5.5 Further reading

The Construction (Design and Management) Regulations, 1994. Advice for designers in steel(41). Describes the responsibilities of the principal parties involved in a project, with a particular focus on the designer. The document describes how the designer can fulfil his obligations, with comments on typical hazards specific to structural steelwork.

Guidance note GS 28: *Safe erection of structures(*42). This important document, produced by the Health and Safety Executive, should be considered as essential reading. It is in four parts:

Part 1: Initial planning and design

Part 2: Site management and procedures

Part 3: Working places and access

Part 4: Legislation and training .

Opportunities and impositions(43). This publication contains a realistic examination of the practical impact of the Regulations.

The CDM regulations explained(44). This is a definitive guide to the regulations, without reference to particular construction sectors.

CDM regulations - case study guidance for designers(45). An interim report produced by CIRIA, this publication contains a number of hypothetical case studies. It was prepared shortly after publication of the regulations.

CITB construction site safety - safety notes(46). Covers a broad range of site safety issues, including the use of specific items of plant and tools. Identifies current safety regulations.

Managing Construction for Health and Safety - Construction (Design and Management) Regulations 1994. Approved Code of Practice(40). This document contains the regulations themselves, together with an explanatory commentary for each rule.

Designing for health and safety in construction(47). This publication includes helpful guidance on how the designer can fulfil his obligations, with suggestions on the form of risk assessments.

6 INTERFACES WITH STRUCTURAL COMPONENTS

Getting the interfaces 'right' is essential when designing for construction. To reflect this importance, Sections 6 and **7** give considerable detail concerning various interfaces. The information given covers all aspects associated with the chosen interfaces, covering both design and construction issues.

6.1 Foundations

To facilitate alignment of the erected structure, the method of attaching the steelwork to the foundations must provide a means of adjusting line and level. The most common way to attach a column to the foundations is by holding-down bolts cast into the base, using sleeves to form a void around each bolt and permit movement of the bolt tip following concreting. If possible the same holding-down detail should be used for all columns. Bolt groups set-out on a uniform grid reduce the likelihood of errors during positioning by the main contractor. A typical system is shown in Figure 6.1.

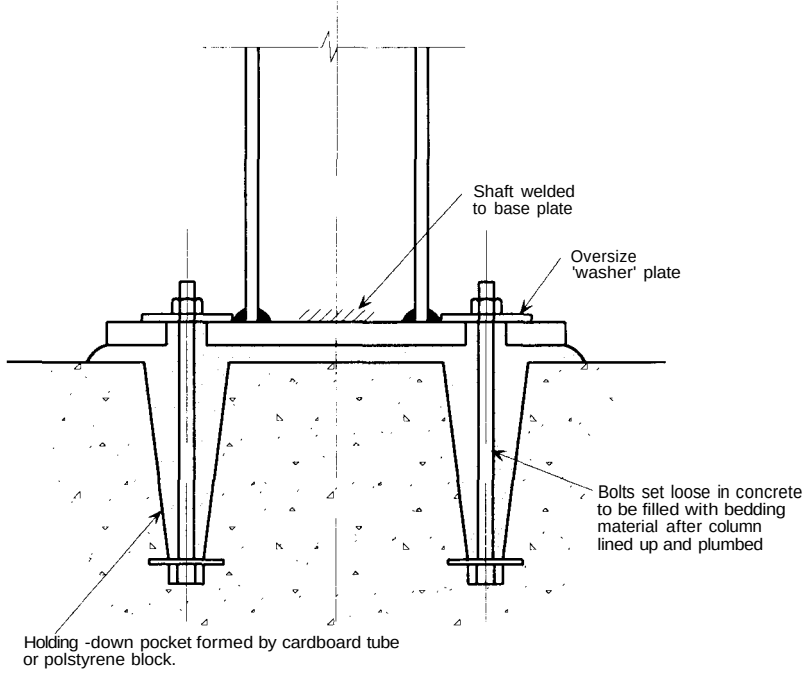

Figure 6.1 *Typical holding-down arrangement for a nominally pinned base*

Even if the base is designed as nominally pinned, four bolts should be used, to improve stability of the column during erection and to facilitate plumbing-up. A by-product of this is that, even though nominally pinned, the base transfers some moment to the foundations. The bolts are best located near the perimeter of the baseplate. This makes tightening-up easier, and avoids a congested area near the middle of the plate which would inhibit flow of the bedding material into this