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AN INVESTIGATION INTO THE PERFORMANCE OF MANAGEMENT CONTRACTS AND THE TRADITIONAL METHODS OF BUILDING PROCUREMENT

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by

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SUMMARY

This research pursues the development of management contracting in the UK construction industry, and aims to compare it with the traditional method with a view to providing some indication of how both systems may be matched to particular circumstances. A theoretical model was used to assist in comparing project performance in a case study sample of 39 management contracts and 30 traditional form of contracts, and have identified several variables which could influence the performance of a project.

The first main hypothesis proposed is:-

' Management contracting can satisfy clients who need their projects quickly and for projects that are large and/or highly complex'.

This led to a second hypothesis,

' Project performance is a function of the characteristics of the client, the project, the designers, the contract procedure employed and the procurement method adopted for their projects'.

The use of management contracting is growing throughout the UK, but the percentage of traditional contracting is still greater than other forms of building procurement method.

Analysis of the 69 case studies suggest that management contracting performs better in some respect than traditional contracting, in particular, when time is the essence of the contract and when the project is highly complex. However, in the construction of large simple buildings, there was no strong evidence which shows that management contracting can perform better than the traditional form of contracts.

Moreover, analysis of the results also suggest that procurement method is not the only variable affecting project performance. The client's requirement, the designer, the characteristics of the project and the contract procedure employed, all had their relative effect on certain performance measures as defined by time, cost and quality.

CHAPTER ONE - INTRODUCTION TO THE RESEARCH PROBLEM AND BACKGROUND

1.1 NATURE OF THE PROBLEM

It is an axiom of construction management that a project may be regarded as successful if the building is delivered at the right time, at the appropriate price and quality standard, and achieving a high level of client satisfaction. Increasingly the achievement of these criteria has been associated with problem of procurement method for the construction. In short the selection of the appropriate method can shape the success of the project.

Broadly speaking, the problem facing the building process can be established under the following factors for the purpose of initial investigation and review. The factors are by no means exhaustive nor ranked or selected in any particular manner other than they could be regarded as the 'popular' choice at the initial stages of any similar research. These are:-

1. Lack of effective communication and co-ordination between the building team.
2. Lack of integration of the design team.
3. Uncertainty within the work of an organization.
4. The changing environment.
5. Advanced technology.
6. Experience of the building team with the building process.
7. Increasing project complexity.

Having set out the general problem it is clear that any account of the manner in which the building process operates should be set in the context of management responsibility and functional demarcation in the client organization or the organization which design or construct the project. In the first place there is the question of intercommunication and then there is the problem of the actual construction of the project.

Another generally accepted view is that the last few years have been an especially difficult period for the construction industry (Hillebrant 1977 and 1985) - Construction output has fallen steadily, partly as a result of the recession but also of the uncertainties generated by some projects exceeding their time and cost budgets. This situation is perhaps more prevalent in the UK than some other Continental European Countries and the USA where the problems are often greater in magnitude but more limited in their type and range particularly within the confines of each contract (Slough Estate 1976 and Nahapiet 1985). UK contracts seem to be fraught with a continuum of problems and difficulties from the onset, across a very wide spectrum, through to the completion stage. For example, among the findings of the Slough Estates' report (1976) was that, total time from inception to completion in the UK was at least 70% longer than in Canada, Australia, Belgium, USA, France and Germany. Moreover, preliminary design phases were more complex; prices in the UK were comparable to those in Europe but more than those in North America.

The intention of the thesis is to utilize this plethora of variables as a basis for study to compare the conventional procurement method with management contracting with the hope that a number of significant and useful factors can be extracted and to be used as a guide for clients who want to know about the system of management contracting and wish to improve efficiency and effectiveness for their future projects.

1.2 BACKGROUND

Observations of the industry, at the time commencing this research, suggested that some sort of analytical approach, such as is now presented in this thesis, was needed in an attempt to solve problems facing the client from the building process.

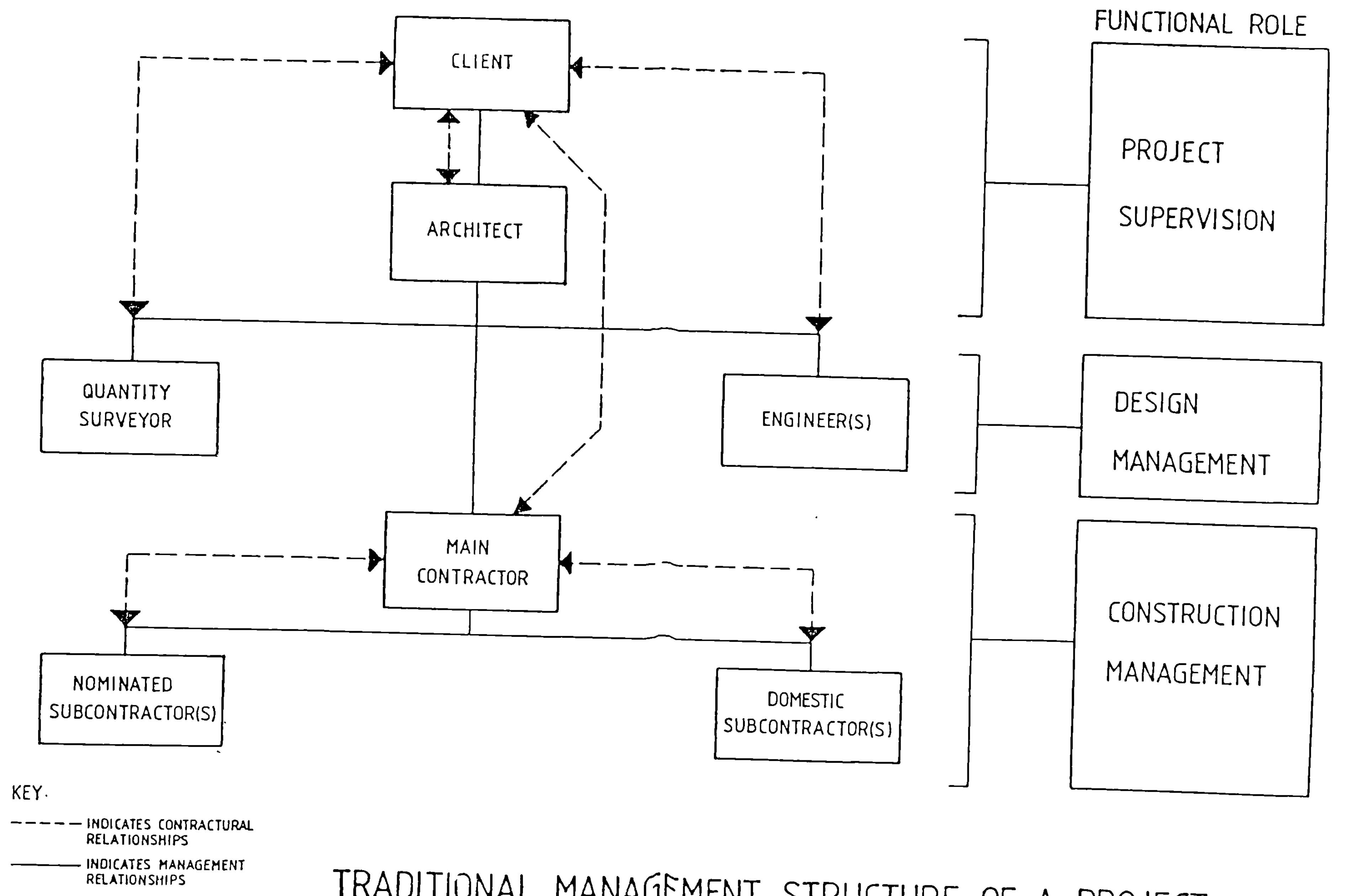
It is likely that when the design and production are combined to each other then good relationships and greater co-ordination and co-operation between the parties involved can be developed (Philip 1950, Emmerson 1964 and Banwell report 1964). The selection of the right contractor for a particular job is an essential factor in controlling what was planned.

Each member of the building team have a criteria for success which may differ from one another. Sidwell (1984a) notes that the client may regard completion of his project on time and within budget as a success. However, client satisfaction may differ in respect of the owner, the occupier or tenant, or the general public. In many cases, client satisfaction depend upon the degree of conformity between expectations, interpretation of the brief, and the realization of the project. For the professionals a criteria for success can be a successful interpretation of the clients needs and a smooth going project. The contractor may also regard conflict free project as a success to secure future work with the client and to satisfy the shareholders.

The N.E.D.O. report (1983) indicated that many clients drifted into the traditional method of contracting towards building without being aware of the alternatives available to manage a contract. Various client guides have suggested ways in which construction projects should be tackled, other than by the traditional method. These include management contracting, project management, design and construction management etc.

The traditional approach is one where the client appoints the architect and the other professionals to design the building and prepare the tender documentation. A main contractor will then be appointed, under a certain form of contract, to actually construct the building. Figure 1.1 show the arrangement of the traditional team in relation to the client and to each other.

The traditional approach has come under increasing pressure, apace with the increasing complexity of building projects. Whilst technology and complexity has forged ahead in the construction process, the approaches to its management have lagged behind.



TRADITIONAL MANAGEMENT STRUCTURE OF A PROJECT FIGURE 1.1

SOURCE - HIGGS AND HILL BUILDING LIMITED (1979)

The Emmerson report (1964) has identified a common criticism of the building process where there is a lack of liaison between Architect and the other professionals and contractors, and between them and clients. It comments that, "In no other important industry is the responsibility for design so far removed from the responsibility for production."

The report pointed out that although a common course of initial study for designers and producers of buildings had been recommended in the Philips report (1950), no practical steps had been taken by 1962.

Emmerson concluded that there was still a general failure to adopt enlightened method of tendering in spite of the recommendations of earlier reports. His recommendations in this respect led directly to the establishment of the Banwell (1962) committee to consider these issues in more detail.

Emmerson recognized that the Royal Institute of British Architect (R.I.B.A.) was aware of the need for improved efficiency in architectural practices. The R.I.B.A. subsequently made a significant contribution to the co-operation by publishing the Plan of Work (1965) and the first edition of their handbook (1974).

The Banwell report (1964) and it's review "Action on the Banwell Report" (1967) have been considered to have had significant impact upon the building industry and it's professions.

The Banwell (1967) review found some progress on pre-planning of projects but professions had done little to "de-restrict" their practices. The review was encouraged by the increase in selective tendering and urged further consideration of serial negotiated tendering.

The Emmerson and Banwell Reports have emphasized the need to reform the organizational approach to building projects. Building project management was seen to be a passive procedural activity (National Joint Consultative Committee of Architects, Quantity Surveyors and Builders 1963) but the movement towards a more dynamic integrated approach was being suggested by Higgins and Jessop (1965) in a pilot study sponsored by the N.J.C.C..

Higgins and Jessop (1965) clearly identified that the problem of communication in the building industry were created to a large extent by the attitudes and perceptions about the values of contributors to the building industry. The most important drawback to the traditional approach, as noted by Higgins and Jessop, is the lack of effective communications and co ordination. In other words the nature of the relationships between the communicators which creates the difficulties for communications structures. Five problems were outlined, namely:-

1. Communication with prospective clients
2. Communication between clients and advisers.
3. Communication within the design team.
4. Communication related to the contract.
5. Communication within the construction team.

Higgins and Jessop then went further and noted that ' if building is thought of without the people involved it can be seen as a chain of interdependent operations called the (Technical System) ie. briefing, design, estimating, billing, supplying, etc. To undetake these operations a wide variety of resources eg. material and skill, remain under the control of people and, organizations which is called the resource controllers ie. the (Social System).

The central problem brought forward by Tavistock (1965) arises from the fact that the basic relationship which exists among 'resource controllers' has the character of interdependent autonomy. There is a lack of match between the technical interdependence of the resources and the organizational independence of those who control them. Any attempt to re-order the division of responsibilities among resource controllers that might arise from a purely technical study would run up against deep-seated difficulties of conflicting values and vested professional, technical and commercial interests.

This view is pointed out by Trist (1957) who studied the effects of mechanization in British Coal mining. The study of the effects of technological changes led Trist to develop the concept of the working group as being neither a technicsl system nor social system, but as an interdependent socio-technical system. The social and technical requirements are mutually interactive and they must also have economic validity, which is a third interdependent aspect. The aim should be joint optimization.

