Causation and Delay in Construction Disputes

Second Edition

Nicholas J. Carnell LLB (Hons), FCIArb, Solicitor

Blackwell Publishing

Causation and Delay in Construction Disputes

Causation and Delay in Construction Disputes

Second Edition

Nicholas J. Carnell LLB (Hons), FCIArb, Solicitor

Blackwell Publishing

Editorial Offices:
Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK
Tel: +44 (0)1865 776868
Blackwell Publishing Professional, 2121 State Avenue, Ames, Iowa 50014-8300, USA
Tel: +1 515 292 0140
Blackwell Publishing Asia, 550 Swanston Street, Carlton, Victoria 3053, Australia
Tel: +61 (0)3 8359 1011

First published 2000 by Blackwell Publishing Ltd

Library of Congress Cataloging-in-Publication Data

Carnell, Nicholas J.
Causation and delay in construction disputes / Nicholas J. Carnell.—2nd ed.
p. cm.
Includes bibliographical references and index.
ISBN 13: 978-1-4051-1861-3 (alk. paper)
ISBN 10: 1-4051-1816-4 (alk. paper)
1. Construction contracts—England. 2. Breach of contract—England. 3. Time (Law)—England. 4. Construction industry—Management. I. Title.

KD161.C37 2005
343.73'078624—dc22

2005045340

A catalogue record for this title is available from the British Library

Set in 10.5/13 pt Palatino
by SNP Best-set Typesetter Ltd., Hong Kong
Printed and bound in Great Britain
by TJ International Ltd, Padstow, Cornwall

The publisher's policy is to use permanent paper from mills that operate a sustainable forestry policy, and which has been manufactured from pulp processed using acid-free and elementary chlorine-free practices. Furthermore, the publisher ensures that the text paper and cover board used have met acceptable environmental accreditation standards.

For further information on Blackwell Publishing, visit our website:
www.blackwellpublishing.com

Contents

Preface

Delay claims are perhaps the most common form of construction dispute. Few people in the construction industry can claim never to have known a project which ran late. However, it is also a subject which is still widely misunderstood. Although it is little more than ten years since the Privy Council's restatement of the law in *Wharf Properties* v. *Eric Cumine Associates*, the terms 'cause and effect' and 'rolled up claim' are often treated as if some magical significance attaches to them. While lawyers and legal writers generally offer the view that the law has not changed significantly since *Wharf*, there is general agreement that the process of proving delay claims has become more complex. Too often the result is that, in addition to being faced with a project which has gone badly, the contractor or developer is confronted by what appears to be a bewildering set of obstacles placed between him and establishing his entitlement.

This book is not aimed at lawyers; the intention is to provide a reference guide for construction professionals. The book has attempted to look at some of the practical considerations which can lead to problems on any project, particularly record keeping and notices, followed by consideration of some of the more frequently encountered contractual issues, such as the entitlement to rely on a programme and the circumstances in which time might be said to become at large. This precedes an analysis of the principal cases concerned with proving delay claims, starting, of course, with *Wharf Properties* and some of the difficulties which can be encountered. There follows a brief consideration of the techniques involved in network planning and the use of the critical path analysis to prove delays. The final two chapters are concerned with claim presentation and the various forms of dispute resolution which are available.

Since this is intended to be a practical guide, and the scope of the subject is potentially enormous, and since a number of the subjects

addressed would merit a work in their own right, in many instances topics are given a fairly brief introduction which it is hoped will lead the interested reader on to more detailed reading.

Perhaps the single most important development since this book was conceived is the introduction and development of adjudication as a quick means of resolving disputes. The impact of adjudication is addressed both by reference to the individual matters covered and in Chapter 11. The view expressed in the first edition was that adjudication would certainly serve to compress the timescale within which disputes are resolved and lessen some of the procedural requirements often regarded as making litigation and arbitration unnecessarily complex, but it was unlikely, at least in the foreseeable future, to bring about a significant relaxation in the standards of proof that are likely to be required. This view has proved largely correct. However, what was not foreseen was the massive body of case law which has sprung up over a very short period and which has served to make adjudication something of a procedural maze.

