The Construction (Design and Management) Regulations 2007

Industry Guidance for

Designers

CDM 2007

CDM07/4

HSE

constructionskills

The Construction (Design and Management) Regulations 2007

Industry Guidance for

Designers

HSE

constructionskills

CONSTRUCTION CONFEDERATION

Published by
ConstructionSkills,
Bircham Newton, King's Lynn,
Norfolk PE31 6RH

First published 2007

ISBN: 978-1-85751-236-6

Contents

Section 6
Dealing with your sub-contractors and sub-consultants

Section 7
Inexperienced clients

Section 8
Contractual relationships

Section 9
Prompt sheets

References and further reading

INTRODUCTION

The implementation of the Construction (Design and Management) Regulations 2007 (CDM 2007) is geared towards added value and minimisation of bureaucracy.

This guidance to CDM 2007 seeks to explain in simple terms what is required so that designers may add value to the project whilst carrying out their principal duty of eliminating hazards and mitigating risk in designs. It is not a substitute for the Approved Code of Practice (ACoP) but guidance written from the perspective of those carrying out design.

Wherever the design itself is prepared, CDM 2007 applies if the construction work is to be carried out in Great Britain.

In addition to the requirements of CDM 2007, designers must comply with their duties under the Health and Safety at Work etc. Act 1974 and other relevant legislation.

CDM 2007 places some absolute duties on designers, such as the duty to check that clients are aware of their duties under the Regulations. In other cases, designers are required to take a step 'so far as is reasonably practicable' or to 'take all reasonable steps' to do something.

In the first case, whether an absolute duty has been complied with will be a straightforward assessment – the designer either did or did not check. However, assessing whether a step has been taken 'so far as is reasonably practicable' or whether 'all reasonable steps' were taken is much more complex.

The courts have considered what these phrases mean but those explanations do not always mean that a practical understanding is achieved. One purpose of the HSE's ACoP, and also this guidance, is to assist with that practical understanding. Further consideration of the detailed requirements is set out in the following relevant sections.

This guidance is intended to reflect good practice. Users, however, are recommended to evaluate the guidance against their own arrangements. In addition, some parts of the guidance may not be appropriate to a particular designer's appointment.

(It is important to note that if an industry standard becomes generally accepted as good practice, then it may be regarded as an established standard and HSE will tend to treat it as an authoritative source of relevant good practice and expect risk control measures identified in it to be complied with.)

Cross references to the ACoP are made in the text.

'Design' relates to new build, alteration, repair, maintenance and the like, use and decommissioning. Of these 'alteration, repair, maintenance etc., and decommissioning' account for some 50 per cent of all construction work. These areas of work are, therefore, important from a design perspective.
Although this guidance is written in support of the statutory requirements of CDM 2007, there is ample evidence that good health and safety risk management will bring wider business benefits. Providing clearer, simpler advice and information, particularly for small businesses, will encourage greater compliance.

Note: In issuing this guidance document, ICE, IStructE, CIBSE and RIBA do not make any warranty, express or implied, that compliance with this guidance is sufficient on its own to ensure that designers have complied with their responsibilities under health and safety legislation.

Definition of terms

ACoP

An Approved Code of Practice provides guidance on how to comply with specific regulations. It has been approved by the Health & Safety Commission and is seen as the accepted standard. It is not mandatory to follow the ACoP but it can be used as evidence in a court of law and failure to adopt the advice in the ACoP will be regarded as having failed to comply with the law.

business

A trade, business or other undertaking (whether for profit or not).

CDM co-ordinator

The person appointed to advise and assist the client on how to comply with the CDM Regulations during the project, and to ensure that suitable arrangements are made and implemented for the co-ordination of health and safety measures during planning and preparation for the construction phase.

client

A person who in the course or furtherance of a business seeks or accepts the services of another which may be used in the carrying out of a project for him; or carries out a project themselves.

construction site

Any place where construction work is being carried out or to which the workers have access
construction phase
The period of time starting when construction work in any project starts and ending when construction work in that project is completed.

construction phase plan

A document recording the health and safety arrangements, site rules and any special measures for the construction work

construction work

The carrying out of any building, civil engineering or engineering construction work.

contractor

Any person (including a client, principal contractor or other person referred to in these Regulations) who, in the course or furtherance of a business, carries out or manages construction work.

demolition or dismantling

The deliberate pulling down, destruction or taking apart of a structure, or a substantial part of a structure. It includes dismantling for re-erection or re-use. Demolition work normally needs meticulous planning and management to ensure that lives are not put at risk. Demolition does not include operations such as making openings for doors, windows, services or removing non-structural elements such as cladding, roof tiles or scaffolding. Such operations may, however, form part of demolition or dismantling work when carried out alongside other activities.

designer

Any person (including a client, contractor or other person referred to in CDM 2007) who in the course or furtherance of a business either prepares or modifies a design; or arranges for or instructs someone under their control to do so. The design relates to a structure; or a product, a mechanical or electrical system intended for a particular structure. A person is deemed to prepare a design where a design is prepared by a person under their control.

domestic clients

People who have work done on their own home, or the home of a family member that does not relate to their trade, or business. They have no duties under CDM 2007

duty holder

Someone who has duties under CDM 2007 including: client, co-ordinator, designer, principal contractor, contractor, worker.

guidance

This guidance describes ways of complying with the regulations but you do not have to follow it exactly. Guidance does not have the special legal status associated with the ACoP. However, following the industry-approved guidance will help you to comply with the CDM Regulations.

health and safety file

Information which people, including clients, designers, co-ordinators, contractors and others involved in carrying out construction or cleaning work on the structure in the future are likely to need, but could not be expected to know.

notifiable

For the purposes of the CDM Regulations, a project is notifiable if the construction phase is likely to involve more than 30 working days; or 500 person days, of construction work for a client.

notification

The most up-to-date information notified to HSE. A legible copy must be displayed where it can be read by people working on the site.

project

A project includes all the preparation, design, planning, construction work and the clearance or preparation of the site or structure for use or occupation at its conclusion required to achieve the end result desired by the client. Many projects involve several structures. Where there are substantial breaks between phases it may be each phase can be treated as a separate project, but projects should not be artificially split to avoid notification and the duties that follow go with it.

principal contractor

The duty holder who is required to ensure effective management of health and safety throughout the construction phase of the project. Their main duty is to properly plan, manage and co-ordinate work during the construction phase in order to ensure that hazards are identified and risks are properly controlled.

Regulations

A statutory device made under a general provision that is contained in an act of parliament. Regulations are approved by parliament and are generally absolute legal standards.

Section 1

GUIDANCE TO THE DESIGNERS CHAPTER OF THE APPROVED CODE OF PRACTICE (ACoP)

1.1 Introduction

1.1.1 This guidance follows the structure of the Designers chapter of the ACoP. Guidance is only given where further explanation or examples will assist either the designer or others who wish to understand the design process. Designers, however, will benefit from reading other sections of the ACoP. The chapter on the CDM co-ordinator, for example, provides an alternative insight into what is expected of the Designer.

1.2 Who are designers? ACoP paras 115-118

1.2.1 The ACoP contains a comprehensive schedule of the various parties that can be 'designers', as defined in CDM 2007. In simple terms, however, a designer is:

- a functional role, that is, it does not relate to the type of organisation. Hence designers may be found in any of the circumstances outlined in paragraph 116 of the ACoP
- any organisation (or individual) that makes a project-related decision, (although practically, for those whose core activity is not design, this will only be when that decision might have a significant impact upon the health or the safety of others).

Categories of party not normally thought of as designers	**Examples of project-related decisions which would be classified as 'design' and have an impact on the health and safety of others.**
Clients (on PFI-type projects this may include sponsors, funders and others)	Clients may: • unduly limit land or space availability • insist on a particular surface finish or choice of material, plant, equipment or features • limit maintenance access by stipulating layout of adjacent soft landscape.
Users (Although for most projects this will be the 'client', there will be exceptions, e.g. PFI, developer-led projects)	As above
Line management (of design organisation)	Line management may: • limit design option reviews • specify materials • set internal procedures which inhibit compliant design.
Project manager	May dictate solutions to design issues (perhaps to protect the budget or programme), which have safety connotations.

Quantity surveyors	Quantity surveyors may: • specify materials or components, which have safety connotations • schedule demolition work.
Contractors	Contractors sometimes make ‘site’ decisions without realising the ‘design’ consequences.
Manufacturers or suppliers of non-standard products	With the increase in ‘off-site fabrication’, the size of the group of manufacturers or suppliers of non-standard products is increasing. Its members, however, do not always see themselves as part of a construction project, nor as designers as defined by CDM 2007.
Designers from other industries	Designers from industries such as IT, shop fitting and manufacturing sometimes do not recognise that their work can fall under the broad definition of ‘construction’ in CDM 2007, as this is not a term they use.

Figure 1 Definitions of designers

1.2.2 This means that a number of parties (individuals or groups) not normally thought of, or who do not think of themselves as designers may in fact be so, and therefore attract ‘designer’ duties (see Figure 1).

1.2.3 Specialist contractors, for example mechanical and electrical piling, steelwork, building envelope, fit-out and interior design, are also invariably ‘designers’, usually appointed on a form of contract with a design element. Unfortunately, the historical terminology of the industry does not identify them as such – they are still referred to as ‘contractors’.

1.2.4 The attraction of duties as a designer under CDM 2007 is dependent on whether design work has been carried out. A contractual term excluding design liability will not release a party from designer duties if design work has been carried out.

1.3 What designers should do for all projects

1.3.1 This section summarises the required actions of designers for all projects, that is whether they are notifiable or not. A summary of designers’ duties is given in Figure 2. **(ACoP paras 119–120)**

1.3.2 However, before turning to the detailed guidance on these duties, it is helpful to consider both the ‘use of the structure’ element of the requirement set out in (3) in Figure 2 and also the question of ‘when does design start?’.

WHAT DESIGNERS MUST DO FOR ALL PROJECTS	
Designers must:	
1. make sure that they are competent and adequately resourced to address the health and safety issues likely to be involved in the design	See 1. 5
2. check that clients are aware of their duties	See 1.4
3. when carrying out design work, avoid foreseeable risks to those involved in the construction and future use of the structure. In doing so, they should eliminate hazards (so far as is reasonably practicable, taking account of other design considerations) and reduce risk associated with those hazards which remain	See 1.5
4. provide adequate information about any significant risks associated with the design	See 1.6
5. co-ordinate their work with that of others in order to improve the way in which risks are managed and controlled.	See 1.7

Figure 2 Summary of designers’ duties

1.3.3 When considering the groups of people who may be affected by a design, it should be remembered that, under CDM 2007, this now includes those involved with the 'use of the structure' if it is designed as a place of work (ACoP paragraph 120c). This includes both employees and members of the public who may be affected (ACoP paragraph 120d).

1.3.4 When deciding what should be provided, designers should remember that certain risks which arise from the use of the structure may be covered by mandatory obligations or specific regulations, regardless of the results of hazard identification or risk assessment. For example, there are very specific requirements in the nuclear and railway industries. This guidance does not cover those more specialist situations and designers will need to check that they are aware of the industry-specific requirements.

1.3.5 Non-industry-specific legislation means that other steps may be mandatory in all industries, again regardless of the results of hazard identification and risk assessments. These include the requirements of the Workplace (Health, Safety and Welfare) Regulations 1992 or the Disability Discrimination Act 1995, but there are many others.

