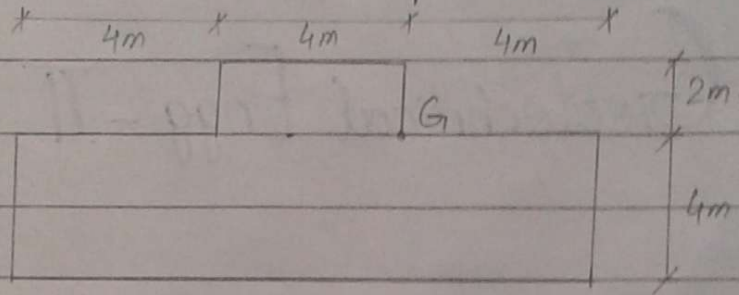


Problem :-

The T-shaped foundation is loaded with the uniform load of 100 kN/m^2 as shown. Find pressure at 6 m below point G .



Solution :-

$$\text{Depth} = z = 6 \text{ m.}$$

$$\text{Loading} = q = 100 \text{ kN/m}^2.$$

$$\frac{\sigma'_z}{q} = W_0 = 1 - \frac{1}{\left(\frac{x^2}{z^2} + 1\right)^{3/2}} \rightarrow \textcircled{1}$$

① First, select a suitable interval for $\frac{\sigma'_z}{q}$ values and then the corresponding values of $\frac{x}{z}$ are determined.

$\frac{\sigma'_z}{q}$	0	0.10	0.20	0.30	0.40	0.50	0.6	0.7	0.8	0.9	1.00
$\frac{x}{z}$	0	0.27	0.40	0.52	0.64	0.77	0.92	1.11	1.39	1.91	∞

Now from the values of $\frac{x}{z}$ we can determine 'x' values as $z = 6 \text{ m}$.

$z = 6m$	$\frac{r}{z}$	$r (m)$
	0	0
	0.27	1.62
	0.40	2.4
	0.52	3.12
	0.64	3.84
	0.77	4.62
	0.92	5.52
	1.11	6.66
	1.39	8.34
	1.91	11.46
	∞	∞

Scale $1cm = 2m$
 $1cm = 200cm$
 $\Rightarrow 1 : 200$

No. of circles = 10

No. of rays = 20

$$\text{Influence Value} = I \cdot V = \frac{1}{(\text{circles})} \cdot \frac{1}{(\text{rays})} = \frac{1}{10} \cdot \frac{1}{20} = 0.005$$

Stress at depth z is given by

$$\sigma'_z = q \times I \cdot V \times (\text{No. of influence units})$$

In this case, No. of influence units = 67

$$\sigma'_z = 100 \times 0.005 \times 67$$

$$\sigma'_z = 33.5 \text{ kN/m}^2$$

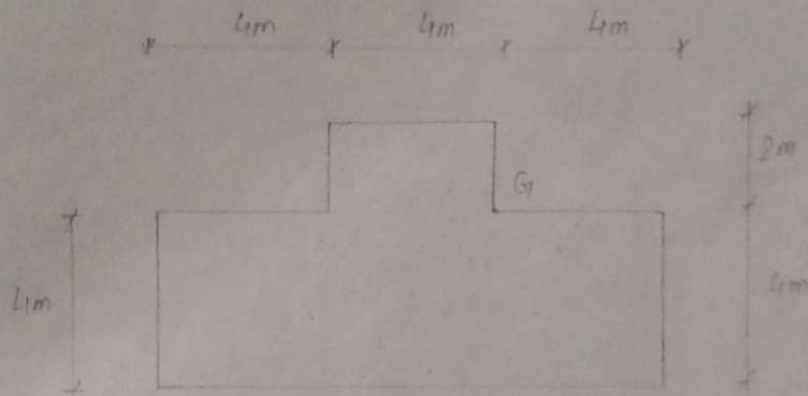
Foundation :-

Scale

1 cm = 2 m

1 cm = 200 cm

1 : 200



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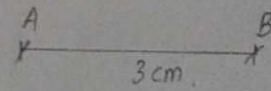
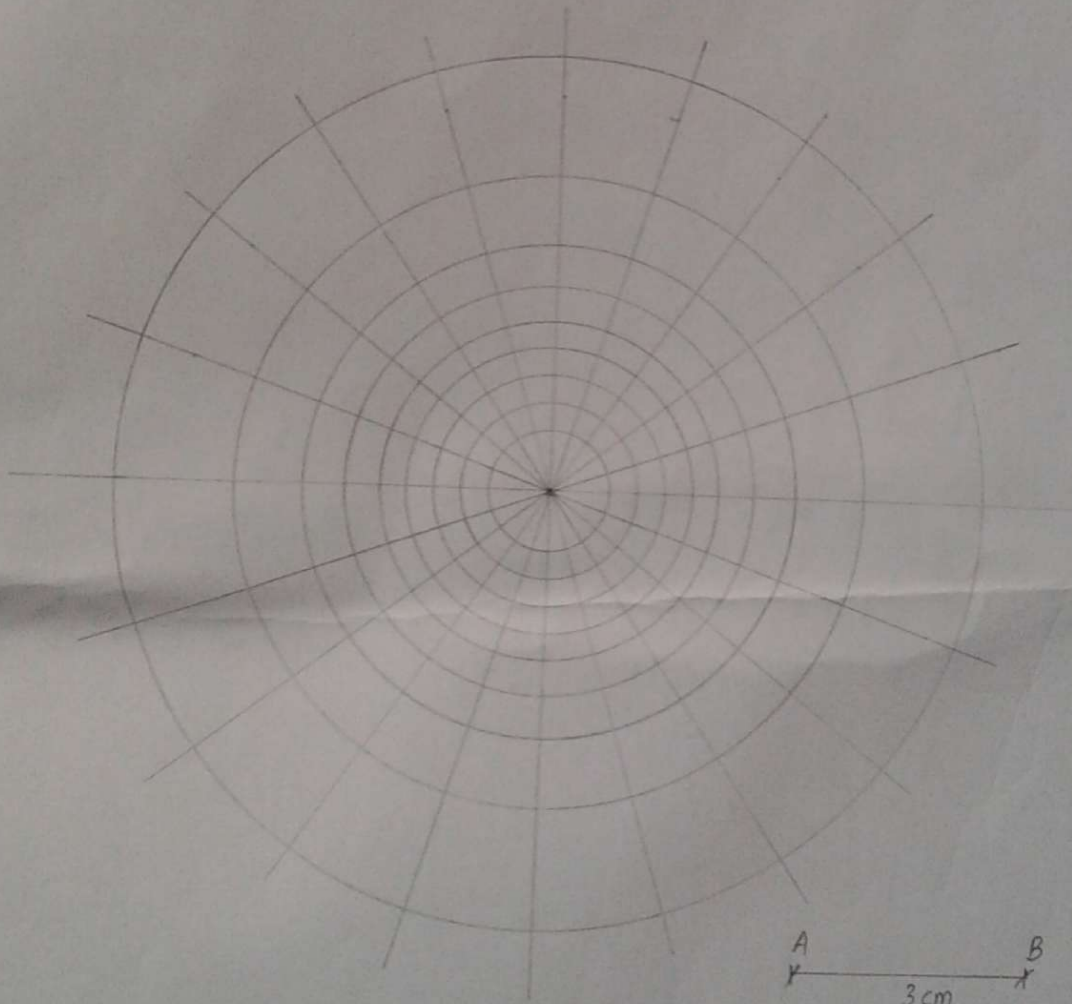
Newmark's Chart :-

Scale

1 cm = 2 m

1 cm = 200 cm

1 : 200



Influence Value = 0.005