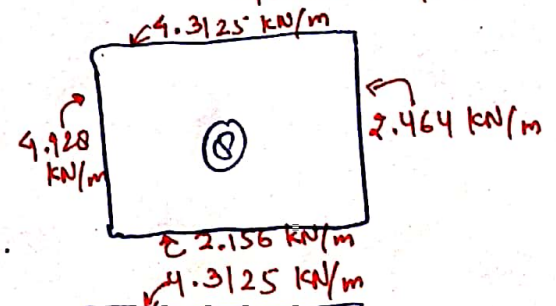
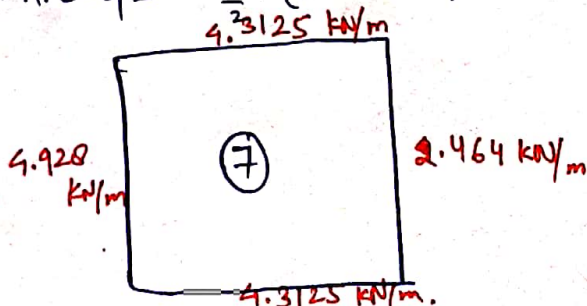
$$\therefore udl = \frac{25 \times 2.94 \times 0.115}{3.5} = 2.415 \text{ kN/m}$$



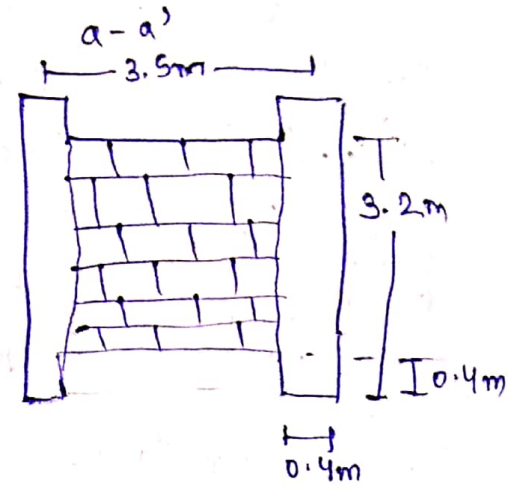
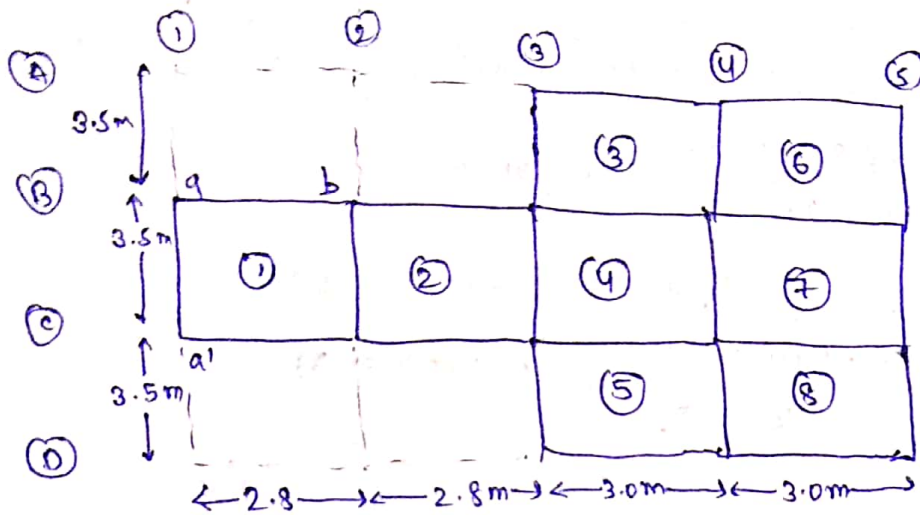
$$T.A. = \frac{1}{2} \times 1.5 \times 3 = 2.25$$

$$udl = \frac{25 \times 2.25 \times 0.115}{3} = 2.156$$

$$T. \text{ Area of } \Delta = \frac{1}{2} \times (0.5 + 3.5) \times 1.5 = 3 \text{ m}^2$$