1.3.6 Hazards associated with the use of the structure, which are not required to be dealt with by mandatory obligations or specific regulations, should then be assessed under risk assessment principles. This issue, and the affect of the duty to eliminate hazards and reduce remaining risk, is considered in more detail in section 1.4. However, in the context of 'use of the structure' issues, this process may, if the expenditure or effort to remove the risk is significant, involve detailed discussions with clients. This is because the decision to take such a step falls within the scope of a client's duties both under CDM 2007 and their general duties under the Health and Safety at Work etc. Act 1974.

1.3.7 Figure 3 sets out some of the typical issues which are likely to form part of the 'use of the structure' or 'in use' review:

Those with impaired mobility	A statutory obligation, see Disability Discrimination Act 1995 and associated guidance.
The various requirements of the Workplace Regulations	Workplace (Health Safety and Welfare) Regulations 1992 Approved Code of Practice L24.
Slips, trips and falls arising from the design	Good practice guidance is available, from a number of sources, e.g. CIRIA C652 'Safer surfaces to walk on: reducing the risk of slipping', and the HSE.
Work at height	Many 'use of the structure' operations involve temporary work at height; the design should take careful account of these to check problems are not being built-in, e.g. changing the ubiquitous 'light bulb'.
Traffic	Traffic routes and circulation should allow for adequate separation of pedestrians and vehicles and eliminate reversing movements where practicable.
Materials	Specified materials should not require cleaning materials which pose a health risk to those using them.

Figure 3 Examples of 'use of the structure' and 'in-use' issues

Have you analysed and discussed the 'in use' health and safety implications of your proposed design with representatives of any known end-users?

1.4 When do designer duties apply?

1.4.1 It is not necessary to be formally appointed to attract 'designer' duties under CDM 2007. The fact that individuals are designing something (even in the preliminary stages) means that they must have regard to foreseeable hazard elimination and risk reduction. **ACoP para 121**

1.4.2 The sophistication of the risk management process at this stage should be commensurate with the level of detail available. Hence, in the early stages of a project (feasibility studies, for example) it will be at a strategic level. Nonetheless, there are often some important 'safety' related issues which can be influenced by early stage decisions, as shown in Figure 4.

Aspect of project	Example of health/safety issue
Site layout	The layout, if determined only by planning or development control considerations, may result in significant problems relating to construction or operational site access and traffic circulation.
Site footprint	The site size, if determined only to satisfy operational needs, may cause problems of noise, dust, traffic to surrounding areas; it may militate against a workable solution to the contractors' needs in respect of welfare and storage space, circulation or craneage locations. For example, problems are often caused by insufficient space being allowed between the structure and boundary for construction or maintenance purposes.
Utility and services provision	A lack of existing utility and service provision may impact on the contractor's ability to establish welfare facilities at the commencement of the construction phase. Advanced contracts for utility/service diversion or provision may, for example, extend the programme, but may also bring real advantages in project simplification and enhancement of safety.
Contaminated ground	Strategic decisions on the treatment or removal of contamination may influence both construction and use phases.
Construction at the site boundary	The scheme may have a significant impact upon adjacent properties.
Construction beyond the site boundary	Construction of new sewers, utilities and road layouts etc. may have an impact on surrounding homes, businesses, schools etc.
Maintenance	Plant room space allocations and assumptions about location may have implications later in terms of access and adequacy. Access to an external building envelope in urban areas, in particular, may be critical. Access is also critical in other forms of construction, e.g. roads, sewage treatment works. The affect on 'users' and the public of ill thought-out maintenance strategies can be very significant (and costly).
Procurement and programme	The method of procurement and the project programme may have a significant impact on safety-critical issues.
Use, cleaning and demolition	For some projects, there may be specific issues that need to be discussed at this preliminary stage.

Figure 4 Key project issues at the preliminary stage

Even if you are engaged in a competition, provision of free advice, or preliminary design work, have you established a risk management process for the project that discharges your responsibilities?

1.4.3 Do not forget that other sets of Regulations also apply. **ACoP para 113**

1.5 Making clients aware of their responsibilities **ACoP paras 122–123**

1.5.1 Designers are required to check that their clients are aware of their responsibilities. This would normally be the responsibility of the designer who first had contact with the client, unless other designers have evidence that the client is not aware of their duties. If the designer has pre-existing knowledge of the client's competence, then that check need not be detailed. It is recommended that you record your actions in this regard. However, this requirement to check provides designers with a good opportunity to confirm with the client that they fully understand the reasons for their obligations; it encourages a business-orientated approach and convey to them key project issues. It is an opportunity (although not a legal requirement) which can provide valuable benefit to the designer and team.

Client duty	Benefit to design process if properly implemented
Ensuring competency and resource	Ensures that, in a competitive situation, all those involved operate on a level footing.
Appointment of CDM co-ordinator (if project is notifiable, i.e. construction period over 30 days or utilising more than 500 person days)	Early appointment allows the project to be co-ordinated, and the client to be properly advised. For notifiable projects, designers should not proceed past initial design work unless a CDM co-ordinator is appointed. For consequences of a late appointment, see 1.9 (also ACoP para 141).
Appointment of principal contractor (if project is notifiable)	Early appointment allows easier access by designers to those who are expert constructors and who can advise on construction options, welfare needs and construction safety information.
Provision of information	Many clients are not aware of the impact of their providing information late or of providing insufficient information. Both these deficiencies can increase the cost of projects, create difficulties for designers and introduce unnecessary client risk. For example, a detailed pre-construction survey may allow contractors to be more specific in their proposals, encourage less risk money (less cost to cover unknown risks) to be included within the price and facilitate option evaluation. Notification of asbestos should be through the provision of an 'asbestos management plan', supplemented as required by further survey.
Ensuring adequate management of the project	Good management will assist designers generally and also specifically in terms of adequacy of information, time and resource. Allocation of key tasks to specific individuals or organisations will avoid items being missed.
Commencement on site	Ensuring that the contractor has time to develop a construction phase plan is likely to result in fewer construction problems. It will also allow time to install adequate welfare facilities (a requirement before commencement) and assemble the appropriate personnel.
Maintaining the health and safety file	A good, well-structured file, kept up to date and made available to those who need to use it, will pay dividends in terms of future work.

Figure 5 Client duties and their benefits to the design process

1.5.2 The design process can benefit from the duties placed on the client, if they are implemented appropriately. In addition there are parallel benefits to the client and principal contractor when they discharge their obligations properly. See Figure 5.

1.5.3 The discussion between designer and client about client responsibilities provides a good opportunity to discuss 'package boundaries' (for both designers and contractors) to make sure that interfaces are adequately defined in terms of responsibilities. **Risk thrives at interfaces.**

1.5.4 For projects beneath the threshold of 30 days or 500 person-days (see Regulation 2 (3)), a CDM co-ordinator will not be appointed. If a designer has the competence to do so, the designer is in a good position to advise the client (although there is no legal obligation) on where they may obtain advice on the actual discharge of their duties.

1.6 Preparing a design ACoP paras 124–130

1.6.1 Design is an iterative process; it usually involves refinement or changes as a result of further discussion and consideration given by the designer, other team members, the client, contractor, or others. It also gets more detailed as project time passes – starting as an outline concept and finishing as fully detailed proposals. A design element may involve more than one party (for example design-and-build type procurement routes) over a significant timescale, or involve specialist contractors whose detailed design may necessitate returning to the scheme designers for changes to the basic design assumptions.

1.62 The process of eliminating hazards and reducing the risks from any remaining hazards will need to be achieved as an integral part of technical or architectural design.

1.6.3 The basic principles for treatment of hazards and risks are set out in the introduction above. However, a closer look at the requirements is required. Designers, in carrying out their work, are required to avoid foreseeable risks to the health and safety of those involved or affected by the construction, use, maintenance and demolition of the structure. In doing so, they must eliminate hazards which may give rise to risk and reduce the remaining risks from any hazards. Both these elements must be done 'so far as is reasonably practicable, taking due account of other relevant design considerations'.

1.6.4 Breaking down each of these elements is critical to understanding the requirements. Designers need not consider risks which cannot be foreseen (ACoP paragraph 125). In other words, designers are not required to design out or reduce the risk of hazards which only become known at a later stage in the project.

1.6.5 Having identified the foreseeable risks, designers should, so far as is reasonably practicable, eliminate or reduce those risks. The current regulatory view is that this means that a hazard must be eliminated (or the remaining risk reduced) unless, compared to the risk, it is grossly disproportionate in terms of time, cost and effort to do so.

1.6.6 The potential consequence of this interpretation is that a step should be taken even if it is disproportionate (up to the point of it being grossly disproportionate) to the risk. However, the ACoP talks in terms of the amount of effort required being dependent on the risk. It does not talk in terms of designers taking disproportionate steps and therefore it is reasonable to assume that what is required is proportionate steps.

1.6.7 Irrespective of whether proportionate or disproportionate steps are required, most designers will still need guidance on how far they need go in their designs. This is where the ACoP and relevant good practice assist as, and by complying with these, duty holders will normally have done enough to comply with the law. The methodology set out in Section 2 of this guidance gives a practical explanation of what is required.

1.6.8 In addition, designers must take into account other design considerations when attempting to eliminate or reduce the risk. They will need to weigh health and safety risk against other design considerations and may therefore need to be aware of the design decisions of other persons and

organisations. As there is a duty on designers to seek the co-operation of others involved in the project, they will need to take steps to find out that information. The effort required will vary from project to project but some of the possible approaches are set out in 1.7 below.

1.6.9 These requirements can appear very complex and daunting but, in reality, industry norms, good practice and a professional approach will guide designers through the process. However, underlying this approach is an assumption that judgements are made by competent persons.

1.6.10 Undertaking hazard elimination and risk reduction as an 'up-front' integrated part of the design process (as opposed to a retrospective activity) is a key element to good risk management and compliant design.

1.7 Providing information ACoP paras 131–134

1.7.1 Experience tells us that many projects have suffered from either a dearth of information – from client and designer (with inevitable consequences) – or a surfeit of information transfer, with insufficient attention paid to considering what others really need. It is essential that the important messages do not get buried beneath irrelevances.

1.7.2 A designer is required to take all reasonable steps to provide information about the design to assist other duty holders in complying with their duties under CDM 2007, that is to identify and manage the remaining risks. There are several ways in which information may be transferred. Some examples are given below in Figure 6.

Area	Suggested means of providing information
Construct	Notes on drawings ('safety' notes are analogous to the accepted 'technical' notes). These are a recommended option as drawings are used in the site office and at the 'coal face'. Although highlighting safety issues in colour on drawings may seem an attractive option, remember that not all sites have colour printers and/or copiers and the effect may be lost. Pre-construction information . ACoP Appendix 2
Use	Written communication is required with a client where assumptions need explanation or clarification, e.g. assumed floor-cleaning regime.
Maintain	Through 'maintenance strategy statements' and other documents contained in the health and safety file* (identifying high-risk tasks and suggested safe systems of work).
Decommission	Providing notes on as-built drawings is a recommended option, supported by additional information (including design summaries) in the health and safety file*.
*Note: there is a specific requirement to contribute to the health and safety file – see Regulation 18 (2).	

Figure 6 Transfer of information

1.7.3 Remember that the aim of this information is to inform competent persons of the significant risks or design issues, relevant to their area of work, which might not be obvious, are unusual or which might be difficult to manage ACoP para 131.

1.7.4 Common faults in this regard include:

- stating the obvious, for example danger of falling from height when considering a standard building
- copying information to everyone, when only specific persons need to see it, and only specific items are relevant
- issuing generic information that does not meet the needs of the specific project or where the real message is buried

- informing the contractor, or others, of hazards, without attempting to eliminate them or reduce the risks, so far as is reasonably practicable
- telling the contractor what controls to adopt, for example PPE, toe boards.

