(Table 7 of BS 5628), γ_m=3.5 (see section 12.3). The design loads from the previous subsection and the characteristic strengths are shown in Table 12.4 along with the suitable brick/mortar combinations.

Check for shear stress: design characteristic shear $f_v=\gamma_f\ \gamma_{mv}$ (shear force/area) < 0.35 +0.6g_A (clause 25), γ_f=1.4 and γ_{mv}=2.5 (12.3). The value of shear force is taken from Table 12.3. For the sixth floor

$$\text{design characteristic shear stress} = \frac{1.4 \times 2.5 \times 5.5 \times 10^3}{102.5 \times 4250} = 0.044\,\text{N/mm}^2$$

$$< 0.35 + \frac{0.6 \times 20 \times 0.9 \times 10^3}{102.5 \times 1000} = 0.45 \quad \text{(safe)}$$

For the ground floor

$$\text{design characteristic shear stress} = \frac{1.4 \times 2.5 \times 38.5 \times 10^3}{102.5 \times 4250} = 0.31\,\text{N/mm}^2$$

$$< 0.35 + \frac{0.6 \times 168.08 \times 0.9 \times 10^3}{102.5 \times 1000} = 1.35\,\text{N/mm}^2$$

There is no need to check at any other level, since shear is not a problem for this type of structure.

The BS 5628 recommends g_A as the design vertical load per unit area of wall cross-section due to vertical load calculated from the appropriate loading condition specified in clause 22. The critical condition of shear will be with no imposed load just after and during the construction.

12.6.3 Load combination, wall B

The design principle has been covered in great detail for wall A; hence for wall B this will be limited to the ground floor level to explain further salient points.

Inner leaf wall B –ground floor level

(i) Dead and imposed loads

$$\text{dead + imposed} = 1.4\,G_k + 1.6\,Q_k \quad (G_k \text{ and } Q_k \text{ from Table 12.2})$$

$$\text{stress} = (1.4 \times 91.9 \times 10^3)/(102.5 \times 10^3) + (1.6 \times 8.51 \times 10^3)/(102.5 \times 10^3)$$

$$= 1.26 + 0.13 = 1.39\,\text{N/mm}^2$$

Table 12.4 Design load and characteristic brickwork strength

Floor	*Design load/m (section 12.6.1)*	*Design characteristic strength* f_k (N/mm^2) $= \dfrac{\text{design load} \times \gamma_m}{\beta t}$	f_k *from table 2 and clause 23.1.2* (N/mm^2)
6th	36.64	1.87	20 N/mm^2 brick in 1:1:6 mortar $f_k = 1.15 \times 5.8 = 6.67$ N/mm^2
5th	78.10	3.98	20 N/mm^2 brick in 1:1:6 mortar $f_k = 1.15 \times 5.8 = 6.67$ N/mm^2
4th	117.14	6.0	20 N/mm^2 brick in 1:1:6 mortar $f_k = 1.15 \times 5.8 = 6.67$ N/mm^2
3rd	155.85	7.94	20 N/mm^2 brick in 1:$\frac{1}{4}$:3 mortar $f_k = 1.15 \times 7 = 8.51$ N/mm^2
2nd	202.0	10.29	35 N/mm^2 brick in 1:$\frac{1}{4}$:3 mortar $f_k = 1.15 \times 11.4 = 13.11$ N/mm^2
1st	253.18	12.9	35 N/mm^2 brick in 1:$\frac{1}{4}$:3 mortar $f_k = 1.15 \times 11.4 = 13.11$ N/mm^2
GF	306.48	15.62	50 N/mm^2 brick in 1:$\frac{1}{4}$:3 mortar $f_k = 1.15 \times 15 = 17.25$ N/mm^2