This socio-technical system approach was also applied to supervisory roles by Rice (1958) in studies of an Indian textile firm. He found that it was not enough to allocate to the supervisory a lsit of responsibilities and perhaps insist upon a particular style of handling men.

In a subsequent research by the Tavistock Institute (1966), a thesis was writen exploring the forgoing problem of communication by providing a model of the structure and functions of the building industry. Two important characteristics were identified that are incorporated in any model of the building process, these are, ' Interdependence and Uncertainty '. The construction industry as a socio-technical system and it's performance was seen as being dependent on the communication between and the interdependence of the participants. The building team was described as a sub-system within the overall system of environment.

Based on competitive tendering procedure, it was reported that within the building process there are five closely sub-systems, these are:-

a) a system of operations
b) a system of resource controllers
c) a system of formal controls
d) a system of informal controls
e) a system of social and personal relation

The traditional competitive tendering was criticised by professionals as being unable, in a situation of certainty about all factors affecting time and cost, to provide the basis for a valid and protective contract. There were two main types of attacks on the problem of the unsatisfactory nature of the organization, functioning and communications in the building industry : Firstly, exhortations to return to the formal system in its pure form ie. directive functions , this of which was deplored. Second, a call for some new form system which incorporates the more adaptive characteristics of the informal system.

Thus, the socio- technical analysis and the three dimensions described by the Tavistock institute (1965 and 1966) of complexity, uncertainty and interdependency had a great impact for the introduction of the new management methods in an attempt to acheive a wide coordination of control of the building process such as package deals in the late 1960's and management contracting by early 1970's.

For instant, large and complex projects , principally, require longer time to build than small and simple ones, which make uncertainties concerning the future unavoidable. The wider they are the more persistent is the need for a local managerial ability to manage uncertainties, so that the objectives of the project could be attained.

Before continuing further, the attributes of integration should also be considered. Principally, the changing technologies, procedures, materials and complexity of the building process are such that the sequencial approach of independent professionals to the formation of design and construction solution is unable to provide an efficient solution to the client's requirements. As mentioned earlier, the problem of communication within the building industry were documented over 20 years ago by the Tavistock institute and integration was seen as a necessary solution to the interdependence and uncertainty involved. Sidwell (1979) sees that high integration is one of the fundamental characteristics of management contracting.

The notion of integration of the building team has been reported in Sidwell's field study of organizational forms (1979). Over 80 interviews and ten detailed case studies were undertaken throughout UK and abroad to identify the range of organizational forms in use in the industry and analysing their principal characteristics. The report groups the diverse range of patterns under three headings, namely, the fragmented pattern, fully integrated system and partially integrated system. Sidwell (1982) considers that the degree of integration of the design team is an important criterion for consideration. The level of integration increasing from traditional through management contracting and project management. They offer a more integrated approach to handling uncertainty. Under management contracting, the contractor is aware of his organizational and contractual obligations in the pre-tender stage and is therefore more adequately able to obtain insights into decision-making and to anticipate information requirements in the post contract stage. With project management, the main emphasis is on co-ordination in order to reduce uncertainty through integration.

This would stress the earlier view in this chapter that organizational relationships are of prime importance for the successfully run project. Furthermore, for organizational relationships to work effectively, interpersonal relationships must likewise operate in an effective manner. Organizational relationships are important also in handling the uncertainties which exist within the building process.

The problem of increasing project complexity and it's measurement have been highlighted by Sidwell (1982) and Bennett and Fine (1980). Sidwell confirmed that objective measurement of complexity is not easy; some indication may be gained by consideration of design time, building time, cost, number of variations, etc. He argued that a highly complex project may require a building team which can provide a wide range of services and expertise. A *relatively uncomplicated project*, regardless of monetary value, should, in theory, require a simpler organizational form. Sidwell went further and noted three aspects of complexity that are worthy of consideration, namely, in the brief, in the design solution and in the technology of the building.

A further factor for consideration of the problems facing the building process is the organizational environment, which can vary between stable and dynamic. Mintzberg (1979) sees the dynamic environment as being the cause of uncertainty within the work of an organization. It is important for the organization to respond quickly to an environment which is becoming dynamic.

Mintzberg (1979) suggested , in terms of the construction process, that project management would be more suited to these environment conditions of uncertainty.

Lawrence (1981) views the construction firms as being located in an environmental perspective of high uncertainty. Furthermore, Mintzberg (1979) notes that, in the building process, there is a prime example of hostile environment facing the construction firm, "who must bid on all contracts". Sidwell (1982) confirmed that the building process must work within the environment and is subject to any influence it may have. The work by Ashridge (1979), viewing the construction industry from a UK perspective at least, supports these ideas.

Changing emphasis of management studies in the construction process began to take place and this has been illustrated in the Bishop's report (1968). That report identified that up to that date most of the Building Research Station's work had been concerned with the management of building sites and building firms but recognized that future work would be concerned more with the management of total building process.

As a response, in the 1970's, three principle references attempted to analyse how frequent various organizational forms had been used. Wood (1975) showed that the majority of the public contracts in the U.K. are still let by traditional methods. The Wilson report (1975) showed the same for private contracts.

Professor Hillebrand's analysis (1977) shows that open selective competition is used for the majority of contracts both in private and public sectors. Negotiated and Package Deals are not used to any significant degree in the private sector, and to a limited extent on public housing and schools.

With these reports and the economical changes in mind (eg. inflation) the professionals and the industry responded by experiencing the four general methods as an alternative to the traditional approach. These are namely:-

1. Management contracting
2. Project management.
3. Design and construct
4. Increase use of negotiated contracts.

As the growth of various procurement methods began to increase a number of authoritative body of information has published guides to clients for selecting procurement method for their projects. Figure 1.2 illustrate a guide for procurement paths presented by the DOE (1982) which are based on client priorities. Figure 1.3, was presented by the BDP (1985), also, as an aid to selecting a procurement path. However, it was warned that the questions were intended as a primer for discussion with the client principal adviser before making procurement decision.

Together with these kind of reports, case studies have been undertaken to investigate the management of the building process and in particular the performance of time, cost and quality when using alternative approaches. Some research work are reported

PROCUREMENT PATHS THE BASIS FOR CHOICE	DESIGN AND BUILD PATHS		TRADITIONAL PATHS		MANAGEMENT PATHS	
	Direct Design and Build	**Competitive Design and Build**	**Sequential**	**Accelerated Traditional**	**Management Contracting**	**Construction Management**
Speed of total process	Highest	Higher	Baseline	Higher	Highest	
Building Complexity	Suitable for lower complexity work especially	For normal complexity	For normal to high complexity		For high complexity work especially	
Building Quality (performance and/or image)	Suitable for normal and less demanding levels of building quality		Suitable for normal and more demanding levels of building quality			
Cost of change after start on site	Higher		Baseline		Lower	
Degree of Price Certainty before commitment to build	High with conditional proposal	High	High	Lower	Lower	
Degree of Competition for construction work	Low	High	High	Lower	High on all but management content	

FIGURE - 1.2

ECISIONS SOLELY ON THE BASIS OF THIS UESTIONNAIRE. IT IS INTENDED AS A UMER FOR DISCUSSION WITH YOUR UNCIPAL ADVISER.

When all questions have been considered sum the number of ringed dots in each column. The procurement paths with most rings should be worthy of further investigati on.

Traditional		Design and build			Management		Design and manage			
Sequential	Accelerated	Direct	Competitive	Develop and construct	Management contracting	Construction management	Contractor project manager	Consultant project manager		
	●	●			●	●	●	●	Crucial	A Timing
	●	●	●	●	●	●	●	●	Important	
●									Not crucial	
●	●				●	●	●	●	Yes	B Controllable variation
		●	●	●					No	
●	●				●	●	●	●	Yes	C Complexity
	●	●	●	●	●	●	●		Moderately	
		●	●						No	
		●	●						Basic	D Quality level
●	●	●	●	●	●	●	●	●	Good	
●	●				●	●			Prestige	
●		●	●	●	●		●		Yes	E Price certainty
	●					●		●	Target	
●			●	●	●	●	●	●	Construction	F Competition
●				●	●				Construction and management	
	●	●							No	
●	●				●	●			Separate firms	GI Responsibility Division of
		●	●	●			●	●	One firm only	
		●	●	●			●		No	GII Responsibility Professional
●	●				●	●		●	Yes	
						●		●	No	H Risk avoidance
●	●				●				Share	
		●	●	●			●		Yes	

FIGURE - 1.3

below and specific case studies into management contracting are reviewed in chapter 2.

Harris (1974) confirmed that package deals are, overall, less time consuming from the inception to the contracted completion date of the project, than a competitively tendered method but certain package contracts will produce approximately 10% higher construction prices than comparable competitive tendered projects. Results of the limited survey also indicate that to the industrialist requiring a definite date of completion, a package deal project would have a higher probability of meeting that date than a competitive tendered one, although industrialists with their own design departments appear to have a better time performance than either of the other two systems. Meade (1983) has also showed saving time achieved by a package deal method.

More recently, a PhD study at Brunel University by Rowlinson (1987), has analysed the performance data of industrial projects built by the design and construct method. He compared the time in terms of square metre per week and the unit cost of 17 design and construct contracts against 19 traditional projects and 10 management contracts. All 46 projects were industrial projects to eliminate variables concerning with the technology of the building. Project performance was hypothesised to be a function of organizational form. Rowlinson found that design and construct projects have a tendency to overrun the planned pre-construction times by 40% on average; this compared with an overrun of 20% for all projects. Traditionally organized projects overrun by 7% on average compared with a mere 2% overrun by design build projects on planned construction times. Both procurement methods are likely to overrun on budgeted costs but by 4% only. It was suggested that the client pays less by taking the design and build approach.

Dr Sidwell of Aston University (1982) investigated the relationship between contractual arrangement and project success. The essential element which brought about success was the level of managerial control. Of the contractual methods studied those with a high level of managerial control e.g management contracting and other non-traditional (e.g design and construct, project management , etc.) performed better on time , gave a higher level of client satisfaction and overran the budget by less.

Ireland (1983), in a study of commercial projects in Australia, supports Sidwell's findings by identifying managerial actions which achieve the objectives of reducing construction time and building cost and increasing architectural quality. He also indicated the scale of effect each action has on performance. He points out in the Unibeam article (1982) that a client may have many objectives, quoting Townsend (1979) and Ferry and Brandon (1982), and so assumes that the lump sum tender on full documentation; package deal and full cost reimbursement are best able to reflect these objectives.

Bromilow (1977) has also investigated the performance of building projects in Australia and has found that projects overran on cost and on time by 5% and 47% respectively. Among the reasons attributed for bad performances was underestimation of construction time at the outset of the project. It was also found that the time taken for the design and construct phases depend on the abilities of people involved and the techniques and resources devoted to the project.

1.3 APPARENT DISADVANTAGES OF THE TRADITIONAL APPROACH

If there is one main reason for the growth of alternative procurement method in this country it surely be the inadequancies of the traditional design and tender system, and the existing procedures are the cause of the increases in cost and delays in completion which are often blamed on the building industry.

These views are expressed by Clamp (1984) and Marler (1983), president of the British Property Federation, who summed up that ' developers can no longer afford to pay the high prices which result from time honoured methods of planning and building which are less efficient than they could be.' The BPF system (1984) has sprung from these concerns by publishing it's five work stages into , concept, brief preparation, design development, tender documents and construction.

Among other problems of the competitive tendering method are the conflicting opinions of the various parties to the contract. The

DOE (1982) views the traditional method as it requires greater co ordination and control because of different firms and contractual relationship. Most of the contractors interviewed throughout this research support this view and those of Affoo's findings (1982) who claimed that one of the deficiencies of the traditional system is the way the building team is related to each other. Too often the relationship between the building team become brittle during the construction process, the only outcome of which is to the detriment of the client.

The competitive tender situation has the disadvantage that it encourages the contractor to submit the lowest possible price, thus reducing his profit margin to a minimum. If the contractor awarded the contract on the criteria of price alone and later the contractor discovers that his price is low, he has alternatives to prevent suffering the loss. Foxhall (1972) stated three alternatives, namely:-

1. To try to economise on the small percentage of the work which he intends to carry out himself.
2. To reduce the cost and, therefore, the quality of management.
3. To look for claims.