1.7.5 The client needs to be made aware of the assumptions behind the design where it relates to the client's responsibilities under the Workplace (Health, Safety and Welfare) Regulations 1992, Regulatory Reform (Fire Safety) Order 2005 and other legislation.

Is the project information you provide appropriate and targeted? ACoP para 133

1.7.6 Expanding on the concept of significant risk, the ACoP gives examples of three categories of risk. See Figure 7.

1 Not likely to be obvious to a competent contractor or designer	You may have had some time to familiarise yourself with the project. The contractor, at the pricing stage, may not appreciate some of the less obvious risks, such as: • interim stability • sequencing major plant installation with construction/demolition • structural issues associated with working around existing foundations • use of sealants or other materials with a health risk • departures from standard details or practice • fragile roofs.
2 Unusual	These may be 'common' risks but occurring in unusual circumstances, or unusual because of the nature of the construction or site, including: • structural stability attained through diaphragm action or dependence on existing structures • contamination • industrial effluent • use of building • unstable ground.
3 Difficult to manage	These may be common risks but be in awkward situations, such as: • working at height • 'health' and 'safety' issues in existing/old buildings • confined spaces • lack of space for erection of standard scaffolding • proximity of gas mains. Or they may relate to the nature of the risk, for example injury to the public.

Figure 7 Risk categories

Ultimately, the decision about what information to pass on is a matter of competent professional judgement. Designers are unlikely to be criticised if they have given considered thought to the matter, as outlined in this guidance.

1.8 Co-operation (and co-ordination) ACoP paras 135–138

1.8.1 The ACoP sets out useful and commonsense procedures. No project can be successful if all parties do not co-operate fully. Good co-operation will benefit everyone: strong relationships mean problems can be resolved more quickly.

1.8.2 Co-operation with contractors, and designers employed by (sub) contractors, can be difficult if the means of communication is not established in the early stages of the project. It is recommended that designers discuss this with the client and the CDM co-ordinator (if one is appointed), suggesting contractual backing if necessary. This could cover:

- notification of appointment of (sub)contractors
- identification of contractor design elements and associated designers, and the inter-relationship between them
- contact details
- programme details for design by others
- inclusion of items on the site-progress meeting agenda to allow discussion of design issues (including relevant temporary works).

1.8.3 The use of team sessions is likely to enhance co-operation and can be used to agree:

- a common approach to risk management (specifically health and safety risk); and a means by which project risk (including 'safety' risk) is adequately considered, for example through design reviews.

1.8.4 Note that 'co-operation' (Regulation 5) is both an active and passive requirement. Designers are required to seek out those with whom they may need to co-operate to allow them to discharge their duties; others, in turn, may seek the designer's co-operation.

1.8.5 Wherever a designer is working, on site, in an office or elsewhere, Regulation 5 includes the important requirement to alert the person under whose control a designer is working of 'anything which he is aware of that might endanger the health or safety of himself or others'.

1.8.6 The Regulations explicitly require 'co-ordination' between all duty holders (in respect of health and safety risk issues). (See also paragraph 119e of the ACoP.) Although contractual allocation of co-ordination duties for other design aspects may differ (for example they may be allocated to the architect, or contractors in respect of dimensional co-ordination), everyone is obliged to play their part with regard to these risk co-ordination issues. **ACoP paragraph 119e**

Note that 'co-ordination and co-operation' obligations under CDM 2007 may differ from contractual requirements. The former always apply but may be clarified or expanded by contractual obligations. However, a contractual obligation which attempts to limit the duties of co-ordination and co-operation will not be effective in reducing the designer's statutory duties. **Regulation 5**

1.9 Contractual impact on 'co-operation and co-ordination' **Section 8**

1.9.1 On projects where the design and contractual obligations have been completed by a designer before another related detail designer is appointed, it is not envisaged that these two parties 'co-operate or co-ordinate' in an active sense through dialogue or meetings, and so on. It is expected that 'co-operation and co-ordination' will occur through:

- the first designer providing adequate information and having applied a hazard elimination and risk reduction exercise such as 'ERIC' (see Section 2), consistent with the stage reached at the time of the design and having taken competent advice as required
- the detail designer having regard to the information passed by the first designer, and the application of a process such as 'ERIC' appropriate to the stage now reached. **Section 2**

1.9.2 Clearly there will be intermediate situations which will have to be assessed on their merits. Detail designers must produce a safe design regardless of what has been prepared for them to develop.

1.9.3 If, however, the scheme designer is still engaged during the subsequent design phase, even if the there is no contractual obligation to engage with the detail designer, then 'co-operation and co-ordination' must take place as required (which may require meetings and so forth), as the statutory duty overrides. Any contractual obligation not to be involved (in respect of CDM 2007 issues) would be unenforceable.

1.10 Proximity of duty holders

1.10.1 It is important that protocols are established even if duty holders are from within the same office or organisation, for example designer/designer, designer/CDM co-ordinator, designer/contractor – so that co-operation, co-ordination and information flow satisfy the requirements of the Regulations. Whilst recognising the need for proportionality, designers should avoid assuming colleagues will 'know what is required' or will 'react in a certain way'.

1.11 Progression of design: appointment of a CDM co-ordinator

ACoP paras 139–142 & Regulation 18 ACoP para 66

1.11.1 Regulation 18 (applicable to notifiable projects) prohibits designers from progressing with anything other than initial design work prior to the appointment of a CDM co-ordinator. This is also described in the ACoP as 'initial design work or other preparation for construction work' (ACoP para 66); the ACoP states that the appointment should be 'before significant detailed design work begins' and notes that 'Significant detailed design work includes preparation of the initial concept design and implementation of any strategic brief ...'.

1.11.2 Designers should encourage the appointment of a CDM co-ordinator at the earliest opportunity.

1.11.3 Notwithstanding, it is considered that the following examples illustrate what is beyond preliminary design, and hence that which should not be progressed in the absence of a CDM co-ordinator:

- work within and beyond RIBA Stage C*
- work within and beyond CIC Consultant Contract 2006 Stage 3* (draft as at August 2006)
- work beyond OGC Gateway 1
- work within and beyond ACE Agreement A(1) or B (1) 2002 Stage C3

or equivalent activities in other forms of appointment or guidance, or in the absence of an industry standard appointment.

*Denotes stage 2 in the 'Clients Guidance'.

1.11.4 However, note that:

- the designer obligations under Regulation 11 apply regardless of the appointment, or not, of a CDM co-ordinator
- competent designers will recognise the key 'health and safety' issues (consistent with the preliminary design stage being considered), and take the necessary actions regardless of the appointment, or not, of a CDM co-ordinator
- if required, designers could utilise their source of competent advice in these early stages, for example the person appointed under the Regulation 7 of the Management of Health and Safety at Work Regulations 1999.

1.12 What designers do not have to do ACoP paras 143–145

1.12.1 This is self-explanatory. Of particular note is that designers do not have to: 'specify construction methods, except where the design assumes or requires a particular construction or erection sequence, or where a competent contractor might need such information' ACoP para 143c.

1.12.2 Most designs assume a construction sequence; some require a specific sequence. It is important in all cases that this is clear to the contractor, and that the assumptions behind the erection phase are known, for example use of standard connection details, and means of attaining temporary stability. ACoP paragraph 134 also emphasises the provision of information on construction sequences.

Key steps in the design process:

1. Communication of quality information
2. Think of others: you have responsibilities for their health, and their safety
3. Good health and safety risk management will benefit the project overall

Section 2

HAZARD ELIMINATION AND RISK REDUCTION

2.1 Introduction

2.1.1 The introduction of CDM 2007 allows the process of 'risk assessment' to be revisited with a view to adopting a more productive and meaningful approach. This part of the guidance describes one method by which designers can address their obligations under Regulation 11 whilst also adding value to the design process.

2.2 The process

2.2.1 There are three components to the process, as shown in Figure 8, these are hazard elimination and risk reduction (1), recording the process/outputs (2) and review (3).

2.2.2. Hazard elimination and risk reduction is the principal requirement of Regulation 11 (so far as is reasonably practicable), and is considered in detail below.

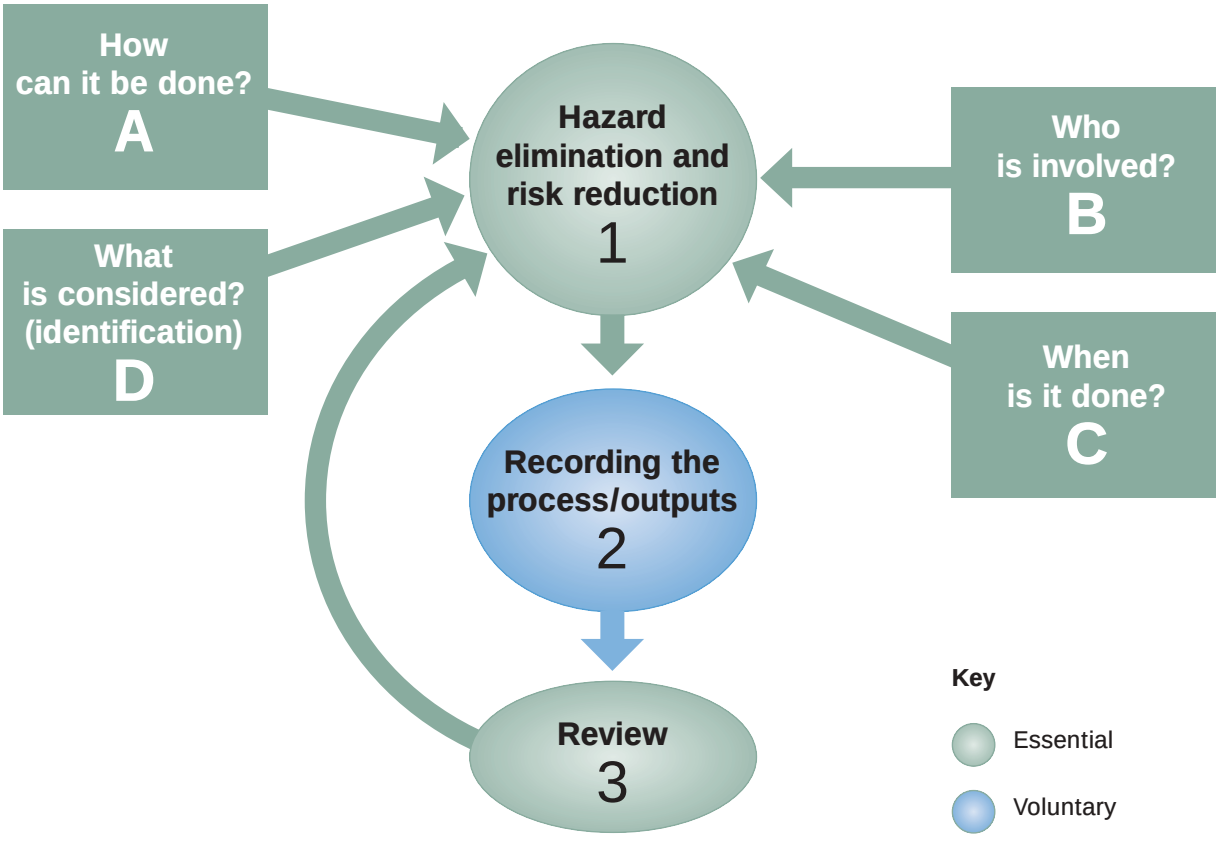


Figure 8: The hazard elimination and risk reduction process

2.3 Hazard elimination and risk reduction

2.3.1 This guidance illustrates the necessary sequence of actions by adopting the ERIC (an acronym for Eliminate, Reduce, Inform and Control) model because it is compatible with the need for a simple qualitative technique. It will only be on rare occasions (for example in the design of nuclear facilities) that a more sophisticated approach, such as quantitative analysis or risk ranking, will be required. There are a number of ways in which this can be achieved at a practical level and, correctly, CDM 2007 does not dictate a specific method. Section 2.4 provides some options in this respect.