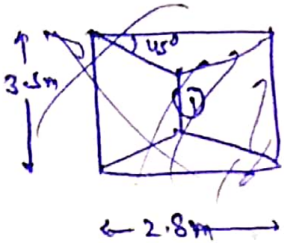


Load Calculations for Brick Masonry



For $\textcircled{a-a'}$

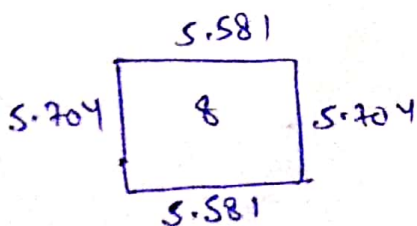
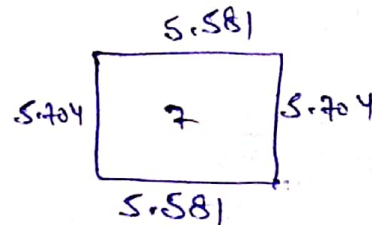
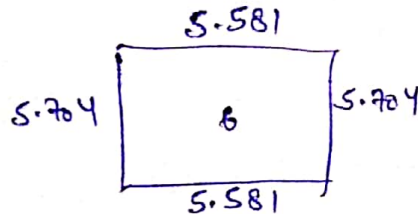
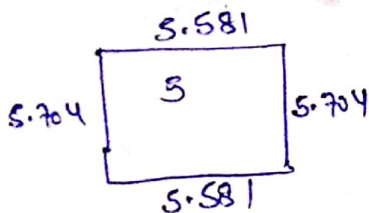
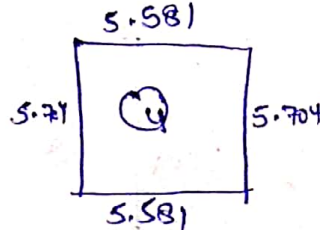
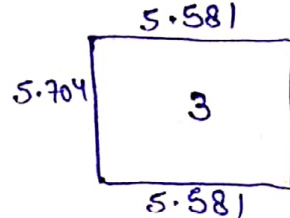
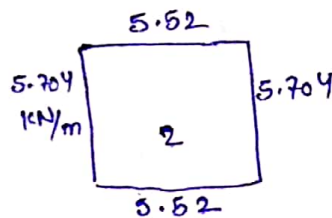
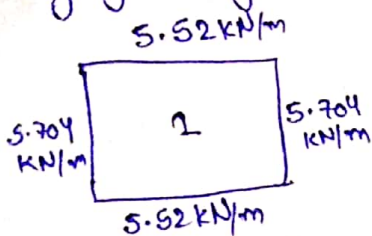
$$UDL = \frac{0.115 \times (3.2 - 0.4) (3.5 - 0.4) \times 20}{3.5} = 5.704 \text{ kN/m}$$



For a-b

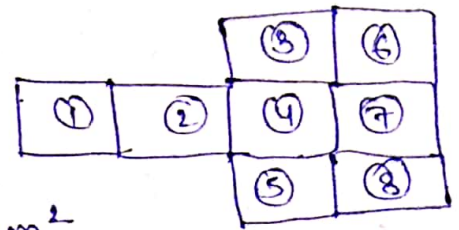
$$UDL = \frac{0.115 \times (2.8 - 0.4) (3.2 - 0.4) \times 20}{2.8} = 5.52 \text{ kN/m}$$

Using ^{sim} calculation similar calculations is done for every beam. Hence, using symmetry we get,



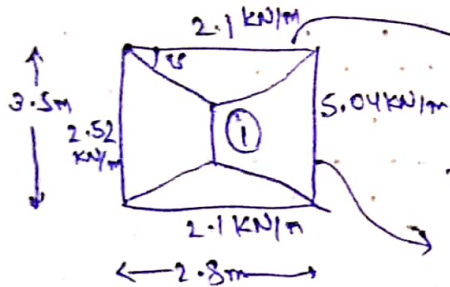
Load calculation for Live load

For every floor except the roof



For 1

$$TA \text{ of } \Delta = \frac{1}{2} \times 2.8 \times 1.4 = 1.96 \text{ m}^2$$



$$UDL = \frac{(1.96 \times 3 \text{ kPa})}{2.8 \text{ (m)}} = 2.1 \text{ kN/m}$$

$$TA \text{ of } \triangle = \frac{1}{2} \times (0.7 + 3.5) \times 1.4 = 2.94 \text{ m}^2$$

$$UDL = \frac{(2 \times 2.94) \text{ (m}^2\text{)} \times 3 \text{ (kPa)}}{3.5 \text{ (m)}} = 5.04 \text{ kN/m}$$

Using Symmetry