Any of the above alternatives could create difficulty for the client.

To conclude, the apparent criticism of the traditional system appear to be the excess time taken, disputes between the parties involved and the fact that the client has to deal with a number of separate parties. Equally important is the system's inability to meet changing conditions. CIRIA (1983) reported that management contracting grew in 1970's partly as a response to inflation and Carter (1972) consider that the introduction of the management concepts was due to changes which occurred in the last ten to twenty years in:-

1. Building techniques - diversity, complexity, standardization.
2. Building organization - growing prominence of the sub-contractor, notably the manufacture, supply and fix sub-contractors, which means dispersal (multipication of the responsibility pattern).
3. Briefing - the growth in size of the project, demand for tighter time and cost targets and for a more unified and purposeful management of the total process.

1.4 APPARENT ADVANTAGES OF THE TRADITIONAL APPROACH

The traditional approach on the other hand can produce a useful set of contract documents which will ensure that the client requirements are fully understood by the tendering contractor, thus forming a common basis for tender evaluation, and illuminating the possibility of any misinterpretation of client criteria. Under this argument the DOE (1982) highlighted the traditional advantages as it provides competitive pricing, ensure high degree of certainty on the basis of cost and specify the performance before a commitment to build.

This situation is not clearly defined by other methods. For example with a package deal the tendering contractors interpret the client's requirements from outline proposals or performance specifications, with the possibility of mis-interpretation and subsequent disputes. With management contracting the contractor usually join the building team before the design is completed.

With the compiling of the list of tenderers for the project the client's professional advisers will be ensuring that only those contractors with the necessary experience in the type of work, reputation, resources, financial stability and technical 'know-how' will form the basis for the final selection. On the other hand, in a number of management contracts the client is taking a gamble on the experience of the contractor with system that he chooses for the contract.

Young (1971) reported that the London Club Members of the nineteenth century (1834) considered that a competitive tender produced lowest building price, and to a great extent this belief has not changed through the years. As Luder (1970) says "experience appears to indicate that if a client requires the lowest building cost, competitive tendering is the way to get it."

The DOE (1982) appreciated the opportunity to combine the best consultancy and contracting skills for the project when adopting the traditional approach. Cannel (1968) stated that "with a closely knit team of architects, engineers and quantity surveyors, a strict control over the building price is possible, and what equally important is that cost planning techniques are employed, with the result that the client is obtaining the optimum value for his money.

To conclude, the initial indications are that the use of professional designers, properly chosen and well integrated, and the use of a well chosen contractor by competitive tender has the potential to provide the client with a better building than if he goes to an alternative methods.

1.5 OUTLINE AIM OF THE PROJECT

All of the available evidence in section 1.2 suggested that performance is related to procurement methods and that alternative methods can deliver projects in a shorter time. But clients have other criteria for project success. What are these criteria and does an alternative procurement methods provide the client with the building he wants, when he wants it and at the right price?

This research pursues the development of management contracting and aim to compare it with the traditional method with a view to providing some indication of how both system may be matched to particular circumstances. The author has used a theoretical model for comparing project performance, in a sample of management contracting and traditional form of contracts and have identified several variables which could influence the performance of a project.

The central hypothesis of the research is that:-

"Management contracting can achieve a higher level of success for clients who need a project quickly and for projects that are large and highly complex"

This led to a second hypothesis:

''Project performance is a function of the characteristics of the client, the project, the designers, the contract procedure employed and the procurement method adopted for the project.''

This research is composed of five chapters. The first chapter has been a general introduction to the research and outlines the main aim and hypothesis to be tested.

Chapter Two is concerned with giving an introductory background to the USA experience with construction management. The various types of management contracting in UK are outlined, together with the literature review of the 'pure' management contracting system. The development of and the market of management contracting in the U.K. is also examined.

Chapter Three examines the research design and methodology and the limitations. It presents the variables, which could influence the performance of a project. The relationship between these variables are then postulated in a similar manner to the one presented by Sidwell (1982). The model's components are then reviewed together with the research hypotheses and the method for testing the hypothesis.

Chapter Four, analyse and explain the results. Data from 39 management contracts are compared with data of 30 case studies from traditional contracts to examine the hypothesis in the research model and in particular investigate differences in client and project characteristics, procedure and project performance.

Chapter Five, consists of the conclusion and implication in relation to client, those in the industry and those considering possible directions for further research.

CHAPTER TWO - REVIEW OF MANAGEMENT CONTRACTING

PREFACE

It was apparent in chapter 1 that one of the features of the construction industry of the 1970s and the early 1980s has been the emergence of a diversity of building procurement methods. Among the most popular has been "management contracting" (MC), and this has assumed a prominent place in the battery of procurement methods offered by contractors. The term "Management Contracting" is similar to the concept of "Construction Management" that was first originated in the USA where it is also known as Professional Construction Management (PCM). The early practice of PCM in the USA has been mirrored in the UK construction industry and some pioneers of the CM approach have independently or in conjunction with contractors, established themselves in the UK. However, the CM concept should be distinguished from MC in that the sub-contract packages are agreed directly between the client and construction contractors, with a construction manager acting as the client's agent. More details regarding the concepts of CM and MC are given throughout the chapter.

The author (1984) has defined management contracting as the "process whereby a contractor is employed to undertake the co-ordination of specialized sub-contractors to complete a project. The management contractor relies upon a percentage fee or a lump sum to be remunerated for the services offered. The management contractor becomes associated with the client team of professional advisors and in common with other professionals has liability for the provision of a professional service."

This chapter consist of two sections. The first section reports on the US and UK perspectives to construction management and management contracting respectively, together with outlining the type of management contracts. It also presents previous case studies into management contracts and, *finally*, *the apparent* advantages and disadvantages of MC are reviewed.

The second section deals with the development of and the market for management contracting in the UK which are seen as a consequence of the growing evidence cited in the first section. It also reports the client perception of management contracting when asked to compare it with the traditional approach.

SECTION 2.1 - LITERATURE REVIEW

2 1.1 THE US PERSPECTIVE

Professional construction management has evolved in the USA as an alternative approach to managing the total construction programme. According to Heery (1976), PCM was rather informal method until the late 1960's but as costs of construction increased during the early 70's and delayed projects become more frequent, the need for PCM became more evident.

Barrie and Pawlson (1976) has defined Professional Construction Management as one where a contractor performs a management function under a professional services contract with client. It treats the project planning, design and construction plan as integrated tasks. Figure 2.1 shows typical organization forms of the PCM practice in the USA. As the construction professional of the construction team, the construction manager works with the designers and the client, from the brief through the completion of construction, providing leadership of the construction team and on all building with regard to time and cost. The construction manager can either be a firm or an individual and in most cases he is paid a fixed fee based on the value of the work.

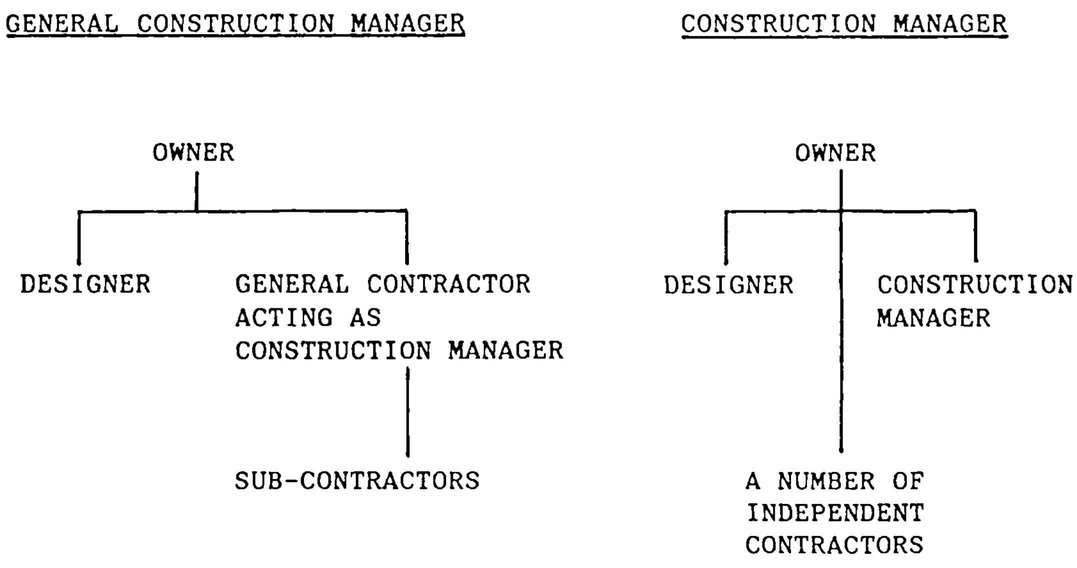


FIGURE - 2.1 ALTERNATIVE CONSTRUCTION MANAGEMENT CONCEPTS IN USA

Heery (1976) defines the process of construction management as that group of management activities over and above normal architectual and engineering services related to a construction programme, carried out during the pre design and construction phases and providing control of time and cost in the construction of a new facility.

The role is often undertaken by Construction and Architect-Engineering firms offer this service. In the USA The Public Building Services (PBS) of the General Services Administration (GSA) commissioned a survey (1970) of the various contractual arrangements and their performance. This revealed that the traditional sequential method was resulting in a total design and construction time of 59 months compared to 24 months for similar projects in the private sector. The report recommended that the GSA abandon its outmoded traditional procedures and use phased construction in conjunction with construction management in a new approach to its nationwide building programme. However, it is said that the GSA modified their view in the mid 1970's to restrict construction management firms to acting in a consultant capacity only and preclude them from undertaking any of the direct works at the same time (Sidwell 1984b).

At the end of the decade the GSA, again, modified their view to restrict the use of the system because of the difficulties in ensuring the construction manager has enough incentive to perform, problems over liability and the need for a firm priced tender before start on site.

Rad and Miller (1978) reviewed the practice of Professional Construction Management in the USA and concluded that the greater growth in construction management took place in the 'design' sector of the industry.

Nevertheless, the Engineering News Record (1982) has reported that the situation in the United States is the top 400 construction management firms undertaking an estimated 42.5 Billion Dollars worth of construction management contracts. The majority of these 400 contractors reported such contracts comprising about 25% of their new awards.

According to Langford (1984) review of construction management in USA, the matter of the size of the fee may affect the market for construction management. The consulting and architectural firms made a brief but unsustained effort to obtain a large share of the construction management market in the USA. Larger consulting firms and small architectural practices provided the major impetus for this unsuccessful drive. There may well be solid financial reasons for the limited impact of large consultancies.

Evidently fees are in the range 2-5% of project construction costs whilst profit on construction work typically ranges from 4-8% on costs.

In the USA the Architect-Engineer's view of PCM was addressed by Tatum, Gans and Harper (1979) who identified several differences in A/E performance as construction managers when compared with the traditional system. During the design process the A/E must be receptive to construction advice from the construction manager an agency outside it's own organization. A positive attitude toward support of construction activities together with the issuance of clear and specific design documentation were seen as essential for effective A/E performance.

Barrie (1979) found that CM projects were generally well organized in the view of the trade contractors. Many of the less favourable comments were the result of design changes or modifications made after contract awarded. A number of individual contractors concluded that while items were generally handled about the same as a general contractor, all indicated that bidding was conducted better than with a general contractor.

Using the construction management as an alternative to the traditional approach, a survey done by Barrie (1981) to show the contractors and the client's opinion on marketing the CM services. In the questions, respondents were asked to rank their management techniques, and to provide comments or qualifications of their responses, or both. Results of the survey show that the average CM client feels that the quality of the CM firm's experience is far more important than the amount of experience or the proposed costs. The most important asset to be marked by the CM firm is the technical and operational expertise of the proposed project manager. The client wants to know if the firm has done similar work. Further they actively seek information from the firm's former clients in order to more accurately evaluate the firm's proposal and the ability of the proposed project manager.