Figure 9 The ERIC model

Note: Although in a different format, the ERIC model mirrors the approach taken in HSE's 'Five Steps to Risk Assessment'.

2.3.2 The ERIC acronym indicates the required actions and the required sequence of the design risk assessment process. The separating line (in Figure 9) before the 'C' emphasises that once a designer has passed on appropriate information (to the contractor, those undertaking the maintenance or to the user), then providing the design does not change (directly or through the impact of an adjacent influence, for example) the Control of the resulting risks then belongs to other duty holders. Only after having considered one 'letter' in the ERIC acronym does a designer move on (see Figure 10).

Eliminate If you can eliminate an identified hazard, by taking a different design decision, you must do this: (1) if it is a mandatory requirement or a specific obligation; but otherwise (2) so far as is reasonably practicable. **ACoP paragraph 127**

For example, placing an air handling unit at ground level instead of at height, on a wall, eliminates the hazard of 'working at height'.

However, you will need to consider other hazards that might be introduced (obstructions, tripping) or risks that remain as a consequence of this action.

If the identified hazard cannot be eliminated:

Reduce The designer must reduce the remaining risks associated with the hazard, so far as is reasonably practicable. **ACoP paragraphs 128–130**

For example, hard landscaping is designed such that there is space around the foot of the wall, and a level surface with access, for a scissor lift to be used to install and maintain the air handling unit, as ladders are not appropriate in this instance.

Alternatively, if it was in fact reasonably practicable to install the unit at ground level, it is likely that there would be some residual risks associated with that placement, such as tripping. These risks must also be reduced.

The ACoP recognises that the weight given to a particular risk will be proportionate to its assessed likelihood, severity, the number of people affected, and frequency or duration of the exposure. This will be a professional judgement but guided by relevant good practice.

In reducing risk, there is a hierarchy to be observed which is described in 2.3.3.

And then, if significant risks remain:

Inform Provide information on these risks to the contractor, or those using or maintaining the structure. **ACoP paragraphs 131–134**

For example, maintenance strategy statement to go in the health and safety file. Proposed access discussed with the client.

Control Providing the design does not change, and no other influence comes to bear (such as a change to the landscaping), then the control of the risks on site during construction or maintenance are the responsibilities of those undertaking the work. The designer is not involved.

Figure 10 The ERIC approach to risk management

2.3.3 When reducing risks, there is a hierarchy to be observed, which is known as the ‘general principles of prevention’ (these originate from the Management of Health and Safety at Work Regulations1999: Schedule 1 but are also mentioned in Regulations 7 & 11 (3) of CDM2007). See Figure 11.

Provide collective protective measures before those that only benefit individuals.	An example of this is to provide edge protection before adopting fall restraint or arrest systems.
Assume the use of PPE as the last resort.	No one likes wearing PPE: it gets lost, worn out, discarded. It should always be the last assumption or choice (although it will be the responsibility of those in charge of the work activity to determine exactly what is required).

Figure 11 Examples of general principles of prevention

The ERIC process and other similar methodologies can demonstrate that, up to the stage it was taken to, the design is compliant with the requirements of CDM 2007.

2.3.4 So, how might **ERIC** be implemented?
Consider the following as a logical way to proceed (Figure 12).

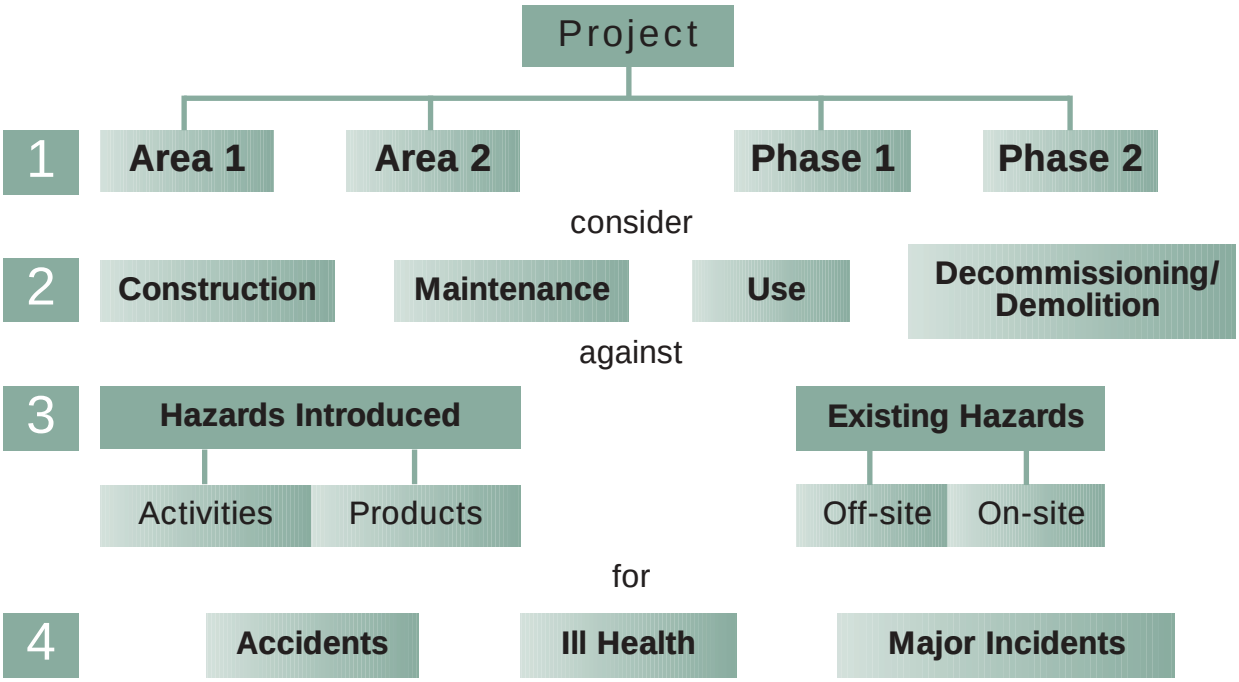


Figure 12 The sequence of risk management

2.3.5 Line 1: small or straightforward projects can be dealt with as an entity. For anything larger or more complicated, it will be useful to divide the project down in some way – by area or by construction phase are two possible solutions.

2.3.6 Line 2: for the project as a whole or for each element identified in line 1, consider the three key phases in the project's life (its construction, use and decommissioning), and its anticipated ongoing maintenance.

2.3.7 Line 3: for each item on line 2, identify the relevant hazards, either those occurring as a consequence of your design decisions, or those which already occur on or around the site, for example contamination, power cables, and schools. Identification of the hazards can, in part, be informed by the known significant causes of accident, ill health and major incidents (line 4). Guidance in dealing with these is given in Figure 8.

2.3.8 Adopting this methodology, designers' work, and the manner in which it impacts on others, may be logically assessed. It should also help designers to undertake the work effectively, productively and proportionately.

2.3.9 For assistance, see also:

- prompt sheets included in this guidance, which are available for relevant actions in lines 2–4
- the references schedule to this guidance, which contains details of further advice which will assist in the process
- **www.hse.gov.uk**, which contains information on 'health' guidance.

2.3.10 Risk occurs not only as a result of 'hard' project-related issues (for example, structural stability and material fragility). Other 'soft' risks are equally important, for example, consider the following questions.

- Is your appointment clear about the scope of your work?
- Have you considered the competence and resource of your team for the task in hand?
- Is your analysis model robust and are the outputs verified?
- Do you have a project review process?

2.4 Who is involved? See Figure 8, 'B'

2.4.1 All those who input to the design process have an obligation to eliminate hazards and reduce risk. There is therefore an advantage in involving the wider group, as typically illustrated in Figure 13, in order to harness a broader range of expertise.

Figure 13 Integrated team action

Where this approach is adopted, the outcomes of these sessions should be fed back to all designers involved in the project so that changes or amendments may be made where necessary.

2.4.2 Group sessions, where designers can bounce ideas off other duty holders, are very effective ways of managing the design process. They also reflect the integrated nature of risk management and provide an opportunity for the discussions to include other project risk issues, such as planning, finance, long-lead items and tenant vacation from existing buildings. It is recommended that such group sessions have a competent facilitator to control, direct and encourage review. This should be the CDM co-ordinator if one is appointed, or other source of competent advice.

2.4.3 Within any organisation undertaking design, it is essential that line management actively supports the process of hazard elimination and risk mitigation undertaken by those involved in the project. Adequate resource, competent advice and appropriate time must be built into the project programme and design budget to allow this to happen.

2.5 When should it be done? See Figure 8, 'C'

2.5.1 Hazard elimination and risk mitigation should be undertaken contemporaneously with the design. This will feature both as a continuous action (mirroring the development of the design itself at the design workstation), and discrete actions (in liaising with other designers, for instance). There are a number of ways in which both these elements can be moderated. For example:

By stages: the standard forms of consultancy appointment (RIBA, ACE, CIC) all have set stages of work. These can be used to trigger assessment reviews. The key point to remember is not to allow the design to progress too far between reviews, as back-tracking to change details (for whatever reason) may cost time and money; and

By gateways: the gateway approach is a simple but effective means of ensuring that the project does not progress at certain predetermined points (which can coincide with appointment stages, for example RIBA Stage C) without specified actions having been completed.

RIBA STAGE C

Has the design team met to review the design from a health and safety perspective?

Has the output from the meeting been signed off with outstanding actions now closed out or with agreed ownership for resolution?

Has the initial maintenance access strategy statement* been prepared and submitted to the client?

*See CIRIA C611 'Safe access for maintenance and repair'.

2.6 What should be considered? See Figure 8, 'D'

2.6.1 The detection of hazards and risks will normally include a review of the likely construction methods, maintenance, use and decommissioning:

a) identifying the relevant mandatory requirements and specific obligations See 2.6.3

b) identifying key project-specific accident and health hazards See 2.6.4

c) identifying key project-specific hazards with potential for very significant harm (major events) See 2.6.7

d) adopting relevant authoritative good practice; and avoiding recognised bad practice See 2.6.9.

2.6.2 One way to determine the relevant issues is to brainstorm the project without any pre-fixed perceptions. However, the following text gives some examples; these are not to be taken as exhaustive and in some cases may not be relevant. Designers must be satisfied that they have considered those hazards relevant to their specific project

2.6.3 Identify the relevant mandatory requirements and specific obligations. These are set down in various Acts and Regulations; some will be specific to your type of project (for example railway requirements), others may be of a generic nature (for example the Workplace (Health Safety and Welfare) Regulations 1992).

2.6.4 Identify key project-specific accident hazards. It is those identified in Figure 14 which cause the most accidents.