The growing use of adjudication, however, is perhaps only the most obvious sign of the changed climate in construction over recent years. Chapters 1 and 10 both comment on the call by both Latham and Egan for construction to be carried out in a climate in which disputes are the exception rather than the norm. Wisely, however, Sir Michael Latham concedes that disputes are part of commercial life and so calls for dispute resolution procedures which allow the prompt disposal of disputes. It is implicit that such disputes will be capable of resolution more swiftly and painlessly where both parties understand and acknowledge the same set of rules, even if they do not agree with one another on the facts. Far too many delay claims come to resemble trench warfare because, in addition to disagreeing with one another over the causes of delay, the parties also disagree about what needs to be proved and how. It is hoped that this book will in a modest way assist in the growth of such understanding. The Society of Construction Law Delay Protocol represents an attempt to do just this. Although there are serious doubts as to whether the document achieves any of these objectives, the fact that there is a concerted attempt to harmonise the way in which delay claims are approached can only be beneficial. This protocol is considered in detail in a new Chapter 9 together with the recently published Change Management

Supplement, the intended purpose of which is to provide a degree of uniformity in the way in which programming and delay analysis are dealt with in standard form contracts.

The other major reform of recent years has been the new Civil Procedure Rules, the wholesale rewriting of the rules of civil litigation in the wake of Lord Woolf's 1996 Report *Access to Justice*. Allied to the 1996 Arbitration Act and the growth of adjudication, the whole basis on which disputes are resolved has undergone its most radical overhaul since the Judicature Acts at the end of the 19th century. Proceedings within the Technology and Construction Court, where most construction disputes are litigated, have changed less than elsewhere. The most far-reaching change has been the introduction of the Pre-Action Protocol for the (sic) Construction and Engineering Disputes. This has set out a code of conduct to be adopted before proceedings are issued. Much of this is concerned with an exchange of information prior to the commencement of proceedings and is intended to give the parties every chance to narrow their differences. Allied to the emphasis on attempting to settle disputes through mediation, the result is undoubtedly a climate which is more geared to resolving rather than fighting disputes. This is generally to be welcomed.

Apart from updating the text since the first edition, the principle changes from the first edition have been to consider the developments in delay analysis, and to rewrite the section on adjudication to reflect the rapid evolution which adjudication has undergone.

As far as possible, references to standard form building contracts have been kept to a minimum. The great majority of references are to JCT 98, the Second Edition of the Engineering and Construction Contract (while maintaining the NEC abbreviation) and the ICE 7th Edition. It is intended that the law is as stated at 22 October 2004.

Author's note

One of the very best legal text books, *Dicey & Morris on the Conflict of Laws*, also boasts what is certainly the best Author's Note. Professor Morris says, in effect, that law books are much like babies – great fun to conceive but thereafter colossally hard work. I can only add that, in the course of writing, my admiration for those who have undertaken more substantial and learned works than this has

increased many times over. It is also fitting in any work concerned with construction disputes to acknowledge my debt of gratitude to that large body of people, largely unsung and frequently maligned, who make up the construction industry past and present. It has been my great good fortune over the past 20 years to work with some of these people. More than any reported case or law book, their legacies are the buildings and works of civil engineering which they have constructed.

Nicholas J. Carnell
October 2004

Acknowledgements

Firstly and of course, I am indebted to my wife, Debbie, for her encouragement, patience and support during the writing of this book, and for the seemingly endless sacrifice of our dining room table to this task. Secondly, to my secretary, Pamela Sylvane-Addo, for converting my two fingered typing of the first edition into something presentable. Thirdly, to Julia Burden at Blackwell Publishing for her patience, firmness, charm and occasional credulity in dealing with an author whose approach to time limits would have driven lesser mortals to despair.

Thanks are also due to my colleagues past and present, who have offered numerous helpful suggestions, which I duly acknowledge whether I have incorporated them or not. Needless to say, the views expressed are my own and I take full responsibility for them.