The rise in popularity of the construction management concept in the USA has encouraged a number of writers to address their work towards the educational needs of the professional construction manager and methods of satisfying them. Jordan and Carr (1976) have concluded the following:-

1. The professional construction manager must possess skills in a number of fields that lie outside the traditional technical areas of civil engineering, and more generally identified with the field of industrial management or business administration.

2. There exist a substantial number of university-level degree programs that undertake to educate graduates for positions in construction management. These programs combine education in the technical areas related to construction with introductory coverage of the major nonengineering areas applicable to construction management. The favourable attitude exhibited by the ndustry toward such programs suggests that they fulfil a perceived need.

3. As an alternative to recruiting graduates of construction engineering and management programmes, professional construction manager firms may satisfy their staffing needs by employing specialists or quasi-specialists in each of the nontechnical areas involved in construction management task.

Finally, guidelines for successful professional construction management in USA is reviewed by a number of writers and organizations. Langford (1984) noted that the AIA, the Association of General contractors of America (AGC) and the American Consulting Engineers Council have prepared guidelines for CM contracts; the AIA and AGC have drawn up standarised contracts.

According to Barrie (1980), the construction management firm should focus its marketing efforts on the skills of the proposed project manager, The project manager should personally visit with the client's engineering staff before the proposal is made, and should have major impact upon the preparation of the proposal.

The construction management proposal should emphasize the firm's discussion of alternative solutions, a list of special charges and a full disclosure of anticipated sub-contracting was recommended by Rad & Miller (1978).

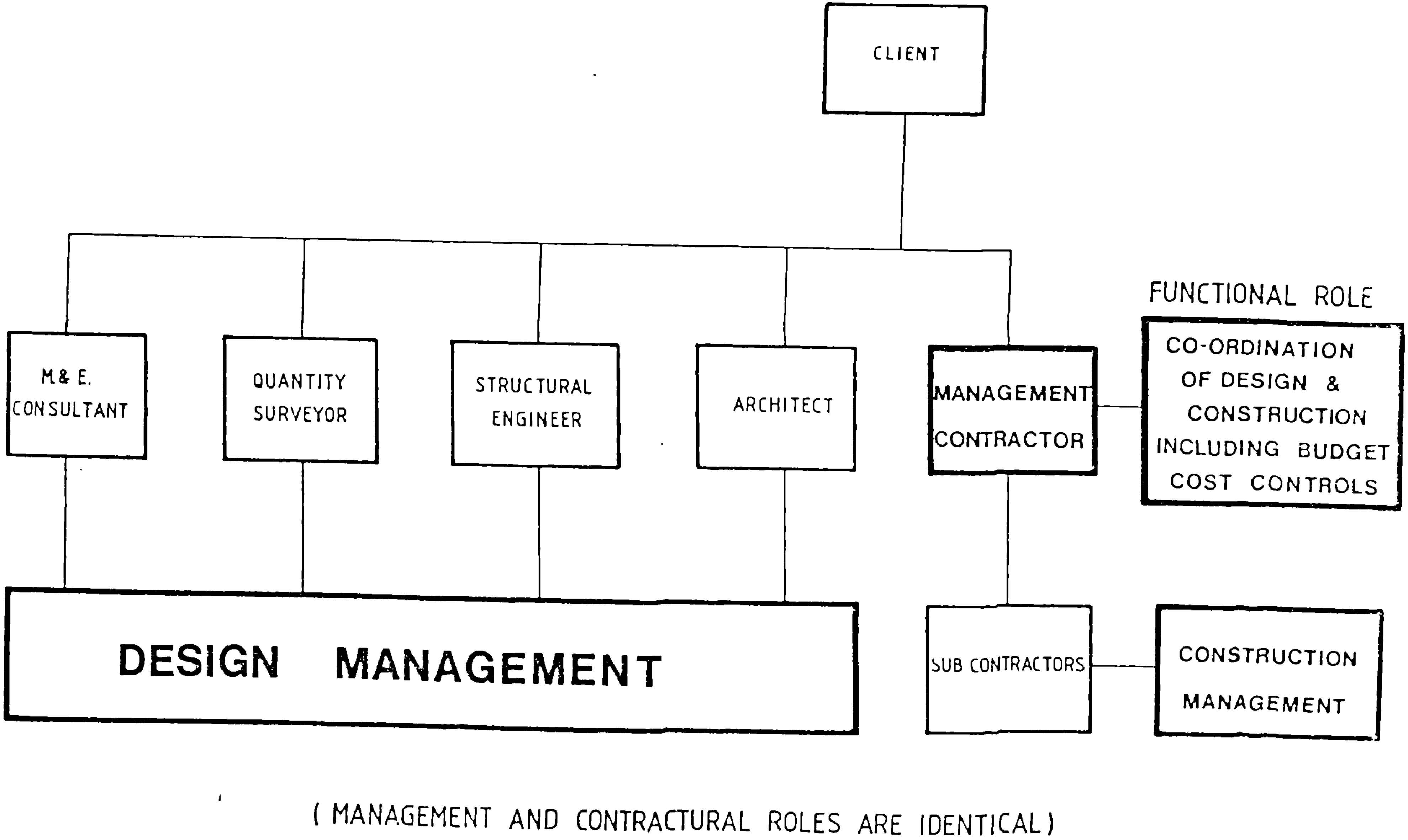
2.1.2 THE UK PERSPECTIVE

As noted above, the early practice of PCM in US has been mirrored in the market development of MC in UK, however there appear to be differences in their practice. While the design sector had greater growth in construction management process in the USA, (formerlly) main contractors were the first to offer management contracting to the client in UK. The first building erected using the system was a large and complex cigarette factory for John Player & Sons in Nottingham, designed by Arup Associates and built by Bovis Limited (Carter 1973).

Sidwell (1983) distinguished the characteristics of management contracting where by the contractor crosses the professional demarcation line and joins the design team as an equal contributor, his considerable expertise and work being solely in the client's interest. Further function of the system is to divide the project into work packages which are then let in phases. Figure 2.2 show the arrangement of the management contracting team in relation to the client and to each other as perceived by a top management contractor participated in this research. Appendix 1 describes the activities involved in a management contract.

According to Higgs and Hill (1979), management contracting is essentially a team approach to the construction process. It links the management expertise of the contractor with that of the professional design team, to achieve the common objective of providing the client with the finished product in the shortest possible time, within the limitation of the budget and the desired quality. Central to the argument, the management contractor is by definition providing a professional management service.

Roger Downing (1982), one of the personnel who was involved in the first management contract in the UK, the Player's Horizon project, believes in the good communication of a short chain of



MANAGEMENT STRUCTURE FOR MANAGEMENT CONTRACTING FIGURE 2.2

SOURCE - HIGGS AND HILL BUILDING LIMITED (1979) command. He enlarged, "the use of high powered sales team by some management contractors does the industry a disservice, inasmuch as a client is often provided with a sea of new faces when the job actually starts".

Downing also comments, "A management contract could be run without a formal contract - it is a philosophy, an attitude, a contract of trust. It eliminates the traditional contracting situation of playing safe with comprehensive tender documents. Decisions are deferred until just before the work is required".

George Neate (1982) stated on behalf of Laing Management Contracting that:-

"A management contractor is employed on a professional fee basis. He is therefore in a position to provide the client and design team with the resources and expertise available within his organization, to provide information in an unbiased and positive manner and to establish an effective working liaison with the design team. It should also be remembered that the inclusion of the management contractor at this early stage would give the project team an extra dimension; he being the only member of the team having practical construction experience."

Neate went further and said that the management contractor should in conjunction with the design team provide the following services:-

1. Design management, resources and planning.

2. Design evaluation and building methods.

3. Development strategy and phasing.

4. Material selection and availability.

5. Cost planning and budgeting.

6. Procurement and construction programming.

7. Research and development.

8. Project administration procedures and computer application

Report 100 by the Construction Industry Research and Information Association (1983) views management contracting as an arrangement where the client creates a contractual and organizational system which is different from that in the conventional approach. The appointed management contractor works closely with the client's project management team. This removes some contractual barriers found in the conventional approach and tends to increase the client's involvement in the project. In this way management contracting is more closely related to a professional service than a normal conventional contract.

However, care must be taken to distinguish 'pure' management contracting from other form of contracts. The CIRIA report (1983) has segmented management contracting in UK as follows:-

1. Pure management contracting, where the contractor has no responsibility for the design, and is not permitted to use directly employed resources to execute the work. Contractors are employed directly by the MC after approval by the client.

2. Construction Management, where the construction manager is employed in a professional capacity as the client agent. with the contractors directly responsible to the client. As the contracts are made between the client and the construction contractors the conventional allocation of risks, in legal sense, remain unchanged. It can be argued here, that a construction management can be distinguished from management contracting in that the later is a service to design professionals whilst the former would expect to draw upon skills more familiar to a construction organization.

3. Design and management contract, where the contractor also takes responsibility for the design. Scope designers are still employed directly by the client. Compared to a management contract a design and management contractor can give the client extra potential for integration of design and construction and better control of the design process, together with similar administration and co-ordination.

4. Management fee contracts is another diversified concept that became clear during the course of this study. The management contractor carries out exactly similar functions and activities as a management contractor except that the contractor is appointed and paid a fee to manage and build the project.

The organizational differences between these methods is well recognized by the diagrams shown in Appendix 2 . It can be seen, that the central difference is the role of the client. Whilst in construction management the client has an active role, in management contracting and management fee contracts, this may be more muted allowing the client to take more detached view. However , construction management , management contracting and design and management contracts rely upon the trade contractors for the actual construction work. Whilst in management fee contracts the management contractor is involved in executing some construction packages.

The management fee contract was criticized by Hayes (1986) who pointed out:-

"In all its forms management contracting was intended as a no-risk situation for the management contractor, the intent being that he should be working with the client's team to manage the design and construction phases of the project development. To do this more effectively, and impartially, the management contractor was only responsible for the management, not for executing the construction, and was not permitted to execute any of the construction himself."

Under the same argument, David Woolf (1979) stated in an interview with the Construction News Magazine that:-

" If the management contractor has a profit motivation on certain elements of the work, it could be argued that he might not always put the client's interest first. All of the work must, therefore, be 'let' on a competitive basis to specialized contractors."

According to Norwest Holst (1984), the divergence of interest inherent in traditional forms of contracts is eliminated in management contracting and the contractor is paid a fee rather than earning a profit, from the outset becoming an integral part of the client's project team.

There have been various views regarding the increased introduction of management contracting by large contractors in the UK building industry. This may take a form of forces imposed on the contractors, the architects, the clients and other members of the building team.

On the contractors side, there have been several acts which affected their use of the traditional approach. For instance, Bayley (1973) comments that "the Redundency Payment Act made a number of firms cautious of their policy to keep labour permanently employed, whilst the Employment Protection Act provides grounds for resisting unfair dismissal". At the present time, because of the way the industry secures its work, continuity of employment is becoming difficult to guarantee. Contractors are looking for minimizing the fixed costs as much as possible. Laing (1968), for instance, states that his firm provides only 25% of their employees with steady employment, the other 75% are, to varying degrees, casual.

The increasing complexity of the construction industry has made the project to be divided into portions of work which are then subcontracted to specialized sub-contractors (Mckinney 1983). This has encouraged many main contractors, who normally undertake work on a traditional form, to turn to sub-contractors working on a large management contract.

Many who worked in the industry have questioned how accurate can a contractor quote a price for a large complex project given the information and time provided for the preparation of the price. Fine and Leon (1971), in particular, have made attacks on the bill of quantities, dismissing it as an unrealistic and pretentious cost model. Fine (1971) has developed various computer programs and mathematical models which he claims substantiate his hypothesis that "the bigger the job, the bigger the disaster". Fine stated that unless contracts are secured on the basis of full documentation, the competition process is meaningless because contractors will bid to obtain the contract and rely on claims to make a recovery.

Bovis (1983) argued that the prime cost plus fixed fee form of cost reimbursement contract is the evolutionary link between traditional forms of contracting and management contracting. The latter involves an even further isolation of the management fee. Bovis regard management contracting as a logical extension of the fee system.

Other forces are imposed on the architect where the complexity of the building process is putting him in a difficult situation (Carter 1972). He may not realize the consequences of his design which may not be flexible, not for time and cost only but also on availability of labour and material, productivity, scheduling etc.

