

Solution - Design Example V5

Loading to ground floor level:

	<u>Dead</u>		<u>Imposed</u>	
Roof:	$6,0 \times 0,5 \times 3,8$	$= 11,4$	$6,0 \times 0,5 \times 0,75$	$= 2,25$
3 floors:	$6,0 \times 0,5 \times 4,0 \times 3$	$= 36,0$	$6,0 \times 0,5 \times 3,5 \times 3$	$= 31,50$
4 storeys: of walling	$2,9 \times 2,5 \times 4$	<u>$= 29,0$</u>		<u>$= 0,0$</u>
Total		76,4 kN/m		33,8 kN/m

$$\begin{aligned}\text{Design load} &= 1,25 G_k + 1,5 Q_k \\ &= (1,25 \times 76,4) + (1,5 \times 33,75) \\ &= 146,1 \text{ kN/m}\end{aligned}$$

Eccentricity of Load:

Building Research Digest No. 246 gives guidance on the assessment of eccentricity. For an end wall with a concrete floor supported over the whole wall leaf thickness the centre of action of the force should be taken as 1/6 of the wall thickness from the centreline. However, where the floor is of very short span or very stiff it may be reasonable to regard the load as axial without applied eccentricity.

If the span to wall thickness ratio less than 30 then consider the load acting axially

$$\text{For this example } \frac{\text{span}}{\text{thickness}} = \frac{6000}{140} = 43$$

Therefore load from first floor acts at $t/6$ while the loads from the upper floors act axially.

$$\text{Load from first intermediate floor} = (1,25 \times 12) + (1,5 \times 10,5) = 30,75 \text{ kN/m run}$$