Key accident hazards which the designer may be able to influence	**Comment**
Working at height	Falling from height is the biggest (single) cause of fatalities. There are steps that can be taken at the design stage to eliminate or mitigate this, e.g. prefabrication, maintenance strategies.
Vehicles and other transport	The likelihood of being struck or crushed by construction (or 'in use') vehicles is reduced by strategic consideration of circulation, separation and space. During construction the contractor is responsible for the detailed implementation, but the designer can sometimes facilitate this by appropriate consideration during the design phase. 'In use' issues will need to be discussed with the client.
Power cables and electrical installations	The risk of electrocution emphasises the need for good information (from surveys if necessary) and avoidance of unnecessary activity in the vicinity of electrical supplies. This is particularly important on refurbishment/extension projects.
Structural instability	Risk of collapses typically applies to buildings and trenches. Be extra vigilant when refurbishing buildings. Consider carefully the need for deep trenches, and their excavation, if adjacent to other works.
Slips, trips and falls	These account for large number of injuries and are very disruptive and costly overall.
Others	Project-specific hazards, e.g. significant fire risks arising from the design.

Figure 14 Examples of key accident hazards

2.6.5 Clearly there will be some variation with the project type and consequently other issues may also be important, for example avoiding lacerations through the careful specification of sheet metal components in fit-out projects; or avoiding poor location of lighting units, from a maintenance perspective, in hazardous environments, for example close to works with open tanks.

2.6.6 Key health hazards which the designer may be able to influence are shown in Figure 15.

Key health hazards which the designer may be able to influence	**Comment**
Musculo-skeletal	This is one of the most common causes of ill health. Designers should consider lifting (e.g. choice of unit size), operating space, and the ergonomics of relevant activities.
Noise-induced hearing loss Hand-arm and whole body vibration	Current Regulations require significant reductions in the level of exposure to workers from those previously tolerated. If noisy or vibration-prone activities unnecessarily result from the design, this may result in additional project costs. Designers can obtain useful advice from contractors and suppliers of equipment.
Dermatitis and other skin-related problems	Designers should consider whether there are alternatives to materials or processes which cause particular problems.
Asbestos-related diseases	This is a major issue on refurbishment projects. Influence can be exerted through adequate information provision and careful consideration of survey information and the management plan.
Other	Project specific, e.g. presence of vermin and bird excreta, specific materials, dusts, sprays, contaminated land, lead.

Figure 15 Examples of key health hazards

2.6.7 Identify key hazards with potential for very significant harm (major events). Hazards which have the potential for very significant harm may require special consideration. Examples of such hazards include:

- use of cranes and other significant plant near public thoroughfares
- structural instability (including tunnels and temporary works) of new or existing structures
- buildability constraints, such as lack of fixing points on facades for scaffolding access
- work affecting live gas mains, high voltage electricity or in proximity to railways
- overhead services.

2.6.8 In order to identify and eliminate or reduce the risk associated with key hazards with potential for very significant harm, designers need to consider how the structure can be constructed, cleaned, maintained and decommissioned. This may involve:

- taking full account of the construction process, giving particular attention to new or unfamiliar processes

- considering the stability of partially erected structures and, where this is not immediately obvious, providing information to show how temporary stability could be achieved
- identifying where standard industry details will not be suitable, and where detailed structural design will be carried out by others
- considering the effect of the proposed work on the integrity of existing structures, particularly during refurbishment
- checking that the overall design takes full account of any temporary works which may be needed, no matter who is to develop those works
- checking that consideration has been given to the availability of sufficient space and adequate ground support for large plant required to construct or maintain the structure.

2.6.9 Adopt accepted relevant, authoritative good practice and avoid recognised bad practice. Industry practice improves all the time. For example, the adoption of safety nets in erecting roofing to steel frames, use of water-based/solvent-free paints and the adoption of mechanical aids to lift kerbs are all relatively recent introductions to the industry; they are now accepted as the norm. Designers need to keep up to date with good practice so, where relevant, it is provided for in designs.

2.6.10 Sources of authoritative good practice include the technical press, trade organisations, professional institutions, other industry bodies and the HSE. Continuing Professional Development (CPD) will help to keep you up to date. Designers' competent advisers (see Regulation 7 of the Management of Health and Safety at Work Regulations 1999) should also be able to assist.

2.6.11 Red and Green lists can also be used as an aide memoir during the design process. Project teams should be encouraged to develop their own lists of processes and materials that they want to eliminate from the project or positively promote, and some examples are given in this guidance. These lists should not be regarded as the current definitive lists to be adopted by all, rather they represent a concept that may be adopted and developed by individual projects. The lists reproduced on the HSE website have been gathered together to prompt debate, invite additional suggestions, and encourage wider adoption of the concept. These ideas have not been approved by HSE, they are merely capturing current practice within the design community.

Note: These lists change over time to reflect new items and contemporary good practice.

2.6.12 The red list shown in Figure 16 includes processes or products that should not be specified or result from the design (without good reason). The list is not exhaustive; it is illustrative. Designers are encouraged to expand and develop their own lists based on their specific projects or work types.

HEALTH
Scabbling of concrete (using hand tools)
Breaking down concrete piles using hand-held tools
Breaking out of concrete using hand-held tools
The chasing-out of concrete/brick/blockwork walls or floors for the installation of services
Processes giving rise to large quantities of dust (dry cutting, blasting etc.)
On-site spraying of harmful particulates
The specification of solvent-based paints and thinners, or isocyanates, particularly for use in confined areas
The specification of heavy building blocks, i.e. those weighing more than 20kg

SAFETY
Specification of fragile rooflights and roofing assemblies
Specification of structural steelwork which is not purposely designed to accommodate safety nets where they may be reasonably anticipated
Specification of roof-mounted services requiring access (for maintenance etc.), without provision for collective safe access
Specification of curtain wall or panel systems without provision for the tying of scaffolds
Location of access manholes in circulation areas (pedestrian or vehicular)
Specification of blockwork walls with retarded mortar mixes which may give rise to temporary instability

Figure 16 Red list

2.6.13 Should a 'Red' item be utilised (having used the ERIC process), then the designer should ensure relevant information is passed on to those affected, be they contractors, those involved in maintenance or use, or decommissioning, or through the health and safety plan or file.

2.6.14 The green list shown in Figure 17 includes processes, products and design outputs that are strongly encouraged. The list is not exhaustive; it is illustrative. Designers are encouraged to expand and develop their own lists based on their specific projects or work types.

HEALTH
Lightweight blocks and kerbs (an alternative is to make items of a size whereby mechanical handling is inevitable)
Flowing concrete (as an alternative to essential conventional in-situ concrete)
Prefabricated reinforcement mats/cages
The specification of concrete products/members with pre-cast or cast in-situ fixings to avoid on-site drilling
Specification of half-board sizes for plasterboard sheets to make handling easier

SAFETY
Adequate access for construction vehicles and mobile plant to minimise reversing requirements (one-way systems and adequate turning radii)
Safe location of all plant, lighting, switchgear and other equipment and furniture with consideration to safe operation of the facility. Specific attention should also be paid to maintenance requirements in order to facilitate safe access and avoid interaction with and risks to users and the public
Off-site fabrication to minimise activities on site and, in the case of staircases, to allow early safe access
Pre-fabrication to minimise work at height and manual handling
Contract requirement to appoint a temporary works co-ordinator (BS 5975)
Design of falsework to comply with BS 5975* (also, as appropriate, BS EN 12812) and good practice generally

Figure 17 Green list

Have you considered categories (a) to (d) listed in 2.6.1 within the context of your specific project?

Have you considered whether other issues are relevant?

If you are a temporary works designer, are you sure that you have sufficient information about the permanent works in order to prepare a safe design?

* Note that BS 5975 is being rewritten and retitled 'Code of practice for falsework and for the procedural control of all temporary works'.

2.7 Recording the process/outputs

2.7.1 The ACoP makes the point that it is not a legal requirement under CDM 2007 to record your deliberations (paragraph 144), but emphasises the benefits of recording and providing information on the significant risks (discussed at 1.7.6). This will satisfy the requirement under the Management of Health and Safety at Work Regulations 1999 for designers with more than five employees, to keep a written record of the significant risks identified in risk assessments (see paragraph 24 of the ACoP to those regulations).

2.7.2 In addition, it makes good business sense to record the output, and the requirements of formal quality assurance schemes will normally dictate that this is done. An audit trail of significant design decisions provides a quick reminder at later stages of the project and during design review. This process need not be complicated and could be achieved in a number of ways including:

- **a risk register:** this provides the opportunity to combine the more strategic risks under CDM 2007 with other project risks to provide a single live document. (But bear in mind that it will not be appropriate to include all CDM risks as, despite being important, some are not of sufficient project status. However, 'discipline registers' can also be established.) A risk register can be a very helpful, simple tool for recording issues, actions and ownership, in a manner that can be readily transmitted around the team (see Figure 18).
- **a stand-alone CDM record**: this might refer to the risk register but relate solely to issues under CDM 2007
- **part of a formal quality assurance process**: the format would be governed by the particular process and the organisation's procedures.

2.7.3 It is essential that careful thought is put into the arrangement and content of whatever method is adopted. If the process is either uncontrolled or ill-considered, there is a danger that it will not add value and will become another bureaucratic paper trail.

2.7.4 A typical register might contain the heads given in Figure 18.

1	References/Location/Phase etc.	
2	Hazard or issue	Brief description (if helpful, these can be wider project hazards, e.g. planning issues).
3	Elimination? If no:	If 'yes' – describe action to be taken, by whom and by when.
4	Associated risks and reduction measures taken	Note: action to be taken in accordance with the hierarchy and principles of prevention and protection (see 2.3.3).
5	Information to be conveyed to others	Is the method chosen to communicate this information adequate? (see section 1.7)
6	Date of assessment	
7	Action by: Required by:	
8	Action cleared	

Figure 18 Register headings

Note that those hazards that are identified as the design progresses, and are removed contemporaneously with the design progression, do not need recording. There is little point in noting something that no longer exists.

DOES YOUR ADOPTED METHOD:

- make it clear who 'owns' the risk (this might be an organisation undertaking design, or an individual) with responsibility for eliminating it, reducing it, investigating it?
- identify the timescale for any action?
- indicate how any residual risk data is to be passed to those who need to know of it?
- detail how it is confirmed that action has been taken, for example use of gateways?

2.8 Review

2.8.1 If a designer's role continues beyond the initial design stage, and there are changes, the designer must go back to ensure that the original assumptions are still valid, and that no new significant hazard or risk has been introduced (inadvertently or otherwise). This is a fundamental element of any risk management process.

DO YOU HAVE A STRATEGY FOR REVIEWING YOUR WORK?

If the project is 'value engineered' (VE), are you satisfied that the process includes consideration of the ill health and safety risk consequences of VE decisions?

Are changes during the tender or construction periods (for example contractor alternatives) appropriately assessed, with adequate communication channels for you to co-ordinate and co-operate?

If your commission finishes before construction begins, have you informed the client of the need to assess the health and safety risk implications on your design in the event of any subsequent changes?

Section 3

TEMPORARY WORKS

3.1 Introduction

3.1.1 This element of guidance has been provided for two reasons: firstly because temporary works fall within the ambit of CDM 2007 as structures within their own right; and secondly because they are inextricably linked to, but distinctly different from, the permanent works.

3.1.2 Although the contractor is responsible for a safe system of work relating to temporary works, permanent works designers often have a major contributory role.