On the other hand, clients are increasingly concerned for economy and speed. Clients often look for firms who can deliver the building on time and within a budget.

Dunaway (1973) sees the development of management contracting as a result of the growth of management science, which utilizes new techniques and skills of programming, control and progressing of resources and capital costs of projects.

The size of the work packages on small projects, say below $1-2M may well also be a force affecting the management contracting market. Management contractors and sub-contractors would obviously have to consider their expenditure in time and resources in terms of opportunity cost. They would, therefore, be more interested in the larger, more expensive projects.

The above discussion of management contracting market forces is a matter of value judgement and many factors require consideration, for instance, the client's criteria with regard to time and cost, the complexity of the project, the nature of the site, labour and material availability and the like.

Finally, many of those involved in the provision of management contracting services fear that the concept may be restricted to the private sector because of public accountability (Mckinney 1983). It was noted that the public sector have experienced cost reimbursement contracts for many years. This particular form of contract would certainly seem to be far more in conflict with the concept of public accountability than 'pure' management contract, simply because the contractor carries out the work himself with little provision for realistic and comprehensive competition. However, Mckinney went further and said that 'pure' management contracts have been awarded in the public sector and these should provide some type of precedent for their continued use by central and local government eg. General Post Office (GPO), Public Service Agency (PSA), London Transport, Department of Health and Social Services (DHSS) etc.

Official reports such as Banwell (1967) and Wood (1975) noted that traditionally, the public sector has taken a narrow view and awarded contracts by means of open competition on the basis of drawings and bill of quantities. These reports points out that:-
"...although in the selection of the contractor competitions on price is very useful, it is not necessarily an essential means to the end of achieving value for money...we suspect that value for money is largely sought in the wrong place, it often seems to be looked for primarily at the letting of the construction contract"

2.1.3 CASE STUDIES INTO MANAGEMENT CONTRACTS

The development of management contracting has interested advocates and researchers to examine it's performance as an alternative system to the traditional method.

One of construction management's major practitioners, Bovis (1976), have hypothesised the construction of a *national office* block with a basic building cost of £100,000 and investigated the cost implications of the time saved by using their management fee system as opposed to the traditional system. Bovis suggested a cost saving of 23.5 percent due to an earlier available start to construction, thus reduced escalation costs and facilitating an earlier return of investment. Affoo (1982) compared the final accounts for similar projects built under a management and traditional contracts. A cost saving for using a management contract was reported as 13.5 % over the traditional contract.

The National Economic Development Office report "Faster Building for Industry" (1983) discussed the effect of method of organization on the distribution of site time and total time on 55 projects. Criteria for fast projects were listed and design and build and management methods were picked out as providing projects up to 50% faster than normal at a competitive prices and with no resulting loss in quality.

Some 10 case studies using management contracting were examined by Sidwell (1983). The analysis showed that management contracts have much shorter pre-construction time than other projects. The results also confirmed that the overall design and construction times are very much shorter for management contracts.

Another body of information regarding management contracting came from C.I.R.I.A. (1983) who visited 52 firms and organizations, 39 in tne UK and 13 in the USA. The report concluded that the various forms of management contracting can offer viable and flexible contractual relationships for projects where time is important, especially where there is a likelihood of insufficient design information being available at the stage when a main construction contract would normally be let. C.I.R.I.A. also concluded that MC are suitable where there is a need to co-ordinate a considerable number of construction contractors and suppliers. It was claimed that management contracting offers potential for improved management of design and construction, particularly where a client has insufficient resources or expertise to concentrate on these crucial aspects of management a project.

Mo e recently, the D.H.S.S. (1986) reported on a four and a half year study of the design, construction and commissioning of three hospital projects, one traditional and two management contracts. The D.H.S.S. concluded that the use of a management contract will be an advantage to a health building project; projects where. for any reason or combination of reasons, the management of design, construction and engineering commissioning stages would be significantly more difficult than usual. The procurement method was claimed to usually produce a completed building earlier than the conventional procedure. In some circumstances it was seen to produce a building at lower cost. Further it will seldom have a significant influence on the quality and performance of the completed building. It will reduce the risk of substantial overrun of time and cost but has little influence on the risk of unexpected shortcomings in the quality and performance of the completed building. The administrative procedures used with a management contract need be no less robust than those which have evolved for conventional contracting and therefore management contracting is not incompatible with the requirements of public accountability.

It must be noted here that the various pieces of research using the case studies approach discussed above are attempts to illustrate performance of management contracting, but they are all based either on small sample measures (Bovis, Affoo, Sidwell and the DHSS study) or the number of 'pure' management contracts included within the study are of a very limited numbers (3 out of 55 in the NEDO report and 13 in the CIRIA report). Hence, the comparison set out in this research illustrate more detailed variables and objectives and based on a larger sample. facts and explanation of which are given in chapter 4.

2.1.4 APPARENT ADVANTAGES OF MANAGEMENT CONTRACTING

The Construction Methods and equipment Magazine (1972) reported that the major benefit of a management contract is its contribution to the removal of the division which exists between design and construction by approaching project planning and design and construction phases as integrated tasks within a construction system. Tasks are assigned to a construction team consisting of the client, the designers and the management contractor. The team works together from project inception to project completion, with the common objective of best serving the client's interest.

Another major advantages put forward by the management contractors participating in this research is that the early involvement of the contractor in the project provides a tremendous advantage, both in the form of using the contractor's particular expertise in problem solving, and the fact that any early relationship between design and construction can save a considerable amount of time in the building process. Furthermore, Hayes (1986) noted that by reducing the construction programme the client gains possession of his building earlier, and so can start to reap earlier financial benefits.

Interaction between construction costs, quality and completion schedule are carefully examined by the team, so that a project of maximum value to the client is realized in the most economic time frame (Neate 1982). Under a management contract all work packages and specialist services, which in total constitute over 80% of the project value, are tendered for in total competition. In this sense, the construction market is carefully investigated to ensure that only capable and competitive contractors and suppliers are invited to tender. Tenderers are fully acquainted with their project commitment and tenders received are enforceable under the contract.

Morris (1973) identified the following as the essential basis of construction management expertise:-

1. An appreciation of the design process, of design costing and of process costing.
2. Major expertise in production control, primarily programming and organization but also in quality control and materials management.
3. Skill in tender evaluation and negotiation.

This covers a wide spread of skills and it is suggested that only the experienced management contractor truly possesses them.

More recently the Central of Construction Market Information (CCMI 1985) has carried out a survey which looked to the management contracting market and analysed the advantages and disadvantages of the approach. Table 2.1 summarizes the main advantages perceived by top 16 management contractors operating in UK.

TABLE 2.1 - ADVANTAGES OF MC (CCMI SURVEY)

ADVANTAGES	NO. OF RESPONDENTS OUT OF 15
(A) TEAM WORK NO SPLIT RESPONSIBILITY CLIENT INVOLVEMENT	13
(B) SPEED EARLY INVOLVEMENT/PROCUREMENT	8
(C) FLEXIBILITY	8
(D) COST BENEFIT	8
MORE COMPETITIVE	5
FEWER CLAIMS	4

It can be seen from the above survey that management contractors related the benefits more specifically to team involvement. According to the CCMI. the management contractors tending to regard financial benefit to client and contractors as being related. Overall of course all the above advantages are interrelated.

2.1.5 APPARENT DISADVANTAGES OF MANAGEMENT CONTRACTING

Although the Emmerson. Banwell and other reports of the 1960's em hasized the need for a link between the design and construction phases of the building process. this does not necessarily mean that management contracting as an alternative method to the traditional approach is the best and only answer to the problem.

There are two major areas where the management contractor may have deficiencies, the CIOB (1983) recorded them as :

1. It may take some time to turn the emphasis of management away from the traditional profit motive to one serving the client.
2. There may be problems with the human relations aspect of consultancy; rough edges may requiring honing.

Throughout this research study, there has been no standard form of management contract, but in 1988, the J.C.T. published a management contract and a copy is attached as Appendix 3. According to Hayes (1986) the conditions of contracts were first written by the contractors themselves, but subsequently by the clients or their quantity surveyors. These MC were based upon the traditional JCT or GC/works 1&2 standard form of contracts.

The conditions of these previous contracts were criticized by Hayes (1986) as they allocate little risk, in a legal sense, for construction to the management contracting firms.

Tim Cornick (1987) identified the issue of risk for discussion to the Construction Management Forum and said , all those who take on a construction project carry risk from client to component supplier. Who carries what risk depends on where the boundaries of responsibility and liability are set.

Table 2.2 summarizes the disadvantages stated by the top management contractors that were surveyed by the CCMI (1985).

TABLE 2.2 - DISADVANTAGES OF MC (CCMI SURVEY)

DISADVANTAGES	NO. OF RESPONDENTS OUT OF 15
(A) NO REAL DISADVANTAGES	7
(B) CLIENT UNCERTAINTY TO FINAL COST	6
(C) VERY COMPETITIVE MARKET LOW PROFIT/FEES	4
(D) ADMINISTRATIVE LOAD/PAPERWORK/ MANAGEMENT	2
(E) CONFUSION OVER TERMINOLOGY	1
(F) PRINCIPLES NOT FULLY UNDERSTOOD	1

The CCMI has noted that the top management contractors tended to equate competition, and low pricing with lesser qualified contractors entering the market.

Finally, a published article by Penny Guest (1986), has criticized a management contract in that it creates problems of site safety. Guest asserted that, "management contracting is causing problems. The safety officers cannot control the number of contractors and sub-contractors on their sites - yet they are in an ideal position to do so". "The large contractors are well aware of the problems, but the middle tier just coming into management contracting are not used to co-ordinating other contractors. Safety matters just tend to happen, rather than get organized". "Fast - track systems, where speed is essential, and sites are congested, present particular difficulties".

However, it must be stressed that the above evidence is too crude to allow conclusions to be drawn on the relative performance of safety under a management contract, but further research could examine the safety issue in a more detailed study.

SECTION 2.2 - THE MARKET DEVELOPMENT AND CLIENT PERCEPTIONS OF MANAGEMENT CONTRACTING

The technical and environmental changes of the late 1960's have changed the traditional attitudes towards marketing, eg. changes in construction operation sequences and procedures, in materials and tools that need to be used etc. Thus contractors began concentrating on their external environment by establishing new customer satisfaction, a situation which again leads to the management contracting concept.

During the late 1960s there was much discussion on the development and provision by contractors of 'Package deals', and the first references to management contracting began to appear from 1972 and with increasing frequency in the late 1970s. However, until the CIRIA report 100 (1983) on management contracting, the subject had not aroused the construction industry as a whole to widespread awareness of the significance of management contracting. It is only now that management contracting output in the UK is beginning to be recognized as an mportant aspect of the construction market.

An estimate of the size of the market for management contracts and a description of output by type of work were part of the objectives investigated in this research. The following sections summarizes the development of, and the market for, management contracting in the UK.

In order to distinguish the information gathered by the author from those published by other sources of information, Table 2.3 summarizes details of the surveys that are refered to in the following sections.

TABLE 2.3 - DETAILS OF SURVEYS CONDUCTED TO INVESTIGATE THE MARKET DEVELOPMENT AND CLIENT PERCEPTION OF MC.

SOURCE OF INFORMATION	CONDUCTED BY	*THE AREA* INVESTIGATED	*YEAR REPORT* PUBLISHED
9 MC INTERVIEWED THROUGHOUT 1983	NAOUM	1.RANKING CRITERIA	1984 BY NAOUM & LANGFORD (SEE REFERENCES)
9 MC INTERVIEWED THROUGHOUT 1984 & 1985 UPDATING THE ABOVE FIGURE TO 18.	NAOUM	1.NO. OF MC. IN UK. 2.BREAKDOWN FOR MC. TURNOVER.	1987 BY NAOUM & LANGFORD (SEE REFERENCES)
10 MC. CLIENTS INTERVIEWED IN 1985 & 1986	NAOUM	CLIENT PERCEPTIONS TOWARDS MC.	1987 BY N. & L.
170 COMPLETED MC. PROJECTS GATHERED FROM THE ABOVE 18 MC. & 10 CLIENTS.	NAOUM	1.MARKET SHARE 2.PROJECTS BUILT UNDER MC.	1987 BY N. & L.
35 MC. WITH D FFERENT MC. EXPERIENCES.	CCMI	1.NO. OF MC. 2.MARKET SHARE	1985 BY CCMI

NOTE : 1. MORE ABOUT HOW THE AUTHOR CONDUCTED THESE SURVEYS ARE GIVEN IN CHAPTER THREE (RESEARCH DESIGN & METHODOLOGY)

2. SOME OF THE MANAGEMENT CONTRACTS INCLUDED IN THE MAIN STUDY (IE. THE CASE STUDIES) ARE SELECTED FROM THE 170 LIST OF MC PROJECTS REFERED TO IN TABLE 2.3.