List of Abbreviations

ADR	alternative dispute resolution
CA	Contract Administrator
CDPS	Contractors Designed Portion Supplement
CM	Construction Manager
CPA	critical path analysis
CPR	Civil Procedure Rules
EET	earliest event time
EFT	earliest finishing time
EST	earliest starting time
ICE	Institution of Civil Engineers
IFC 98	JCT Intermediate Form of Building Contract 1998
IMechE	Institution of Mechanical Engineers
JCT	Joint Contracts Tribunal
JCT 98	JCT Standard Form of Building Contract 1998
LADs	Liquidated and ascertained damages
LET	latest event time
LFT	latest finishing time
LST	latest starting time
MW 98	JCT Agreement for Minor Building Works 1998
NEC	New Engineering Contract
PC	prime cost
PERT	programme evaluation and review technique
PNT	project network techniques
PQS	professional quantity surveyor
SBIM	School of Business and Industrial Management
TPT	total project time
WCD	With Contractor's Design
WCD 98	JCT Standard Form of Contract With Contractor's Design 1998

CHAPTER ONE
TIME IS MONEY

1.1 Introduction

This book is intended to act as a guide through the construction process for those engaged on behalf of both employers and contractors, and to provide an aid in avoiding delays and also in coping with them when they do arise. Quite deliberately the subject of quantification of claims has not been attempted. This is because it has already been dealt with by others in a manner which the author could not possibly hope to emulate, to say nothing of the fact that the present task is already a substantial one.

No two construction projects are alike; accordingly, no two delay claims will ever have identical ingredients. Even the simplest series of modular buildings will be erected on different pieces of land or at different times or by different people. Unlike manufacturing industry, construction is not primarily concerned with the repetition of a series of processes but with a succession of one-off projects. Hence, as the complexity of the works increases, so does the number of variables, and, of course, the range of things which can go wrong.

The cost of a project will be determined by an equation which balances time, materials and labour against the conditions under which the works are to be executed and the requirements of the person for whom the works are being carried out. Planning a project is concerned with determining how many men with what equipment will take how long to carry out what work on a particular site. The project will be costed by determining the quantities of these components which will be required to complete the required work, and, where one side of the equation undergoes a significant alteration, claims will frequently follow.

The origins of modern construction and civil engineering planning lie in the canal boom of the late 18th century. Prior to that time

most employers had hired individual craftsmen and labourers. The canal age saw the workforce grouped into gangs under the ultimate control of the engineer. The requirement that each new 'navigation' should have an enabling Act of Parliament to allow the formation of a new joint stock company, meant that budgets in the form of the company's share capital were fixed in advance by reference to the anticipated cost of the works. The results were projects which would be instantly recognisable, particularly to those involved in construction management. Equally familiar were the delays and increases in costs which bedevilled many of these projects.[1.1]

Then, as now, a great deal of energy was expended attempting to plan projects in such a way that completion took place on time and within budget. When it did not, claims resulted, and again these would be familiar to today's contractors.

1.2 An outline of the battlefield – looking forward

Where one of the key resources is significantly altered the result will generally be either delay to the works or the need for acceleration. To understand either we will have to give brief consideration to the planning of the project. The first question facing the planners of every job is 'How do we propose getting this project from inception to completion in accordance with the programme and budget?' The important point to realise is that although no two jobs are ever exactly the same, and thus the number of potential things which can go wrong is infinite, these problems fall into a series of broad categories. These can be anticipated, and steps taken to guard against them.

Indeed, these broad categories can really be grouped into two headings – those which have their origins in the planning of the project and those which are caused by problems during the construction of the works.

Planning the project

Accordingly, the starting point in understanding delay claims is the period before work has started on site and appreciation of the following matters.

