7. DESIGN CONSIDERATIONS

7.1 Choice of Type of Wall—The type of wall for different situations of use of light-weight concrete block masonry shall be as given below:

a) External and internal load bearing walls shall be of load bearing lightweight concrete blocks of appropriate thickness. Exposed walls shall be rendered externally with composite mortar in accordance with **11.1**.

b) In special cases where high thermal insulation is required, cavity walls having inner leaf of lightweight concrete blocks and the outer leaf of dense concrete block may be used. Each leaf of the cavity wall shall not be less than 100 mm thick. To ensure adequate impermeability for the walls the exterior surface of external walls shall be plastered with composite mortar in accordance with **11.1**.

7.1.1 From considerations of durability lightweight concrete blocks shall not be used below damp-proof course.

7.2.3 *Lateral Supports*

7.2.3.1 Lightweight concrete block masonry walls shall be provided with horizontal or vertical lateral supports at right angles to the faces of the wall. Lateral supports may be obtained by cross-walls, pilasters, sealed bonds, or butteresses where the limiting distance will be measured horizontally, and by floors and roofs where the limiting distance will be measured vertically.

*Code of practice for structural safety of buildings: Loading standards (*revised*).

7.2.3.2 The limiting horizontal distance for load bearing wall shall be 24 times the nominal thickness of the wall, while its limiting vertical distance shall be 18 times the nominal thickness of the walls; the maximum storey height permitted for a 200 mm thick wall shall, therefore, be 3·6 m.

7.2.3.3 The limiting horizontal or vertical dimension of a partition wall shall not be more than 36 times the thickness of wall.

11.3 Provision for Door and Window Frames

11.3.1 A course of solid concrete block masonry shall be provided under doors and window openings or a 100 mm thick precast concrete fill-block under windows. The solid coarse shall extend for atleast 200 mm beyond the opening on either side and should be enforced with two numbers high strength deformed steel bars of 10 mm diameter.

11.3.2 For jambs of doors and windows where hollow blocks are used the hollow core adjacent to the joints shall be filled with concrete mix of 1:3:6 are reinforced with single high strength deformed steel bars of 10 mm diameter for each jamb.

11.3.3 Mild steel bar holdfasts should be so fastened to the door window frames that these occur at block course level and their ends be embedded in a hollow which shall be filled up with 1 : 3 : 6 cement concrete (*see* Fig. 9).

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10.3 Provisions for Doors and Window Frames — Mild steel bar holdfasts should be so fastened to the door or window frames that these occur at block course level.

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10.6 Intersecting Walls All walls wherever they meet or intersect shall be bonded or tied securely in accordance with **10.6.1** and **10.6.2**.

10.6.1 *Bearing Walls* — When two bearing walls meet or intersect and the courses are to be laid up at the same time, a true masonry bond between at least 50 percent of the units at the intersection is necessary.

When such intersecting bearing walls are laid up separately, pockets with 200 mm maximum vertical spacings shall be left in the first wall laid. The corresponding course of the second wall shall be built into these pockets.

10.6.2 *Non-load Bearing Walls* — Meeting or intersecting non-load bearing walls shall be bonded by either of the two methods recommended for bearing walls or provided with adequate lateral supports.

10.6.3 The side walls of long buildings shall be stiffened at regular intervals with *pilasters* or by sealed bonds which are about twice the thickness of the wall.