2.2.1 THE USE OF MANAGEMENT CONTRACTING IN THE UK

This research has identified eighteen principal management contractors operating in UK. The MC interviewed were asked when their organizations were first involved with management contracting, the results of which are shown in Table 2.4.

TABLE 2.4 - HISTORY OF THE MANAGEMENT CONTRACTORS STUDIED

YEAR	NUMBER ENTERED MARKET	CUMULATIVE	COMPANY IDENTIFICATION
1928 (MFS)			J
1968	1	1	J
1970	1	2	K
1971	2	4	A, D
1974	1	5	F
1977	1	6	B
1978	1	7	G
1979	3	10	E, M, Q
1980	5	15	C, I, L, M, P
1981	2	17	O, R
1982	1	18	H

NOTE: IN 1985 THE CENTRAL OF CONSTRUCTION MARKET INFORMATION (CCMI) UPDATED A NUMBER OF 35 COMPANIES OFFERING MC, 16 OF WHICH WERE CLASSIFIED AS TOP MCs AND 19 WITH SOME MC EXPERIENCE.

From the results shown it can be seen that the management fee system (MFS) has been used as early as 1928 by Bovis. It was not until the late 1960's that 'pure' management contracting gained recognition within the industry. Now it is seen as part of an essential business portfolio by most large contracting firms in the UK and much competition among them to stay in the management contracting market.

Figure 2.3 plots the growth in the number of firms offered management contracting as a service. It shows no entry to the MC market in 1972, 73, 75 and 76. However, the number of management contractors increased by 50% between 1979 - 1983 with an estimated £580 million in 1983. This rapid increase by early 1980's was, perhaps, because at that time it was recognized by a number of influential organizations that clients could benefit from management contracting and that it had certain advantages to offer. By early 1980 many reports, articles were published, seminars and conferences held like the ones organized by the Midland study Centre (1982 and 1984), and by the High Point Research and Studies (1985). These events encouraged the industry to talk and think about what management contracting meant and its utility to the industry.

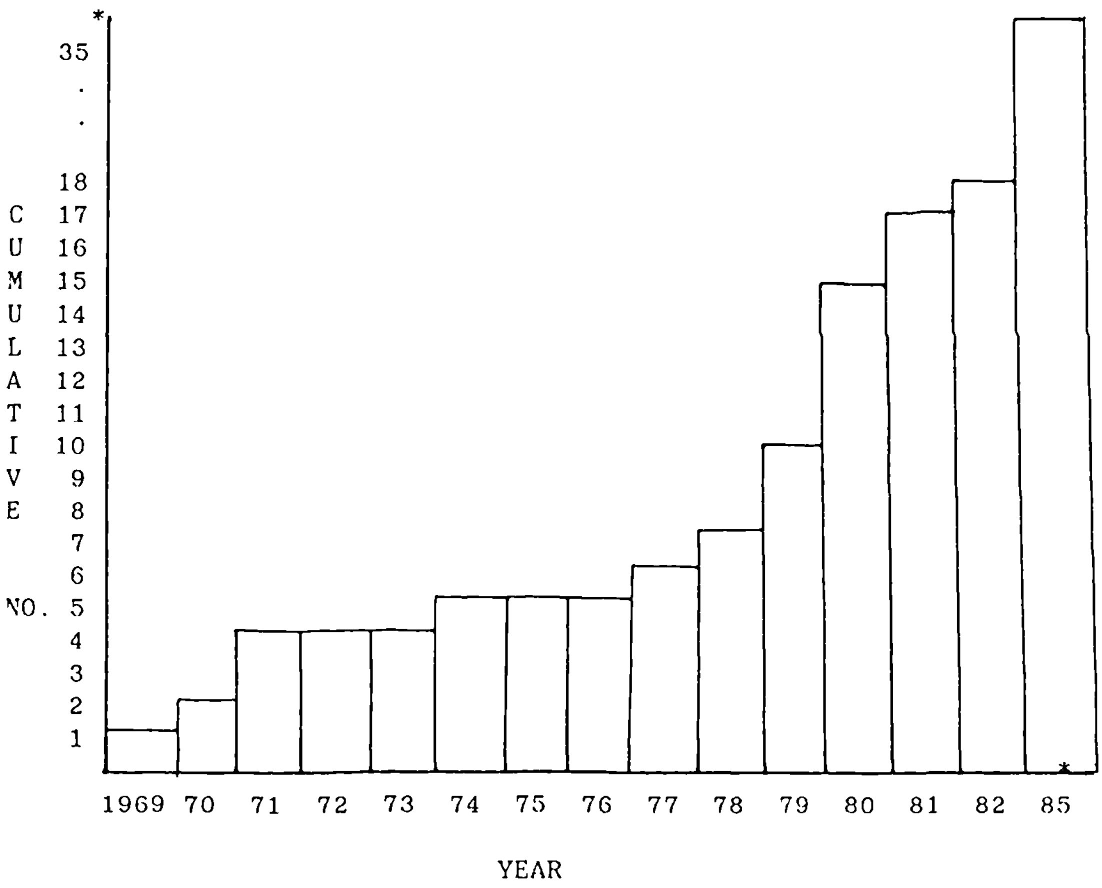


FIGURE 2.3 - CUMULATIVE NUMBER OF CONTRACTORS ENTERING MC MARKET

* (THE CCMI UPDATED ESTIMATE)

The number of contractors involved only provides part of the picture. More critically, this research investigated how committed were these organizations to the provision of management contracting services. Table 2.5 show the extent of management c ontracting work in relation to the contractors total turnover.

TABLE 2.5 - PROCUREMENT METHOD ADOPTED FOR THEIR TURNOVER BY THE MANAGEMENT CONTRACTORS STUDIED

	PERCENTAGE OF TOTAL TURNOVER OBTAIN BY THIS METHOD, BY CONTRACTOR								
BUILDING PROCUREMENT METHOD	A	B	C	D	E	F	G	H	I
TRADITIONAL	40	30	-	-	75	80	70	95	80
MC.	30	20	50	25	25	15	25	5	15
OTHERS	30	50	50	75	-	5	5	-	5
TOTAL	100	100	100	100	100	100	100	100	100
NUMBER OF PROJECTS CONSTRUCTED	31	20	6	40	12	40	28	6	5

	J	K	L	M	N	O	P	Q	R
TRADITIONAL	-	70	60	30	80	80	70	50	80
MC.	100	25	20	60	15	10	25	25	20
OTHERS	-	5	20	10	5	10	15	25	-
TOTAL	100	100	100	100	100	100	100	100	100
NUMBER OF PROJECTS CONSTRUCTED	61	51	22	33	26	15	27	30	11

Al hough one firm stated that 100% of their turnover was obtained by a management contract, a high proportion of this work was in the form of management fee contracts, which for the purpose of this research is classified as a hybrid form of management contracting.

The percentage of traditional contracting was still greater than other forms of contract, on average 50% of the management contractor's construction output, with 25% for management contracting and 25% other types of procurement methods eg., project management and package deal. The results also reveal that, on average, 95% of their MC work were commissioned by competition and only 5% by direct negotiation.

2.2.2 THE MARKET SHARE OF MANAGEMENT CONTRACTING IN UK

The market share of management contracting can be illustrated by a survey carried out by the author which indicated that the system is becoming increasingly common and popular in the UK construction industry. Table 2.6 show the total output of management contracting for the contractors interviewed, obtained from their management contracting lists of projects.

TABLE 2.6 - OUTPUT OF MANAGEMENT CONTRACTING (1983 PRICES)

YEAR	TOTAL OUTPUT	NUMBER OF PROJECTS
1982	£338 MILLION	83
1983	£580 MILLION	110
1984	£740 MILLION	154

Comparing this figure of £740 million output for 1984 with these resulting from the CCMI survey at approximately the same period which showed an output of £890 million, it would seem that the two figures are about the same. The difference between the two surveys could be attributed to the fact that some contractors find it difficult to separate output to the various packages they offer, and this is particularly true of management fee contracts.

Based on the DOE (1984) Register of Contractor Firms and the 3rd quarter output analysis by size of firm. the targeted sample of the 105 top contractors accounted for approximately 19% of all UK contracting output and around 37% of all work done by builders and civil engineering contractors. The management contract output of £890 million represents some 4% of total contracting output at say £21,000 Billion. According to the CCMI it was expected a growth by 9% in 1985 while the general growth of the market was still at about 1%.

From the above figures one could conclude that the market share for management contracting is sizeable and has a healthy growth, hence the temptation of more companies to jump on the band wagon.

2.2.3 - MANAGEMENT CONTRACTING PROJECTS

The author (1987) has published the distribution of management contracting work based on 170 completed buildings. The results revealed that management contracting was applied to all types of projects and clients. The building types were offices, health, factories, schools, public premises and general buildings, and Figures 2.4, 2.5, 2.6 and 2.7 shows percentage of MC projects according to their category.

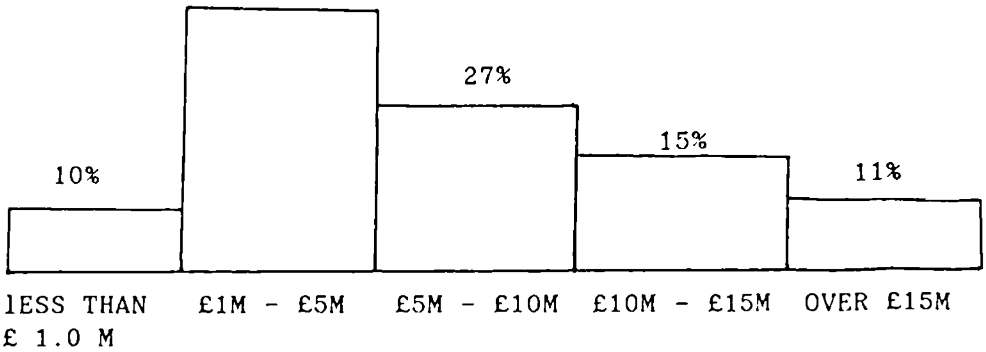


FIGURE 2.4 - PERCENTAGE OF MC BY VALUE OF PROJECTS

It can be seen from Figure 2.4 that management contracting had been used for projects costing more than £1M (in 1984 prices) and in particular projects ranging between £1M to £5M. It can be argued, however, that many small contracts can be very complex and difficult, especially on restricted sites, or where high technological inputs are required.

In 1981 work exceeded £2 million in the contract value accounted for 16% of the total value of all new work or £1.468 million at 1977 prices (Mckinney 1983). It is not suggested that management contracting should be considered for use in all contracts in excess of £2 million. Indeed many authorities on the subject would consider contracts of less than £6 to £10 million unsuitable. The information is, therefore, only a general indication of the market in terms of the larger contracts, ie. those in excess of £2 million.

Figure 2.5 below divides the value of projects by building type and shows that about 50% of those surveyed MC were commercial buildings and offices and 27% were industrial buildings. The industrial sector could be further subdivided into 60% factories and 40% warehouses and others. The rest of the work was accounted for banks, houses and other public premises.