- The importance of planning the works properly, which above all means within time and budget constraints that are actually capable of being fulfilled. This obviously starts with the employer producing a scheme for the procurement of the works which is possible within these parameters.
- The role and preparation of programmes, histograms and resource schedules by the contractor to enable the requirements of the employer to be fulfilled.
- The part to be played by critical path analysis in planning the works.
- The parties' contractual obligations and entitlements, particularly in the principal standard form building and civil engineering contracts and sub-contracts, and especially those provisions regulating time.
- The parties establishing proper procedures for reporting on progress and for dealing with problems as and when they arise in a way which will not cause the works to be delayed.[1.2]

During the construction

Only then is it appropriate to look at the matters which actually cause delay during the works themselves. These will typically be one of two types. (Which type a matter belongs to depends on whether risk rests with the employer or the contractor.)

Contractor's responsibility

Some matters which arise due to a failure on the part of the contractor will have their origins in a failure properly to carry out the planning stages of the works, others will be due to an inability to perform in the manner agreed in the contract.

Employer's responsibility or neutral events

Those matters caused through an act or omission of the employer or his team or by a matter which does not arise through the fault of the contractor. These will also be governed by the contract conditions. A useful list of these is provided in Clause 25.4 of JCT 98 and includes:

- *force majeure*[1.3]
- exceptionally adverse weather conditions
- clause 22 perils (flood and the like)
- civil commotion, strike or lock out
- compliance with architect's instructions
- non-receipt of essential information
- delays by nominated suppliers or sub-contractors, artisans and tradesmen
- Government action
- restrictions on the availability of labour or materials
- delays by statutory undertakers
- delays in giving access to the works.

Dealing with the claim

That done, attention turns to the task facing surveyors, lawyers or claims consultants, typically, and perhaps unfortunately, coming to the project after the delaying events have occurred and the project is significantly late (matters considered in detail in Chapters 7 and 8). Invariably their task is to produce or rebut a claim, seeking to assert that delays are the fault of someone other than their client and are of a type which give rise to an entitlement to compensation in terms of time or money. This will involve analysis of the methods frequently employed in this exercise and the problems with each such approach. This cannot be done without then considering the guidance and sometimes hindrance provided by courts. It is also apt to bear in mind, even at an early stage, the levels of proof required by the courts should the parties fail to reconcile their differences.

It is then appropriate to look in Chapter 10 at some of the ways in which claim preparation can be improved. The objective is to identify the steps to be taken in producing claims which will achieve their forensic objective – proving why delays occurred. Necessarily this will involve a brief guide to 'the Black Museum' – those claims which have gone badly wrong and where short-comings have been exposed and highlighted by the court – since the invariable truth is that it is easier to determine what can and should be done with the benefit of hindsight and from others' experience. This in turn leads to consideration of the guidance provided by the Society of Construction Law's Delay Protocol.

It is only fair at this point to declare an interest. My own experience of delay claims and their causes comes from advising those in the construction industry, most frequently in circumstances where the delay is already a fact and the issue is how it occurred and whose fault this is. The greater part of this book is written from the perspective that the parties to a construction project have their rights and obligations mapped out by the contract by which they have agreed to be bound. Delays and claims result from matters which mean that the works are not carried out precisely as envisaged in that contract. Accordingly, avoiding delays is crucially concerned not only with good practice during the planning and execution of the works but also with proper operation of the contract machinery. Similarly, successfully mounting or defending a claim is largely an exercise in understanding and enforcing rights and duties contained within that contractual framework.

While it might be suggested that the mark of a successfully drafted contract is one which the parties are not required to refer to during the works, this is not a reason to dispense with a properly drafted contract. In simple terms, the best contracts are those where the parties can say, 'We know what it says, we know where we stand, so let's get on with the job'.

Old and new approaches

In many respects this is a view which is as old as contracting itself. However, and almost by definition, it is a confrontational approach in which the contract serves, as the heading of this section suggests, to outline the battlefield. Nevertheless, while co-operation is not always seen as the way to achieve the best results, in reality it will usually pay dividends. A very large part of this book is therefore concerned with discussing techniques which can be used to obtain the best results available under the contract.

This view has been questioned by three important developments. These were:

- the publication of the New Engineering Contract (NEC) – now the Engineering and Construction Contract,
- the release of *Constructing the Team* by Sir Michael Latham, the final report of the government/industry review of procurement

and contractual arrangements in the UK construction industry, and

- the Housing Grants, Construction and Regeneration Act 1996.