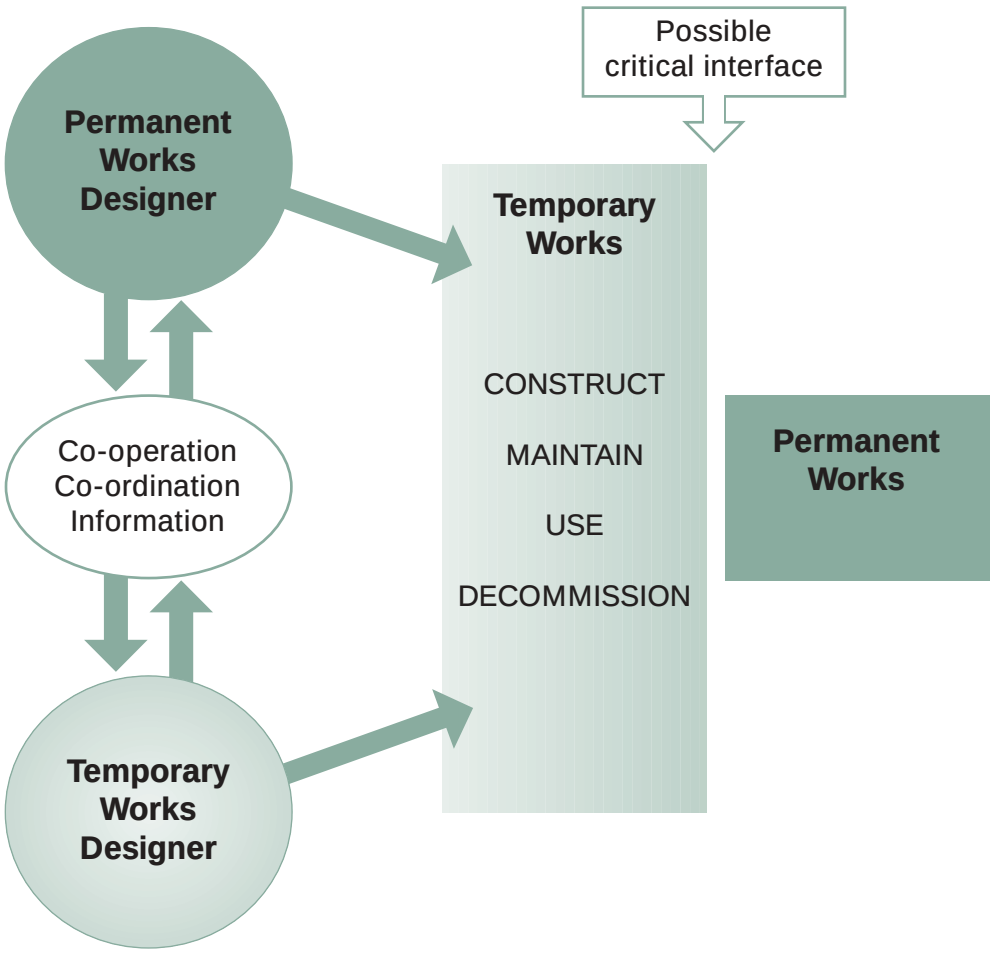


Figure 19 Temporary works relationships

3.2 Permanent works designer

3.2.1 The permanent works designer will need to be satisfied that the permanent works design allows for a reasonable safe system of work in respect of temporary works (having regard to hazard elimination and risk reduction to be implemented by the temporary works designer and subsequently the contractor).

3.2.2 Where the likely solution is an industry standard, that is based on codes of practice and established temporary systems, then there may be no need to take any further action. However, if the solution is not standard, or will result in risks which may not be obvious to the contractor, then this should be highlighted. Information should include details of the interaction with the permanent works, paying specific attention to interim instability issues.

3.2.3 Typical shortfalls in permanent works design include:

- a failure to identify a shortage of space to use anticipated standard forms of temporary works
- proximity of other major hazards not clear
- interaction with permanent works not clear
- assumptions not given (for example interim loading limits, deflection limits of permanent works)
- failure to consider whether the permanent works is capable of sustaining anticipated loadings from temporary works.

3.2.4 Remember that temporary works may be required during maintenance works as well as during the construction phase.

3.2.5 In some cases benefit may be obtained through incorporation of ‘temporary works’ into the permanent works, for example sacrificial support piling acting as rear shutters. These solutions may also bring cost savings.

3.3 Temporary works designer

3.3.1 The temporary works designer may be employed by the permanent works design organisation, principal contractor, contractor, supplier, manufacturer, or be self-employed. Contractually, the temporary works designer may be remote from both the principal contractor and the permanent works designer. However, for the purposes of CDM 2007, the role is classified as a ‘designer’ and this ‘Guidance for designers’ is therefore relevant.

3.3.2 Typical shortfalls in temporary works design include:

- not providing lateral stability requirements and vertical load limitations amongst outputs
- lack of appreciation of the structural behaviour of temporary works
- lack of appreciation of the specific site issues and constraints, for example availability of lateral restraint from the partially complete permanent works;
- not providing quality assurance assumptions, for example required supervision, necessary compliance with British Standards and other codes of practice, appointment of a temporary works (falsework) co-ordinator.

Section 4

USING THE EXPERIENCE OF OTHERS

4.1 Projects usually accrue maximum benefit when they are developed by an integrated team (that is all parties are involved), which contributes at the design stage. Parties making up the team can include:

- client (with PFI type procurement, this may include the sponsor, funder and others)
- users
- design team (scheme and detail)
- principal contractor
- lead and specialist sub-contractors (who are likely to include detail designers)
- key suppliers and manufacturers
- facility managers
- CDM co-ordinator.

This approach has been the mainstay of the 'Constructing Excellence' agenda for many years: www.constructingexcellence.org.uk

4.2 Such an integrated approach improves 'buildability' and promotes a safe design as access is directly available to expertise relating to the construction and operational phases of the structure. On relevant projects it will also allow proper consideration of critical temporary works interaction with the permanent works. In addition, it brings benefits in such areas as programme and cost certainty, value engineering and option appraisal. The inclusion of these parties in the process of elimination of hazard and mitigation of risk will be significantly beneficial.

4.3 It is not always possible to achieve this degree of integration, for example if the procurement route is 'traditional' (whereby the design is well developed before appointment of the contractor). In these cases, scheme designers need to check whether they have the experience and knowledge (that is competency) to appreciate the relevant issues that will arise during construction, use, maintenance or decommissioning, and which may be influenced at the design stage.

4.4 If competency is lacking in any area (which may sometimes be the case given the sophistication of techniques, new processes and methodologies used), then consideration should be given to attaining this knowledge through other means. One way of achieving this is to engage a contractor, facilities manager or others to provide a consultancy service at the appropriate time during the design stage. If this is programmed into the cost plan, it is also likely to be a cost-effective addition.

Do you have the experience and knowledge – as an individual, organisation or design team – to discharge your responsibilities to eliminate hazards and reduce risks (so far as is reasonably practicable) that may arise in respect of specific issues during the construction, use, maintenance or decommissioning of the structure?

Are you satisfied that a safe and healthy integrated design can be produced without consulting contractors, suppliers or facility managers?

4.5 The decision about whether additional competent advice should be introduced is not dependent on the contractual arrangements with your client or others, but on whether the advice is needed to allow a designer to make the appropriate assessments.

Section 5

PRE-QUALIFICATION AND COMPETENCE

5.1 The requirements in respect of pre-qualification and competence are given in the ACoP and in this CDM Guidance (Annex A) for corporate competency issues. This section relates to the competency of individual designers. See ACoP and Annex A of this guidance

5.2 Before engaging others, for example sub-consultants or self-employed individuals you will need to check that they also satisfy the competency requirements of CDM 2007. In addition, you may find this section of the guidance for designers helpful in support of the ACoP.

5.3 All designers are obliged to reach, and subsequently maintain, an adequate level of competency, unless they are under competent supervision. CDM 2007 is explicit on the matter. ACoP para 198

5.4 The ACoP makes the following statement in para 195:

'To be competent, an organisation or individual must have:

- sufficient knowledge of the specific tasks to be undertaken and the risks which the work will entail
- sufficient experience and ability to carry out their duties in relation to the project; to recognise their limitations and take appropriate action in order to prevent harm to those carrying out construction work, or those affected by the work..'

5.5 It is not appropriate to be prescriptive in respect of the details relating to the above; a professional judgement is required. However, one way of determining individual competency is to use the two-stage approach outlined in Figure 20.

Determining competency of an individual designer: the two-stage approach ACoP paras 213-225

Stage 1 competency (education and training)	**Stage 2** competency (experience)
This will normally be demonstrated by either: • membership of a design-related institution, which adequately requires and examines skills and knowledge in this area • an individual assessment for those who are not members of any recognised body. In this case the criteria set by the relevant professional institution for the discipline involved will give a good basis for assessment.	This will normally be demonstrated by, for example: • membership of institutions which require ongoing validation of experience and knowledge • membership of specialist registers which require ongoing validation of experience and knowledge • individual experience assessment.

Figure 20 Determining competency

5.6 With regard to stage 2, it is expected that designers will keep up to date with new or revised legislation and authoritative good practice in relation to health and safety risk management within the relevant construction sector. This will be in parallel with similar attainments in technical and managerial skills. Pending the introduction of formal validation schemes by all the relevant institutions, designers may find it helpful to keep individual assessments and records (but see also paragraph 5.9). Figure 21 illustrates the level of knowledge and ability likely to be required. ACoP para 217

5.7 Designers who have not kept sufficiently abreast of developments, and so on, as noted in paragraph 5.6, may not be able to demonstrate competence.

5.8 CDM 2007 does not prevent a designer being deemed 'competent' on a work type, or scale not previously encountered, providing evidence is produced to demonstrate an ability to manage risk at an appropriate level. This will be also be a professional judgement by the relevant duty holder. **Annex A of this guidance**

5.9 Although employers must be satisfied with the competence of all persons used by their own organisations (employees and self-employed), the 'competency check' undertaken by other duty holders in accordance with Regulation 4 is only intended to extend to reasonable enquiries, and would not therefore ordinarily include all members of the design team. Key persons would suffice, together with evidence of procedure and practice of the employer gleaned from the 'corporate competency' assessment. **See ACoP and Annex A of this guidance.**

	Career level	**Typical level of attainment** (cumulative)	**Typical means to attain required level**
	Education base	As set out in Accreditation or Institution requirements.	Via an accredited Higher or Further Education course with appropriate health and safety risk management content.
IPD PHASE	**Trainee Engineer, Technician or Architect**	1 Has knowledge and understanding of current legislation. 2 Has good knowledge of Regulations and best practice relevant to area of work. 3 Understands and is able to apply the hierarchy of risk control. 4 Understands and is able to apply the principal means by which designers can eliminate and reduce hazards. 5 Understands and is able to apply the principal means by which hazards and risks can be controlled on site. 6 Understands personal and collective responsibilities and liabilities. 7 Is aware of current initiatives and industry concerns in respect of health and safety.	In line with institution requirements for IPD phase.
CPD PHASE	**Qualified Engineer, Architect or Technician**	1 As a designer is totally familiar with and able to routinely apply means to eliminate and reduce hazards. 2 Able to undertake simple health and safety monitoring. 3 Is able to relate health and safety risk management to good management and business success. Leads by example.	1 Achieves ongoing CPD on health and safety risk matters. 2 Ensures CPD training is specifically obtained on new or revised Regulations. 3 Self development in this area.
	Senior Engineer, Architect or Technician	1 Able to advise younger engineers in health and safety risk matters. 2 Able to use industry KPIs and the like in health and safety risk matters. 3 Able to undertake simple design/ construction health and safety audits.	1 Achieves ongoing CPD on health and safety risk matters. 2 Ensures CPD training is specifically obtained on new or revised Regulations. 3 Self development in this area.