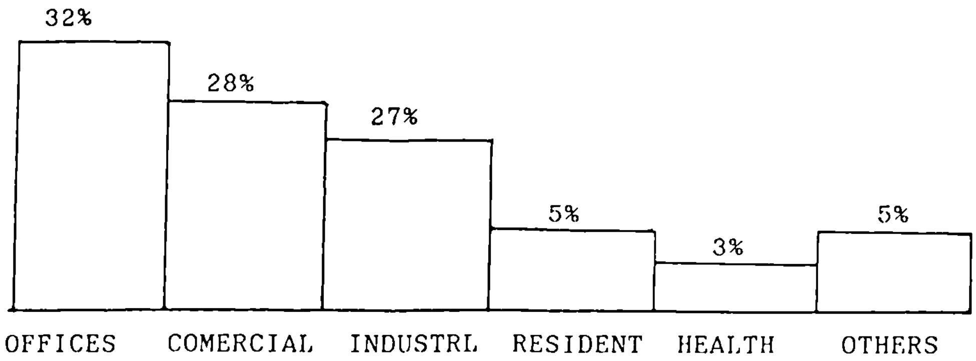


FIGURE - 2.5 PERCENTAGE OF MANAGEMENT CONTRACTING BY BUILDING TYPE

Figure 2.6 shows that 63% of the MC were used for new types of construction and 37% for other than new, ie. refurbishment, remedial work, modernization, etc. Figure 2.7 indicates that 68% of the projects have been commissioned by private-sector clients, 27% by the public sector and 5% by a mixed co-operation.

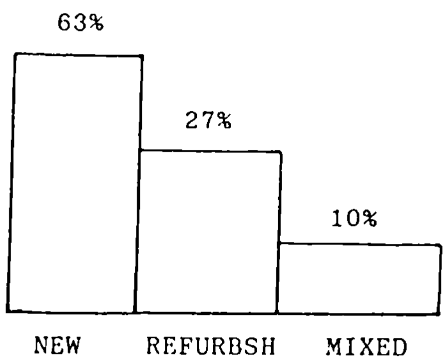


FIGURE - 2.6 PERCENTAGE OF MC
BY CONSTRUCTION TYPE

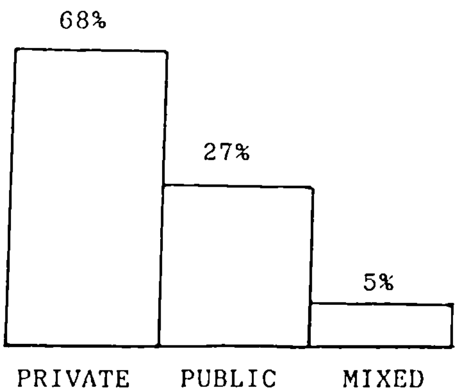


FIGURE 2.7 - PERCENTAGE OF MC
BY SECTOR

2.2.4 THE CLIENTS' PERCEPTION OF MANAGEMENT CONTRACTING

The literature available to date has considered the A/E's role, the trade contractor's position in respect of PCM in the US and the management contractors perception in regard to management contracting in the UK, but little research has been conducted on the clients' or owners' perspectives. Hence, in an interview conducted with construction clients, an attempt was made to assess their satisfaction with management contracting when compared with the traditional method of project procurement. Appendix 4 reports on the views of Ten clients with management contracting, presented for the ASCE by Naoum and Langford (1987). The report discusses the system from different aspects of it's use and the following are summary of the main findings:-

1. The results of the clients studied showed that management contracting work accounted between 3%-8% of the firm's total expenditure on construction work. The prominent criteria of the 10 participating organizations for choosing the management contracting method were the following: Minimizing the overall time of the building process; obtaining reliable time estimates for the project; and suiting large and complex projects.

Earlier, in 1984, Naoum and Langford reported on a pilot study conducted with nine management contractors to review the system of management contracting. The following are the ranking criteria for clients when considering a building project: (1) Increasing the reliability of cost and time estimates; (2) minimizing the duration of the pre-construction and construction periods; (3) increasing management contractors' involvement during the design stage; (4) more flexibility during construction ; (5) reduced maintenance costs; (6) suitability; (7) providing a high degree or personal control over specialized work; (8) lower costs in use; (9) cheapest cost; and (10) aesthetic appeal.

2. Having established the criteria by which clients choose a management contract, it is necessary to compare their views when practising a management contract and the traditional method of contracting, having in mind his needs in terms of function, cost, speed and aesthetics. Table 2.7 are summary of clients' responses.

TABLE 2.7 - RESPONSES TO QUESTIONS ON MC VERSUS TRADITIONAL METHOD

QUESTION	RESPONSE OUT OF 10		
	YES	SAME	NO
1. IS MC MORE RISKY TO CLIENTS?	6	2	2
2. IS MC MORE PROFITABLE TO THE CONTRACTORS?	10	-	-
3. DOES MC INVOLVE FEWER CLAIMS?	3	4	3
4. IS MC MORE FLEXIBLE?	10	-	3
5. DOES MC ALLOW AN EARLIER START ON SITE?	10	-	-
6. IS MC QUICKER?	10	-	-
7. IS MC MORE RELIABLE IN PREDICTING THE CONSTRUCTION TIME?	9	1	-
8. IS MC CHEAPER?	2	4	4
9. IS MC MORE RELIABLE IN ESTIMATING CONSTRUCTION COST?	6	3	1
10. DOES MC PROVIDE MORE CONTROL FOR SUB-CONTRACTORS?	9	1	-
11. DOES MC EXERCISE MORE CONTROL OVER CONSTRUCTION OPERATIONS?	9	1	-
12. DOES MC PROVIDE A BETTER BUILDING DESIGN?	1	1	8

As can be seen, there is a conflict of opinion concerning the risk to be absorbed by clients when dealing with a management contractor. Three clients saw the principal risk arising from the absence of a tendered lump sum price from the main contractor prior to construction. Another client claimed that clients are subject to a greater risk in respect of costs because of the staggering and phasing of orders for specific work over a long period. While in the traditional method it was the main contractor who was taking that risk by putting a lump sum bid out at the outset, the contractors' perception of risk was also different for management and traditional contracting. With MC the contractor is likely to settle for a smaller guaranteed profit and abandon a higher potential profit through the management of implicit risks.

It must be stressed, however, that the risk issue is very difficult to define and consequently the associate risk can not be easily measured .

All clients studied agreed that management contracting is flexible in that it enables variations on the original design and specifications throughout the course of construction; they added that cost can be controlled by changes in the design but without affecting project performance.

Frequently the time factor was seen as one of the major advantages of management contracting; none of the clients sampled commented unfavourably about the MC's time performance. All clients agreed that a MC reduces the precontract period by overlapping the design and construction process; this enabled the project to be completed in a shorter period than for a traditional method. However, some clients added that their experience with past management contracts counted very much in considering the company's other needs.

Conflicting attitudes about the cost factor were observed. When interviewing a large public client, a mismatch between the expectations of a public body and the procedures of management contracting with uncertain final costs, could be observed. It was reported that, because of the way the public sector is organized, it is naturally biased towards caution in committing themselves to spending taxpayers' money, and ensuring that their accounting officer (ie Chief Executive) has good answers to critical questions which might be put to him by the Public Accounts Committees. However, a second public organization did not feel constrained in using management contracting due to public accountability because they had to change their building procedures.

A private banker stated that there is a tendency for greater involvement of the professional consultants: "The architect and quantity surveyor get involved more than they should in some work which is the management contractor's job." This overlapping responsibility was reflected in higher fees being paid. Another four private clients had a fairly positive attitude toward the cost performance of management contracting. One distinguishing characteristic amongst this group is that low costs were not considered as essential for client satisfaction.

None of the clients interviewed felt that management contracting produced a better building design than the traditional method, but most clients stated that they did not choose a management contractor for that reason in the first place. This evidence refutes the CIRIA conclusion that clients who use management contracting frequently want the management contractor to be responsible for managing the design.

3. After comparing the experience of clients for management and traditional contracts, it is necessary now to review their attitudes towards using the system in the future. Table 2.8 shows the clients' responses to the question of whether they will use MC again.

TABLE 2.8 - ATTITUDES TOWARDS MANAGEMENT CONTRACTING IN THE FUTURE

STATEMENT	NUMBER	IDENTIFIER
NOT DECIDED	1	A
NOT ON MAJORITY OF OUR PROJECTS	1	B
DEFINITELY FOR ALL OUR PROJECTS	3	C, F, H
DEFINITELY FOR OUR LARGE COMPLEX PROJECTS	1	D
FE 'ER BUT DEFINITELY THE MANG. FEE SYSTEM	1	E
DEPENDS ON OUR CRITERIA	1	G
DO NOT KNOW	2	I , J

The difference between clients' criteria and their organizational structures has influenced their views and attitudes towards management contracting. These views have, in one way, prevented the long-term use of management contracting by some clients but led other clients toward continuous use of the system. For example, client A is a sophisticated firm and is very much concerned about public accountability and financial control. Client A wanted to find the best way to improve its performance in meeting different requirements on major projects. Despite the fact that they have constructed nine projects on MC, the organization had not made up its collective mind yet regarding satisfaction with the system because of the following reasons: (1) The uncertainty of the ultimate cost; (2) the liability of the MC is not well defined; (3) it is an expensive method when spending tax payers' money; (4) the complex organizational structure of the client may influence contractor performance. Client A agrees that MC saves time and saving time is saving money, but to quantity that saving is impossible in the public sector.

Client B is a private firm and also has a sophisticated organization with copious internal resources to manage its construction projects. Client B stated that in its experience MC projects are shorter in duration, but the failures to capitalise on any advantages that MC can offer sometimes lies within the client's organization. If its own procedures are not matched to project requirements, the client could lose the advantages of MC. The client could delay progress if his approvals are not matched to the speed of management contractor's work. Moreover, the type of work client B commissions is not seen as appropriate for the long-term use of management contracting (see comments in Chapter 4, section 4.6.3).

On the other hand, clients C - G, having smaller organizational structure with simple procedures, had a more positive attitude towards MC. However, these clients have their own limits for the application of MC; current experience is shaping how they will use the system in the future. The client's attitude towards MC could be shaped by how the building team performed on the last job. From this, clients may oscillate between traditional and management procurement methods.

The management contractors and clients participated in this research have criticized many contracting organizations for entering MC without the right personnel. Client C noted that, 'although from the client's point of view, the intention is to integrate them with the professional team of architect,structural engineers and quantity surveyors at an early stage in the proceedings to gain the advantage of their know-how within the building industry, many have not yet understood or chosen to understand this change in status and merely regard themselves as administrative middle-men in between the sub-contractors and the client in his professional team and thus does not inject any creative ideas which is one of the objects of the exercise and is indeed the reason why certainly in our case, after a careful selection process, we bring them into the proceeding at the earliest possible stage.'

2.2.5 - THE FUTURE OF MANAGEMENT CONTRACTING

Two useful reports commented about the future and marketing of management contracting in UK. The CCMI report (1985) concluded the following:-

1. MC is growing but it is still seen by many respondents to be at an evolutionary stage, as does the whole of project management. It was stated that the leading management contractors have a much more optimistic view of the future than have those in the other groups ie. those with less experience with management contracting. According to their survey, this may well be because they have to a great extent 'cornered' the market. Table 2.9 indicate the resulting summary of the trend to management contracting in the foreseeable future.

TABLE 2.9 - FUTURE TREND FOR MC (CCMI SURVEY)

RESULTS SUMMARY		RESPONDENTS PREDICTING		
	NO. RESPONSES	"INCREASE"	"DECREASE"	"NO CHANGE"
GROUP 1 (TOP MC)	15	15	-	-
GROUP 2 (FAIRLY EXP.)	15	5	7	3
GROUP 3 (LITTLE EXP.)	6	1	3	2
GROUP 4 (NOT EXP.)	7	4	1	2
TOTAL		25	11	7

2. Management contracting is likely to grow in the public sector where some authorities are changing their standing orders to enable them to carry out management contracts. It was suggested that the PSA will be an important source of advice and experience which other authorities will look to.

3. It was also stated that some contractors are looking to design, construct and manage as well as the provision of integrated sub- contractor packages as the next stage of market development in the UK construction industry.

Finally, a report on marketing by Brailsford (1985), who is the director of Higgs and Hill Management Contracts, believes that "if management contractors intend to become an integral part of the professional services, it is incumbent on them to contribute in a major way to formulating solutions. This can only be progressively achieved by a process of education both clients and designers, in addition to their own organizations. well produced reports, seminars and an awareness of the clients' requirements, all give individual help to this process."