All three were keenly anticipated and, since publication, have provoked lively debate. The impact of each will be considered in subsequent chapters. For present purposes, it is important to note that while making the approach from slightly different angles, each addresses the industry from a novel perspective. This, essentially, is that the problems of the construction industry emanate from contractual relationships which provoke conflict rather than consensus.

The NEC approach is to impose a duty of good faith, while the Latham Report calls for a change in attitude – to promote co-operation rather than conflict between the parties. The Housing Grants, Construction and Regeneration Act 1996 attempts to provide for fairer dealings between parties to construction contracts by requiring interim payments to be made, limiting the right of set-off, outlawing 'pay when paid' clauses and, most importantly for present purposes, providing a statutory right to have disputes dealt with quickly and efficiently by way of adjudication. (Although the right to adjudication does not apply to contracts entered into before 1 May 1998). While adjudication will significantly reduce the time period required to deal with disputes, experience suggests that this will not be at the expense of a lowering of the required standard of proof.

Interestingly, adjudication has had the effect of *increasing* the number of matters which are referred to some form of dispute resolution. This may seem odd in the context of legislation the stated aim of which was to reduce the number of disputes. However, it is unquestionably beneficial to have a simple, cheap and effective way of dealing with disputes which avoids the need for full-scale arbitration or adjudication. Similarly the availability of this remedy will 'enfranchise' many for whom arbitration or litigation were previously not affordable. Against this, the proliferation of procedural challenges to adjudicators' decisions, which have ended in the courts, is to be regretted.

While the overall objectives of each development deserve the very highest praise, the commentators have given a reception which has been decidedly mixed.[1.4] It is nevertheless interesting that, when first published, the drafting of the NEC was criticised as being

change for its own sake, and certainly, some of the drafting of the first edition was clumsy and imprecise; but many of these difficulties have been addressed in the second edition. More importantly, as the NEC becomes more commonly used, it seems likely that many of those criticisms will be 'worked out' and as its use becomes more widespread, this does seem to be the case. In particular, the use of simple and accessible language, and hence the avoidance of what are sometimes seen as the obscure and confrontational nuances of the older forms, is welcome.

The final paragraph of this opening chapter offers an apology in respect of two comments which will certainly be levelled at this book. The first is that it comprises a counsel of perfection; that this is all very well but it will involve so much care on the part of all those involved in the building process as to prevent any project from getting past the planning stage. The second is that it is obviously easy for a lawyer to offer suggestions on how best to deal with delay claims from a perspective which is necessarily concerned with generalising problems. Both are valid criticisms. However, the response to each is basically the same. This is not a complicated book. The view of the majority of specialist lawyers engaged in this field is that most problems arise from simple and, in the main, avoidable events. The steps required to avoid problems are frequently no more arduous than appreciating what precisely the contract or even just good sense dictate. In the main, this involves developing good habits. The irony is that the provisions of the relevant British Standard BS 5750 require precisely this. While it is obviously appreciated that the majority of those employed in the industry are exceptionally busy, the issue is one of suggesting how the limited time available can best be spent. These are universally applicable considerations.

CHAPTER TWO
PLANNING THE PROJECT

2.1 Allocating risk

Choice of contract

Every project starts with a decision by the employer to carry out certain works. After determining what he wants to build the next decision, and possibly one of the most crucial in the whole project, is to decide upon the contractual regime according to which the works are to be executed. Virtually everything which follows will depend upon this decision. This is an obvious point but one which should not be ignored. To give an obvious example; the choice between design and build and traditional contracts involves deciding between two wholly different ways of allocating risk. The issue is whether the employer retains control over, and therefore responsibility for, the design of the works or whether he delegates this task to the contractor, protecting his own position by a design warranty of the sort found in clause 2.5.1. of the JCT Standard Form of Building Contract With Contractor's Design.[2.1] The choice of permutations and the range of available forms of contract is enormous. Some of the questions which face the potential employer in picking an appropriate regime for the works are dealt with below.

