25% increase in design strength, provided that the bearing width is between 50mm and half the thickness of the wall. Type 2 includes short beam or slab bearings spanning at right angles to the wall, provided that they are more than the bearing width from the end of the wall. Slabs whose bearing length is between six and eight times their bearing width are included in category 2 and are thus allowed a 50% increase in design strength. A slab resting on the full thickness and width of a wall attracts a 25% increase in design stress provided that it is no longer than six times the wall thickness.

Type 3 bearings envisage the use of a spreader or pad-stone and are permitted a 100% increase in design strength under the spreader. The stress distribution at this location is to be calculated by an acceptable elastic theory.

The accuracy of these rather complicated provisions is uncertain. Test results (Page and Hendry, 1987) for the strength of brickwork under concentrated loading suggest that simpler rules are possible and such have been adopted in EC6 (see subsection 4.4.4 (c)).

The section on laterally loaded walls was based on a programme of experimental research carried out at the laboratories of the British Ceramic Research Association. For non-loadbearing panels the method is to calculate the design moment given by the formula:

$$\alpha W_k \gamma_f L^2 \tag{4.7}$$

where α is a bending moment coefficient, γ_f is the partial safety factor for loads, L is the length of the panel and W_k is the characteristic wind load/ unit area. Values of α for a variety of boundary conditions are given in the code. They are numerically the same as obtained by yield line formulae for corresponding boundary conditions.

This moment is compared with the design moment of resistance about an axis perpendicular to the plane of the bed joint, equal to

$$f_{kx} Z / \gamma_m$$

where f_{kx} is the characteristic strength in flexure, γ_m is the partial safety factor for materials and Z is the section modulus.

Obviously everything depends on the successful achievement of f_{kx} on site, and considerable attention must be given to ensuring satisfactory adhesion between bricks and mortar. The best advice that can be given in this respect is to ensure that the bricks are neither kiln-dry nor saturated. Mortar should have as high a water content and retentivity as is consistent with workability. Calcium silicate bricks seem to require particular care in this respect.

Further information is given in this section relating to the lateral resistance of walls with precompression, free-standing walls and retaining walls.

4.2.4 Section 5: accidental damage

The final section of the code deals with the means of meeting statutory obligations in respect of accidental damage. Special measures are called for only in buildings of over four storeys, although it is necessary to ensure that all buildings are sufficiently robust, as discussed in Chapter 1.

For buildings of five storeys and over, three possible approaches are suggested:

1. To consider the removal of one horizontal or vertical member at a time, unless it is capable of withstanding a pressure of 34 kN/m^2 in any direction, in which case it may be classed as a 'protected' member.
2. To provide horizontal ties capable of resisting a specified force and then to consider the effect of removing one vertical member at a time (unless 'protected').

In both the above cases the building should remain stable, assuming reduced partial safety factors for loads and materials.

3. To provide horizontal and vertical ties to resist specified forces.

It would appear most practicable to adopt the second of the above methods. The first raises the problem of how a floor could be removed without disrupting the walls as well. In the third option, the effect of vertical ties is largely unknown but in one experiment they were found to promote progressive collapse by pulling out wall panels on floors above and below the site of an explosion. If vertical ties are used it would seem advisable to stagger them from storey to storey so as to avoid this effect.

The treatment of accidental damage is discussed in detail in Chapter 9, and the application of the code provisions to a typical design is given in Chapter 10.

4.3 BS 5628: PART 2—REINFORCED AND PRESTRESSED MASONRY

Part 2 of BS 5628 is based on the same limit state principles as Part 1 and is set out in seven sections, the first three of which, covering introductory matters, materials and components and design objectives, are generally similar to the corresponding sections of Part 1. Sections 4 and 5 are devoted to the design of reinforced and prestressed masonry, respectively, whilst the remaining two sections give recommendations relating to such matters as durability, fire resistance and site procedures.