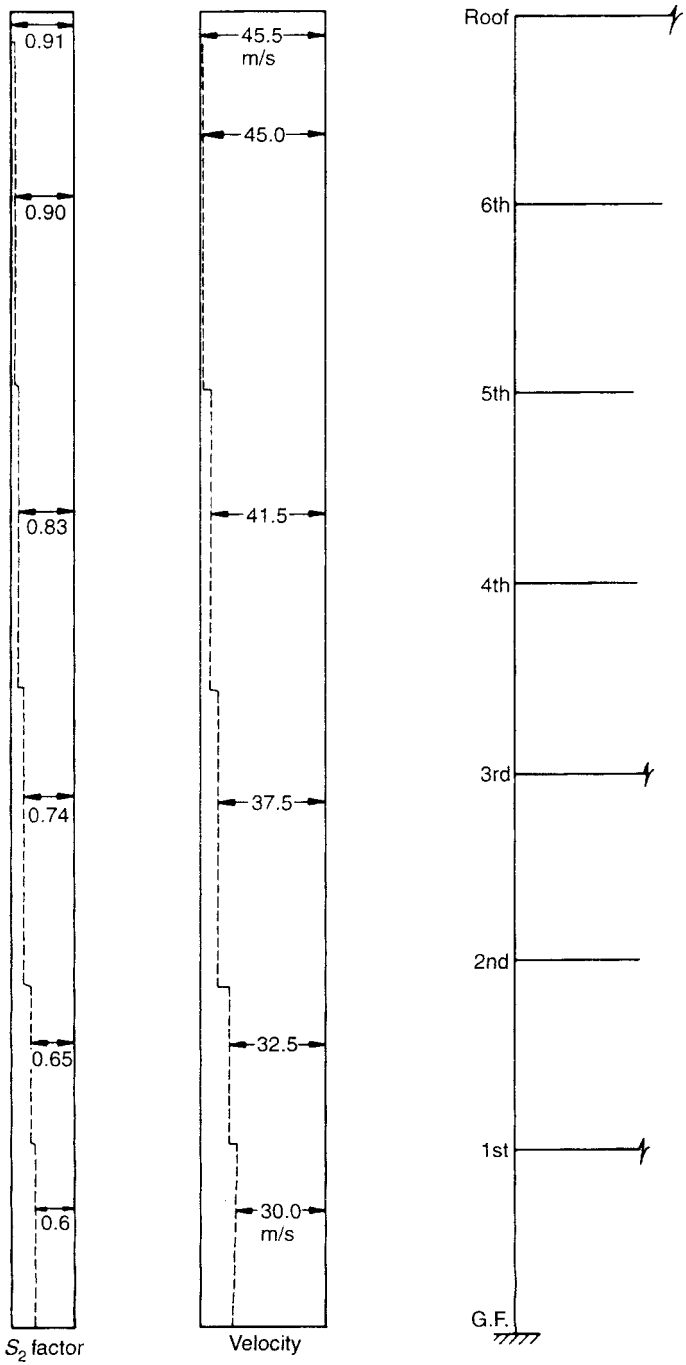

Fig. 12.3 The variation of the factor S_2 and the wind velocity along the height of the building. (Assumptions made in the design shown in full lines.)

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- 1st floor

$$29.313\times(18\times18/2)=4748.71\text{kNm}$$

- ground floor

$$1.1\times(1269/10^3)\times21\times21\times21/2=6463.2\text{kNm}$$

In the calculation the factor S_2 has been kept constant (Fig. 12.3), which means the design will be a bit conservative. However, the reader can vary the S_2 factor as given in Fig. 12.3 taken from Table 3 (CP 3) which means the wind speed will be variable depending on the height of the building.

12.5.3 Assumed section of wall resisting the wind moment

The flange which acts together with the web of I-section is the lesser of

- 12 times thickness of flange+thickness of web
- centre line to centre line of walls
- one-third of span

(a) Wall A

For wall A (Fig. 12.4), neglecting the outer skin of the cavity wall flange, the second moment of area is

$$I_A = 2\times\left(\frac{(0.1025)^3\times1.34}{12}+0.1025\times1.34\times(2.07)^2\right)$$

$$+\frac{(4.045)^3\times0.1025}{12}$$

$$=1.169\times0.565=1.734\,\text{m}^4$$

(b) Wall B

The flange width which acts with channel section has been assumed as half of the I-section. For wall B (Fig. 12.5), neglecting the outer skin of the cavity wall flange,

$$I_B = 2\times\left(0.67+\frac{(0.1025)^3}{12}+0.1025\times0.67\times(2.07)^2\right)$$

$$+2\times0.1025\times\frac{(4.045)^3}{12}$$

$$=0.571\times1.13=1.7\,\text{m}^4$$

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