The range of choices has expanded considerably over the past decade, not only in terms of the different types of standard forms now published but also in relation to the number of ways in which parties attempt to modify those standard forms. Depending upon precisely which version is selected the unamended JCT 98 standard form is just over 60 pages long. It is not unusual to see this augmented by amendments proposed by one or other of the parties which can add the same length again. The authors of these amendments are generally either lawyers or project managers. Except where the works have some truly extraordinary feature, this is a

practice which has been condemned in all quarters as a fairly naked attempt to secure an advantage and shift the balance of risk in the standard form. A further criticism is that these amendments can actually lead to uncertainty and hence to disputes.

Figure 2.1 shows the sort of network of relationships which may be involved and the contractual links between the parties. Each of these relationships involves the allocation of risk between the parties. The importance to the employer and his professional advisors of choosing the appropriate form of contract, whether it is a standard form or a tailor-made document, cannot be overstressed. The wrong choice can have serious consequences later in the contract. An illustration of this is provided by comparison between two forms which are often used for similar works, namely the ICE 7th Edition and the IMechE Model Form. Both have been widely used by local authorities, particularly in connection with street lighting contracts. The former provides by clause 12 that where unforeseen ground conditions are encountered this may entitle the contractor to relief. By contrast, clauses 2 and 11 of the IMechE Form make the contractor responsible for determining ground conditions, and the right to claim that ground conditions are unforeseeable is thus limited. Hence, the employer faces a clear choice between the two forms and the decision will depend in large part upon the employer's perception of which regime is most likely to suit the conditions of a particular job.

Initial questions

As Fig. 2.1 shows, the different standard forms and different contractual schemes impose completely different sets of relationships. In a paper presented to the King's College Centre for Construction Law and Management[2.2] in 1994, Richard Winward asked the question whether construction contracts actually benefit the parties. His starting point was to refer back to the report by Sir Harold Banwell in 1964[2.3] where the problems in the construction industry at that time were attributed to the failure to use and comply with standard form contracts. The industry has moved on but the possibility still exists for the parties to select a particular standard form or contractual regime for a project which does not suit the objectives they are attempting to achieve. The choice of the correct form is