	Career level	Typical level of attainment (cumulative)	Typical means to attain required level
CPD PHASE	**Manager** (or equivalent)	1 Able to inculcate a health and safety culture within team. 2 Understands the need to benchmark and review progress. 3 Understands the wider occupational health and safety responsibilities of managers. 4 With support able to implement a comprehensive health and safety management system.	1 Achieves ongoing CPD on health and safety risk matters. This should encompass the wider issues of managerial responsibility. 2 Ensures CPD training is specifically obtained on relevant new or revised Regulations. 3 Self-development in this area.
	Director or Partner (or equivalent)	1 Capable of formulating health and safety policy with advice from competent source. 2 Has good understanding of current legislation and Regulations necessary to fulfil role as director. 3 Understands the responsibility of directors towards health and safety. 4 Is aware of current initiatives and drivers in the health and safety field affecting staff and work.	Achieves ongoing CPD on health and safety risk matters. This should encompass the wider issues of senior managerial responsibility and should include a formal course for 'senior executives'.

Figure 21: Life-long learning for health and safety risk management

Section 6

DEALING WITH YOUR SUB-CONTRACTORS OR SUB-CONSULTANTS

6.1 The effective management of sub-contractors and sub-consultants is essential in order for designers to discharge their legal obligations. It also makes good business sense. Remember that risk thrives at interfaces.

Are duties and responsibilities between parties clearly defined?

Is the method and timing of the interchange of information clearly established?

Is the process of co-ordinating the hazard elimination and risk reduction process clearly established?

Is the process of monitoring the work of those individuals or organisations which you have engaged established?

6.2 Traditional areas of confusion, which often lead to problems if not resolved prior to appointment or commencement of design, include the production of:

- project-specific information for the health and safety file (particularly as-built drawings) and the timing of this data
- design philosophy statements (covering structural stability, item replacements, maintenance, access, and so on)
- information for the pre-construction information
- attendance at ‘risk management’ meetings
- involvement of competent persons.

Are your sub-consultancy appointments clear on these issues?

Section 7

INEXPERIENCED CLIENTS

7.1 Introduction

7.1.1 For many designers, dealing with inexperienced clients is the norm. Although frequently these projects may be small, inexperienced clients also commission large projects. Either category of project may contain elements of high risk. It is important that designers endeavour to make their contact with the client as productive as possible; this is likely to be achieved if clients are apprised of the reasons for certain actions and requests, and the potential beneficial consequences are explained.

7.1.2 The requirement to check that clients are aware of their duties provides an ideal opportunity to emphasise the benefits to the client of the pragmatic implementation of health and safety legislation. See 1.4.

7.2 Projects requiring a CDM co-ordinator

Have you met with the client to explain your duties, to check that they are aware of theirs, and to indicate the benefit that the pragmatic application of health and safety legislation will bring to the project?

Have you suggested that the CDM co-ordinator joins you for this meeting in order to add emphasis to the importance of the pragmatic and holistic implementation of health and safety legislation (that is, it is more than just 'CDM') and its integration with other risk management?

If the CDM co-ordinator has not yet been appointed, and you are requested to progress beyond 'preliminary design', have you made the client aware that you cannot start this design work?

7.2.1 The meeting with the client may also be used to highlight common pitfalls which:

- could have an adverse effect on the health or safety of others
- may impinge on the statutory obligations of designers
- may adversely affect the project (see 1.4).

Late appointment of CDM co-ordinator	Client is, de facto, the CDM co-ordinator until one is appointed, but may not be effective if inexperienced. Design will be delayed (see 1.8)
Late provision of information	Likely to delay design and require assumptions to be made which may result in a higher project cost. May also result in rework fees from designers.
Insufficient information	Likely to cause difficulties to the design, and create the potential for uncertainty during construction or thereafter. Uncertainty usually costs money.

Figure 22 Pitfalls associated with late appointments

7.2.2 Meeting the client is likely to be very much more productive than just sending a letter to outline the duties. Even if clients are aware of their duties, holding a discussion in order that they may be put into context will usually be worthwhile.

7.3 Projects not requiring a CDM co-ordinator

7.3.1 Designers are required to check that clients are aware of their duties even if the project is not notifiable; in some cases, this can become more important because there is no CDM co-ordinator to assist. In certain situations, designers may find it useful to include their ‘competent adviser’ in discussions with the client. The adviser can assist with the explanation and rationale behind the various measures. It is possible to have some quite complex, high-risk projects which fall below the trigger level of 30 days or 500 person days.

Section 8

CONTRACTUAL RELATIONSHIPS

8.1 General

8.1.1 Although contractual arrangements will define the scope of a designer's role (that is whether they are responsible for a particular element of a project or activity), these arrangements will not take precedence over a designer's statutory obligations. However, contractual arrangements may have an influence on the ease with which a designer is able to discharge those obligations.

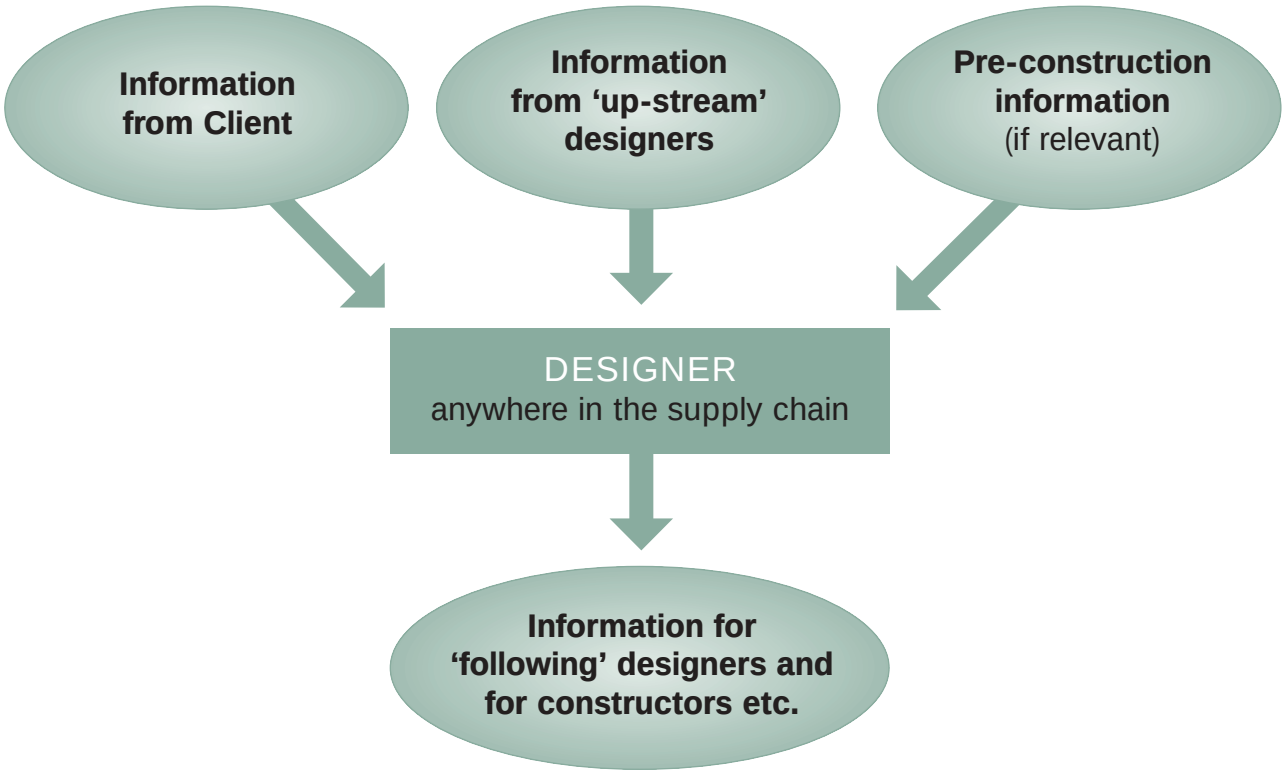


Figure 23 Designers and the contractual chain

8.1.2 No matter where the designer lies within the contractual chain (see Figure 23), in order to progress their design, they should expect: Regulation 10

- information from the client, although it may arrive via other parties
- relevant elements from the pre-commencement information (if the designer is appointed by a contractor)
- relevant and adequate information from any 'upstream' designers
- co-ordination from the CDM co-ordinator (if a notifiable project).

8.1.3 Although this should largely occur through contractual routes of communication, there is a statutory obligation on all duty holders, regardless of the contractual arrangements, to:

- seek co-operation from (and co-operate with) other duty holders
- co-ordinate their activities
- provide information.

8.1.4 In turn, no matter where the individual designer lies within the contractual chain, they should have regard to: Regulation 11

- the design (and assumptions) of others already in place
- those who follow them, that is the discharge of their duties under Regulation 11.

8.1.5 Designers will discharge their duties through:

- elimination of hazards and risk reduction, so far as is reasonably practicable
- provision of information to contractors, users, those who maintain, and so on, to allow them to develop safe systems of work
- advice in this guidance.

8.1.5 This process may involve co-operation and co-ordination with other duty holders who are contractually remote.

8.2 Examples of issues arising in contractual situations

8.2.1 Typical issues arising in contractual situations are outlined in Figure 24.

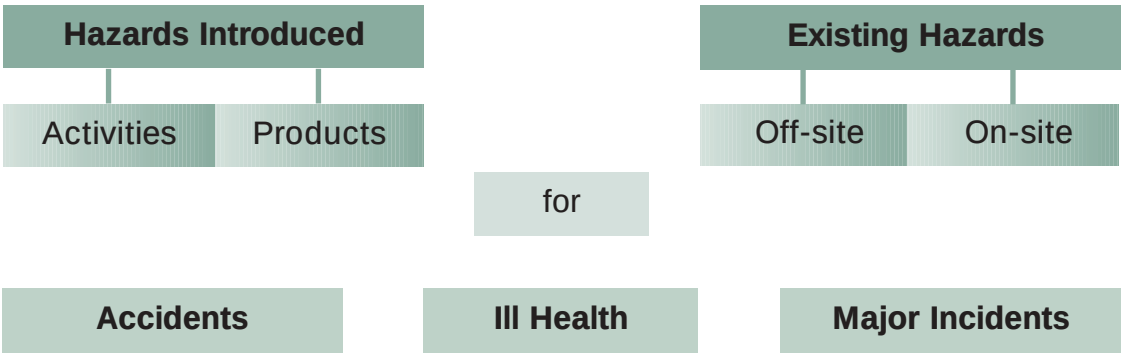
ISSUES ARISING IN CONTRACTUAL SITUATIONS	
Insufficient fee, or time, for designer to give due consideration to health and safety risk management.	If the designer cannot deploy sufficient resource of adequate competency within the fee available or time allocated, or is not willing/able to do so outside of these constraints, the designer must inform the client that they cannot proceed.
* Client arranges for engagement of designer to be terminated once drawings are produced (or at a similarly early stage).	If a compliant (safe) design is dependent on the nature of the detailed design yet to be undertaken, with which the designer will have no involvement, the designer must inform the client of any critical issues regarding foreseeable significant hazards and risks.
* Projects with long gestation periods, e.g. PFI or housing developments.	The information given must be commensurate with the stage reached, which may influence subsequent design, construction, maintenance, use or decommissioning. This might relate, for example, to space available, technical assumptions made, interaction with other aspects of the design, or the need for site inspections and verifications. The designer is not responsible for health and safety risk issues relating to the subsequent design with which they have had no involvement.
Design for an element split amongst a number of designers	This is a common occurrence in structural design, for example reinforced concrete slabs, timber and steelwork. Examples in architectural design include curtain walling systems; and an example in services engineering design is plant systems. Designers should be satisfied that: • the limits of their design are clear to those who follow • sufficient information is available to following designers to allow them to develop or complete a safe design • it is possible for others to develop a reasonable design, e.g. using standard arrangements and details, within the space and location available or, if not, that this is identified • that foreseeable significant health or safety risk issues relating to the element of the design prepared, that will subsequently arise e.g. during the construction phase, are identified.

