exists in relation to unit manufacture and on site. Materials have to meet the requirements of the relevant European standard (EN). It is further assumed that the structure will be adequately maintained and used in accordance with the design brief.

The section contains an extensive list of definitions including a multilingual list of equivalent terms, essential in a document which is to be used throughout the European Community. It concludes with a schedule of the numerous symbols used in the text.

4.4.2 Section 2: basis of design

The code is based on limit state principles and in this section are defined the design situations which have to be considered. Actions, which include loads and imposed deformations (for example arising from thermal effects or settlement), are obtained from EC1 (ENV 1991) or other approved sources. Indicative values for partial safety factors for actions are as shown in Table 4.4.

Application of these safety factors requires a distinction to be made between actions which are permanent or which vary with time or which may change in position or extent. Combinations of actions require the application of coefficients to the various actions concerned and general formulae for such combinations are given. Values of the combination coefficients are provided in ENV 1991, but for building structures the following formulae may be used in conjunction with the partial safety factors for the ultimate limit state shown in Table 4.4.

Considering the most unfavourable variable action:

$$\sum \gamma_{G,j} G_{k,j} + 1.5 Q_{k,l} \tag{4.8}$$

Considering all unfavourable variable actions:

$$\sum \gamma_{G,l} G_{k,j} + 1.35 \sum_{i \geqslant l} Q_{k,i} \tag{4.9}$$

Table 4.4 Partial safety factors for actions in building structures for persistent and transient design situations

	Permanent actions, γ_G[a]	Variable actions, γ_Q		Prestressing, γ_P
		One with its characteristic value	Others with their combination value	
Favourable	1.0	0	0	0.9
Unfavourable	1.35	1.5	1.35	1.2

[a]See also paragraph 2.3.3.1(3) of EC6.

whichever gives the larger value, where $\gamma_{G,j}$ is the partial safety factor for permanent actions, $G_{k,j}$ is the characteristic value of permanent actions and $Q_{k,l}$ and $Q_{k,j}$ are respectively, the characteristic values of the most and of the other variable actions considered.

Partial safety factors for material properties are given, as in Table 4.5. These are applied as appropriate to the characteristic material strengths to give design strengths.

4.4.3   Section 3: materials

(a) Units and mortar

This section starts by defining masonry units, first in terms of relevant European standards and then by categories which reflect quality control in manufacture and also with reference to the volume and area of holes which there may be in a unit.

Mortars are classified according to their compressive strength (determined according to EN 1015–11) or by mix proportions. If specified by strength the classification is indicated by the letter M followed by the compressive strength in N/mm².

Requirements are also set out for unit and mortar durability and for the properties of infill concrete and reinforcing steel.

Table 4.5 Partial safety factors for material properties, γ_M (EC6)

γ_M			Category of execution [a]		
			A	*B*	*C*
Masonry[b]	Category of manufacturing control of	I	1.7	2.2	2.7
	masonry units[c]	II	2.0	2.5	3.0
Anchorage and tensile and compressive resistance of wall ties and straps			2.5	2.5	2.5
Anchorage bond of reinforcing steel			1.7	2.2	–
Steel (referred to as γ_S)			1.15	1.15	–

[a] See section 6.9 of EC6.
[b] The value of γ_M for concrete infill should be taken as that appropriate to the category of manufacturing control of the masonry units in the location where the infill is being used.
[c] See section 3.1 of EC6.