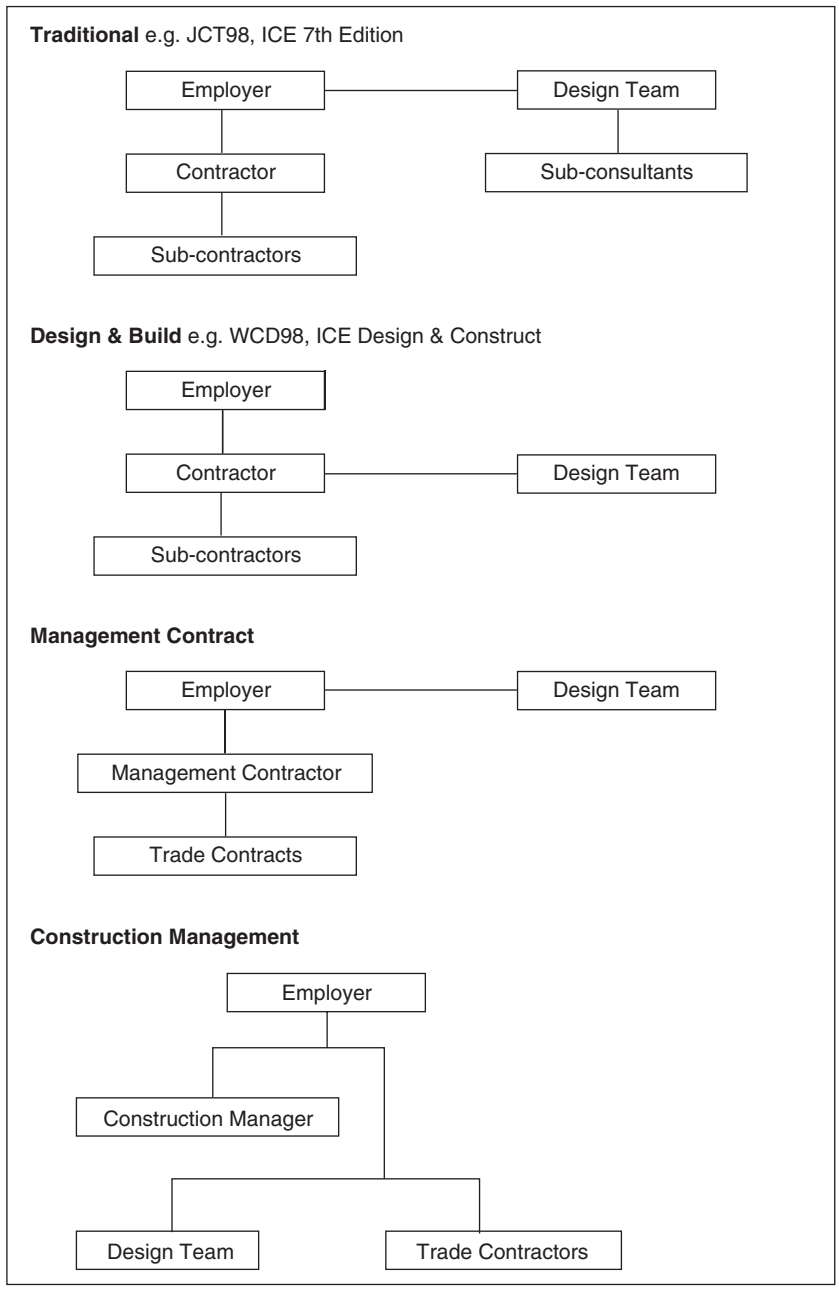

Fig. 2.1 Relationships and contractual links.

obviously dependent upon the precise circumstances pertaining to the project, but, without producing a comprehensive list, the following questions may be worth repeating.

(1) Does this project actually merit the use of the Minor Works Form or Intermediate Form instead of their 'grown up' relatives?
(2) Do the number of PC or prime cost items mean that it would be more desirable to use a re-measurable form?
(3) Is this a contract which merits the production of full scale bills of quantities or is something more standardised going to suffice?
(4) Do we really need a design team to act on behalf of the employer or would it be more sensible to produce a conceptual design and then delegate the detailed design work to the contractor? Do we therefore propose to novate or assign the authors of the original design to the contractor?
(5) Is the complexity of the project such that we can entrust coordination of the works to the contractor or the architect, or would it be better to have this task performed by a specialist project manager?
(6) Would it be sensible to do away with the idea of the main contractor or management contractor altogether and acknowledge that the works are so complex that what we actually need is a management contractor whose job is to manage the works of the various package contractors who will build the project?
(7) Alternatively, is this the sort of job where we are building something which in itself is fairly straightforward but where the circumstances or conditions in which it is being built are such that the price of the works may vary considerably depending upon how we progress?
(8) At the opposite end of the scale, is this a case where we simply pay the contractor a sum of money and at the end of the contract period take delivery of a completed project?
(9) To what extent is the aesthetic finish of the works a concern; is this something over which the employer wishes to retain control?
(10) Is the design or the scope of the works likely to be finalised before the works commence or are these likely to evolve significantly as the works progress?

Identifying responsibilities

It will be apparent from Fig. 2.1 that the choice of contract will be instrumental in determining where risks lie. How this affects the timing of the works will be considered in the next section. The ascertainment of delay, its calculation, causes, and most importantly responsibility are all related back to what the contract actually says. Many claims are badly produced because the claimant fails properly to consider the precise nature of the obligations actually imposed.[2.4] The mere fact that a party has (or believes that he has) suffered an injustice does not of itself give rise to any entitlement.[2.5]

It almost speaks for itself that the wrong choice of contract has potentially serious consequences. This is illustrated by taking a simple situation and comparing the different risks. Take as an example the construction of a warehouse where problems occur with the installation of the exterior cladding, caused by either faulty design of the fixing system or poor workmanship, resulting in instructions changing the fixing to a different method. The following permutations are possible, and for these purposes, it is probably sufficient to compare the traditional regime contained in JCT 98 with the design and build method in WCD 98.