ISSUES ARISING IN CONTRACTUAL SITUATIONS continued	
Design for an element split amongst a number of designers (continued)	Note: If you sub-contract some of your contractual design responsibility to others, for example to complete the detailed design, you will have a statutory responsibility under CDM 2007, and health and safety legislation generally, to monitor those undertaking the work (in addition to any continuing contractual responsibility). If you 'pass down' some of your design (for example because your client instructs you to do so, or through 'custom and practice'), you may have a responsibility to monitor those undertaking the work, depending upon the circumstances.
Procurement team/contractor/client changes a design in order to satisfy, e.g. budget or programme constraints	It is anticipated that in this situation the party making the change would normally become a designer and, as such, attract the duties of Regulation 11. However, if the affected designer is still engaged, and aware of the change, then that designer will also have duties to consider the effect. It is recommended that in such cases the designer ensures their views are clearly recorded with the client and CDM co-ordinator. If the affected designer is subsequently asked to implement the change, they need to remember that the statutory duty to eliminate hazards and reduce risks (ERIC etc.) overrides any contractual obligation. A competent CDM co-ordinator should be able to assist in such a difficult situation by explanation and co-ordination of the parties, and specifically the client.
*Note. These examples are generalised. Specific actions taken will depend on the circumstances.	

Figure 24 Typical issues arising in contractual situations

Prompt Sheet 1

Construction



1 Have you established how your design may be constructed safely and without ill-health effects?

2 Where you lack specific construction expertise, have you taken the advice of those who are competent in this field?

3 If your construction assumptions rely on the design of others, have you co-operated and co-ordinated in this respect?

4 Have you provided information which is project-specific and concentrates on significant risks which may not be obvious to those who use the design?

5 Are you satisfied that 'downstream' designers have sufficient information and scope to conclude the design process without compromising safety? For example:

- use of standard details not compromised (without explanation)
- sufficient space (for the detail itself, and to execute it)
- actions identified
- temporary stability issues identified
- maintenance/in-use requirements explained.

6 Are you satisfied that contractors have been provided with sufficient information on significant risks which may occur during the construction process?

7 Have you given sufficient consideration to temporary works that will be required, in respect of:

- interim loads
- the ability of the partially constructed permanent works to sustain anticipated temporary loads
- the sequencing of temporary works with the permanent works
- access for temporary works
- the role of existing structures
- stability during variable weather conditions?

Key references
Red and Green lists
CIRIA C 604 Work Sector Guidance
The Control of Noise at Work Regulations 2005

Prompt Sheet 2

Typical Existing Hazards

Hazards Introduced

Activities | Products

Existing Hazards

Off-site | On-site

for

Accidents | **Ill Health** | **Major Incidents**

On- and Off-site

Services (buried or in structures)
Contamination
Traffic to, from, or around the site Overhead cables
Surrounding use of land
Adjacent construction
Obstructions
Existing structures (stability or contamination)
Urban debris (needles, glass, asbestos)
Children, the elderly
Restrictions on traffic movement, e.g. one-way systems, peak times
Site boundary issues, e.g. pavement restrictions
Water, tidal rivers, flood plains
Underground structures or tanks

Have you supplemented information to hand by survey and other research in order to ensure that adequate data is available to progress the design and to allow the contractor to construct safely?

Have you considered whether 'technical' surveys can be usefully supplemented to provide information to safeguard the health or the safety of others?

Have you considered different options in respect of hazard elimination or risk mitigation?

Key references
Red and Green lists
CIRIA C 604 Work Sector Guidance

Prompt Sheet 3

Maintenance

Hazards Introduced

Activities | Products

Existing Hazards

Off-site | On-site

for

Accidents | **Ill Health** | **Major Incidents**

1 Have you considered the various anticipated maintenance operations in respect of the health and safety perspective of:

- access and egress
- working environment
- space (ergonomics)
- client liabilities (e.g. testing of fall arrest systems)
- effect on others (e.g. public, users)?

2 Have these been scheduled into a ‘maintenance access strategy’ for discussion with the client and inclusion within the health and safety file?

3 When eliminating hazards and mitigating risk, have you considered the balance between maintenance cost, frequency and disruption, and the overall benefits of adopting a different and/or more expensive capital cost solution?

Key references
CIRIA C 611 Safe access for maintenance and repair
Red and Green lists

Prompt Sheet 4

Decommissioning/Demolition

Hazards Introduced

Activities | Products

Existing Hazards

Off-site | On-site

for

Accidents | **Ill Health** | **Major Incidents**

1 Have you obtained the health and safety file (if there is one)?

2 Have you identified hazardous materials used in the design, arising during use, or remaining on the site?

3 If asbestos is likely to be present, have you obtained the 'asbestos management plan' required by the Control of Asbestos Regulations?

4 Are there any critical sequences that need to be followed during the decommissioning/demolition process?

5 Have you identified any pre-tensioned or post-tensioned components?

6 Have you identified any structural instability issues that need to be addressed during decommissioning/demolition?

At the design stage:

7 Has all relevant information been placed in the health and safety file and on the drawings (including design summaries and advice on high-risk activities such as dismantling or demolition)?

Key references

BS 6187: Code of Practice for Demolition

Party Wall Act 1996

Prompt Sheet 5

In Use

Hazards Introduced

Activities | Products

Existing Hazards

Off-site | On-site

for

Accidents | **Ill Health** | **Major Incidents**

1 Has your design taken account of the Workplace (Health, Safety and Welfare) Regulations 1992, the Control of Noise at Work Regulations 2005 and other relevant Health and safety legislation?

2 Has your design taken account of the Disability Discrimination Act 1995, associated guidance and other relevant legislation?

3 Are the cleaning and maintenance requirements of walking surfaces (internal and external) designed in accordance with good practice and communicated to those who need to know?

4 Does your design take account of any specific ‘in use’ aspects reasonably foreseeable?

5 Have maintenance and plant/item replacement assumptions been discussed and agreed with the client?

6 Have you communicated ‘in use’ issues to the client or others who need to be informed?

Key references
CIRIA C 652 Safer surfaces to walk on: reducing the risk of slipping
Red and Green lists

References and further reading

This schedule of references has been limited to ‘key’ documents or sources of reference. There are, of course, many more sources of information, but those scheduled are considered central to good compliant design. Not all will be required for any one design. Others will invariably be required. Some references are included to provide a broader picture, e.g. HSG 150.

Category	Comment
REGULATIONS (these are the prime documents, although this is not an exhaustive list)	
The Construction (Design and Management) Regulations 2007	These now include the Construction (Health, Safety and Welfare) Regulations 1996.
The Management of Health and Safety at Work Regulations 1999	The ‘cornerstone’ regulations which place basic obligations on employers and individuals.
The Confined Space Regulations 1997	Designers need to understand the definition of a confined space in order to recognise, during the design phase, its potential likelihood and severity.
The Provision and Use of Work Equipment Regulations 1998 (PUWER)	These cover a very wide range of ‘equipment’ and the obligations regarding inspection, testing and certification.
The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)	These regulations are linked to PUWER and encompass safety lines, eye bolts and the like. They set out testing requirements etc. for these systems and consequently the future liabilities of clients.
The Manual Handling Operations Regulations 1992	These provide some good practical explanations in addition to explaining the risk management hierarchy.
The Workplace (Health, Safety and Welfare) Regulations 1992	These are relevant to the ‘in use’ phase of a structure.
The Control of Noise at Work Regulations 2005 The Control of Vibration at Work Regulations 2005	These regulations impose limits of noise and vibration exposure on those at work. If site activities arising from the design involve noise or vibration, there is an obligation on the designer to take action (ERIC). Activities involving unnecessary noise and vibration will also cost more than in the past as a consequence of the reduced limits of exposure.
The Chemical (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3)	These regulations require suppliers of hazardous materials and substances to provide a safety data sheet. This data sheet can be used by designers to determine whether the proposed material or substance is likely to be hazardous if it is used in the manner that is proposed. Data sheets can usually be obtained from suppliers’ websites.
The Control of Substances Hazardous to Health Regulations 2002 (COSHH)	These contain the obligation on employers to assess and use hazardous substances safely.
EH40 Occupational Exposure Limits (revised periodically)	This document schedules the limits for all substances with a Maximum Exposure Limit (MEL) or an Occupational Exposure Limit (OEL).
The Control of Asbestos Regulations 2006	These regulations draw together requirements in relation to asbestos, and revoke most previous legislation on this topic.
The Work at Height Regulations 2005	It is important for designers to understand the principles behind these regulations so that others, e.g. contractors and maintainers, are not put into hazardous situations unnecessarily as a consequence of the design.

Category	Comment
PUBLICATIONS: Industry – CIRIA	
CON 662 CDM 2007: Construction work sector guidance for designers	This replaces previous versions (C604 and C166) and reflects CDM 2007
C611 Safe access for maintenance and repair	This document provides a good framework for a methodical approach to ensuring maintenance is given adequate consideration. It contains a comprehensive outline of means of access and space requirements. It introduces the concept of 'maintenance strategy statements'.
C621 Good practice guidance for refurbishing occupied buildings	Approximately 50 per cent of construction relates to refurbishment. Particular care is required when working on existing structures; the accident rate is higher for this type of work than for new build. This document gives guidance.
C652 Safer surfaces to walk on: reducing the risk of slipping	A comprehensive report on all aspects of walking surfaces, including the preferred means of design against slipping using the 'slip potential model'.
CON 663 CDM 2007: Workplace 'in-use' guidance for designers	A guide from CIRIA covering the issues associated with the 'in-use' phase of a project.
PUBLICATIONS: HSE	
HSG L144 New CDM ACoP	This informative document has legal status. It is essential reading for all designers.
HSG 33 Health and safety in roofwork	Falling from roofs accounts for a significant proportion of fatalities and accidents.
Health guidance for designers	Occupational Health Management Model on **www.hse.gov.uk**

General background information to assist an understanding of the relevant issues

HSG 47 Avoiding danger from underground services
HSG 144 The safe use of vehicles on construction sites
HSG 149 Backs for the future – safe manual handling in construction
HSG 150 Health and Safety in Construction
HSG151 Protecting the public – your next move
HSG 168 Fire safety in construction work
HSG 185 Be safe and shore – H&S in excavations
HSG 213 Introduction to asbestos essentials
INDG 223 Managing asbestos in workplace buildings
Construction Information Sheet No. 27 Solvents
Construction Information Sheet No. 36 Silica
Construction Information Sheet No. 37 Handling heavy blocks
IND(G)127 Noise in construction
IND(G)171 Upper limb disorders – assessing the risks

WEB ADDRESSES

www.dbp.org.uk A collection of real design examples illustrating good practice.
www.lboro.ac.uk/research/design4health/ Healthy Design in Construction, a best practice project run by Loughborough University.
www.tlchm.bris.ac.uk/safety/chip.htm A good reference point for CHIP3

Note that BS 5975 is being rewritten and retitled 'Code of practice for falsework and for the procedural control of all temporary works'