Design

The scheme of WCD 98 is that the employer by his Requirements says what he wants to have built and the contractor by his Proposals tells him how he proposes to do this. Clause 2.1 obliges the contractor to carry out the works in accordance with among other things the Employer's Requirements and the Contractor's Proposals. If the problem is one of defective design, under clause 2.5.1, to the extent that the works are designed by the contractor and form part of the Contractor's Proposals, the contractor owes the same duty as if he were an architect employed under a separate contract. This is a cumbersome formula but its meaning is clear enough – the contractor must exercise reasonable skill and care in the design work.

By contrast, under the terms of clause 2.1 of JCT 98, the contractor's obligations are limited to the execution of the works. He has not prepared Contractor's Proposals and design is primarily

the responsibility of the architect appointed by the employer (see Fig. 2.1).

Workmanship

Under both régimes, this is the contractor's risk.

Instructions

Under JCT 98, an instruction altering the design of the works can be made under the terms of clause 14.1.1, and the contractor is entitled to have the varied work needed to implement that changed design valued under the rules prescribed in clause 14.5. By contrast, WCD 98 makes it clear that a Change in the Employer's Requirements can be made under clause 12.1 and will be valued in accordance with clause 12.5, but by necessary implication, and by operation of clause 8.1.2, if the works do not accord with the Employer's Requirements or are not of a standard appropriate to the works necessitating design modifications, the risk rests with the contractor.

Extensions of time and loss and expense

Under JCT 98, instructions requiring a variation of the type described in the previous paragraph will be a relevant event for the purposes of both clauses 25.3 and 26.5 and will entitle the contractor to both extensions of time and appropriate loss and expense. In WCD 98, the fact that these matters are at the risk of the contractor will obviously disqualify him from recovering extensions of time or loss and expense, except to the extent that the instructions or variations come about as a result of a Change in the Employer's Requirements or the eradication of an inconsistency in the Employer's Requirements.

The point is one which cannot be overstressed – the starting point for any analysis of delay or entitlement to extensions is the contract. If the contractor has undertaken a particular risk, he cannot complain if it causes him delay. The reverse side of the argument is that if a particular matter is one over which the employer wishes to keep control he will wish to manage that risk himself. A common

example of this is where the finished appearance of a particular feature is of importance.

2.2 *Timing obligations*

The choice of contract will also govern the parties' timing obligations. The question is not only 'How long do we have to complete the various activities comprising the works, and the works themselves?' but also 'If we do not complete by these dates, which events will influence whether we can claim more time and obtain some recompense for this?' Taking the example of risk allocation it will be apparent that the answer will lie in whether certain functions are within the range of risks retained by the employer or whether they fall under the control of the contractor and are items which will have been taken into account in calculating the price.

Timing is crucial in building and civil engineering contracts because of the extent to which the price of the works is dictated by the time related costs of plant, labour and overheads. This is obvious if one considers and compares the lesser degree to which the price of a car will relate to the time based components in its price. By contrast the construction industry, as we all know, is concerned with producing a never ending series of prototypes. To that extent, the amount of time required to complete a project is always likely to involve a degree of guesswork. A feature of the tendering process is the calculated gamble by the contractor to determine how much of any particular variable resource is necessary to deliver the project within the time parameters while producing a competitive price. This is frequently identified as the source of disputes. In a depressed market such as that which characterised the early 1990s, the result was that market forces led to many jobs being priced at levels which would not ordinarily permit the contractor to cover his costs, let alone make a profit if he devoted sufficient resources to execute the works in accordance with the contract.

For the present it is sufficient to make three comments about this policy of buying work. The first is that, if the price for the works is only achievable by paring resources to a bare minimum, events which the contractor might otherwise have taken in his stride will impact more seriously upon his ability to proceed in accordance with the contract. Hence delays are more likely and will be greater