Brailsford went further and said "from whichever angle we look at our marketable image, the main criterion must be creativity, based on a foundation of practical ability. We must produce well designed and economical buildings more quickly, at the same time adopting a more professional approach. Indeed, we must create A BETTER WAY TO BUILD."

CHAPTER THREE - RESEARCH DESIGN AND METHODOLOGY

3.1 AIMS AND OBJECTIVES

The main aim of the research is to compare two procurement forms, namely management contracting and the traditional approach and to assess their performance. The following are the major objectives of the study as outlined at the commencement of the research work:-

1. To establish the background, apparent advantages and disadvantages to the client, in adopting management and traditional contracting.
2. To find out the extent of management contracting, the typology of projects and the classification of clients using management contracting.
3. To evaluate the client criteria of satisfaction when using a management contract.
4. To evaluate the difference in criteria for project performance, for management and traditional clients.
5. An objective comparison of the time and cost of projects completed with a management contract and comparable buildings constructed using the traditional approach. Both time and cost has a number of aspects associated with it, details of which are given in Chapter 4 (the results).
6. A subjective comparison of client satisfaction with regards to time, cost and quality in adopting both systems.

3.2 PREVIOUS RESEARCH MODELS

Before setting out the research frame work and methodology due, consideration must be given to previous research in this and related fields. The first area of interest of concern to the researcher is the development and refinement of building process models. a model forming a framework for the definition and ordering of data on a subject which it visualizes and which allows separate occurrences to be compared. Thus a model is a key element in determining the scope of any research, it points to those variables which must be considered or controlled in data collection and analysis. Echenique (1970) classified the model as can be made for description. prediction. exploration or planning, and can be either physical (eg. architectural models) or conceptual (ie. matematical model like linear programming).

Since the 1960's various models have been developed to invesigate the effectiveness of the building team or the operation of the building process. Some researchers developed their model to show the structure of the industry (eg. the Tavistock model). but others were interested in showing the processes and participants involved in project development and have a temporal aspect ie. they show sequences of events and not instants in time. However, although the Tavistock report produced the former type of model. showing all the participants and their inter-relationships at an organizational level. it did open the building industry's eyes up to a systems approach. According to Cleland and King (1968), the system approach illustrates the interreaction and interdependence between the identified variables, suggesting that , an action of one variable can cause reaction on the part of others.

Among the most relevant models for this research that followed the Tavistock report are those of Morris (1972), Walker (1982), Ireland (1983), Sidwell (1982), Nahaphiet (1985), Wearne (1984), Rowlinson (1988) and Newcombe (1988).

Morris (1972) took a system view of the construction industry and studied the interfaces between the design and production. He used the Tavistck reports and the work of Miller and Rice on organizational boundary definition (1967) and Lawrence and Lorsch's studies of differentiation and integration (1967) as a mainspring of his research model.

Model 1 in Appendix 5 show Morris's work where the building process is broken down into three main sub-processes which may occur sequentially or concurrently ie outline design, detailed design and construction. The concurrence of the sub-process is an indicator of the degree of integration of the building process. This integration may be modified by the managerial actions which determine the make up of the building team and the parameters by which they are guided. This managerial action may in turn be modified by the environment, which constitutes all the factors which influence the client, the building team and the building process. This provides one of the first pieces of work which approaches the problem in terms of the process as a whole and attemptss to provide a rationale for actions.

Walker (1980) also adopted a systems viewpoint and defined a model which is client oriented and is common to all projects. He used the technique of linear responsibility analysis to investigate decision making and appropriate organization structures for construction project management. The model is in terms of three stages of project conception, project inception and project realization. In recognising the non-sequential nature of the construction process, the decision points within the system adds task discontinuity to Miller's work (1959) on technology, territory and time.

Ireland, in his PhD thesis (1983) adopted Kast and Rosenweig's model (1973) of the organization and indicated that he had reversed their proposition of management and structure being dependent systems and conducted his research on the basis that 'technology used, structure chosen, the phsychosocial aspects and the way the project is managed will all have an affect on the acheivement of goals and values subsystem'. Ireland maps these sub-systems to form a strategic control of the building process but omits discussion of who should exercise this control. It also appears that the concept of socio-technical analysis is not fully supported from his research. This is so due to the cross-sectional approach to the research method evidence for impact of the social system and the adaptive controls would be very difficult to find. A major limitation of the work is that it was not extended to cover non-traditional methods of contracting.

The field of examining project management, project performance and the building process, though continuous and often on a large scale, and the more recent work by Ninos and Wearne (1984), Nahapiet (1985), Rowlinson (1987) and Newcombe (1988) are of interest.

Ninos and Wearne (1984) brought together conclusions from research on case studies and other opinions, that effective control of construction is dependent on the promoter's decision on authority vested in his project team. The guide summarises the need and problems of control and essentially describes the building process in terms of delegation of authority.

The work by Nahapiet (1985), in comparing project performance, proposed that the selection of contractual arrangements is a function of the type of client, his time and cost requirements and the characteristics of his project. Model 2 in Appendix 5 show the main relationships between the factors examined in the course of the study. This is only a partial representation of interdependency factors of project delivery, since it leaves out a number of other important influences, not least the characteristics of the people involved in the project.

In a PhD research programme by Rowlinson (1987), a model was developed to assess the data collection process which showed four main variables, the client, procurement, process variables and performance (see Model 3). The characteristics of he client, complexity and sophistication, are hypothesised to be influences in the selection of the building team and participation in the building process. The environment within which the building process takes place is a determinant of the effectiveness with which success criteria are matched by performance and the attributes of the client body and project itself were given as examples of independent, situational variables in this context. The controllable variables of building team organization and management, the decision taken by the building team prior to and during the project, are regarded as the major influence on the building process and it's outcome.

Newcombe's Anatomy of a Construction Project (1988), illustrates the components, context and characteristics of a typical construction project. These components and contextual factors have been conceptually defined in model 4 shown in Appendix 5. A preliminary synthesis of the components and context of a project has been attempted which has highlighted the interactions between the parts of the model. Some perceptions of the success of a project have also been explored, illustrating that different parties may view project performance in contrasting ways.

The various models of previous researchers were studied by Sidwell (1982) who criticised them however for they infers a sequential process and does not illustrate the iterative and cyclic nature of the building process. He, therefore, identified and studied the interrelationship between 19 variables and discussed them under six main headings (see Model 5 in Appendix 5) :-

A) Client characteristics

B) Project characteristics

C) Project procedure

D) Building team

E) Environment

F) Project success.

The elements client characteristics and project characteristics were seen as an independent variables. Project procedures and building team were considered as a moderator variables which are selected to achieve optimum level of the fifth dependent variable, project success. The five variables were all seen as a subject to the influence of the sixth element of the model, the environment.

Sidwell applied the model over 32 case studies to examine, on the one hand, the relationship between the variables: client, project, building team and project procedure, which together define the organization form. And on the other hand, variables of the organization form are examined with variables of project success in respect to time and cost.

However, Sidwell (1982) did not include designer characteristics nor client and contractor criteria, which are modified by the foregoing, in order to guage performance. These criteria have been assumed previously and deemed to be project characteristics. Having said this however, the success measures that he used were both subjective and objective which helps counter criticism on criteria.

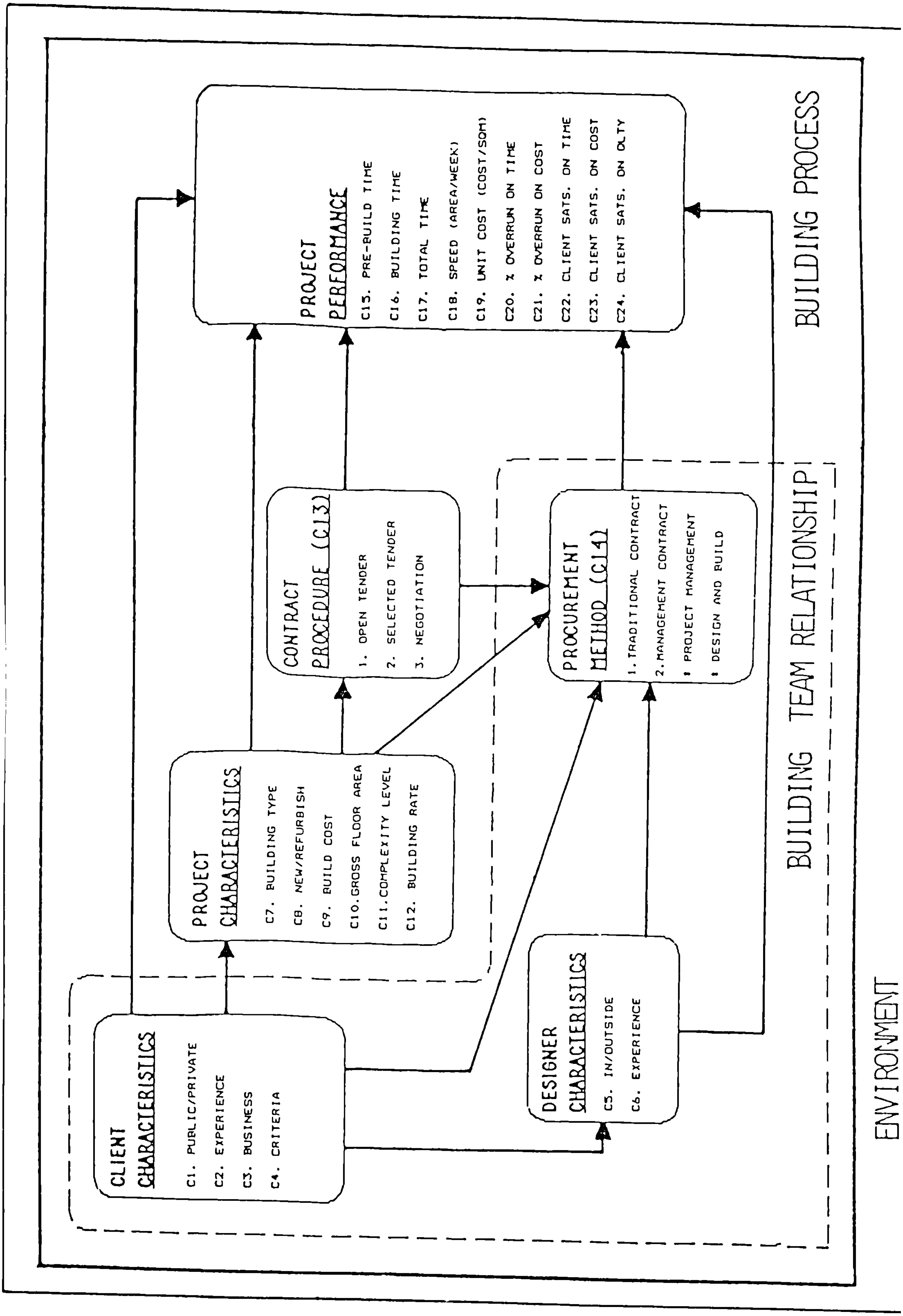
3.3 THE CHOSEN RESEARCH MODEL

The model presented in this research also consist of a number of activities for designing and building a construction project with regards to the type and size of the project. The model points to those variables which had to be measured or controlled in data collection and analysis. Figure 3.1 show the interdependence between these variables which are postulated in a model similar to the one presented by Sidwell (1982).

Although the model show connecting arrows in the inter variables eg. between client and designer characteristics, their relationship were not examined as they are outside the scope of this research. This research model concentrate, firstly, on examining the relationship between two types of procurement methods, that is management contracting and the traditional approach with elements of the client characteristics, designers characteristics, project characteristics and the contract procedure adopted. Secondly, elements of project performance are examined with each component of the research model.

3.4 DETAILS OF THE RESEARCH MODEL

The components of the model are condensed below:-



THE RESEARCH MODEL

FIGURE 3.1

The Client Characteristics

1. Client type - public / private
2. Client experience
3. Client business - developer / purpose built
4. Client criteria - cost / time / quality

The characteristics of the client organization differ in respect of type of business and the experience that the client has of the construction industry. This will generate different expectations and criteria for achieving satisfaction with respect to cost, time and quality and consequently influence the selection of the procurement method. For instance, property developers and commercial clients are likely to place great *emphasis upon speed* of construction because of necessity to borrow money. Yet the quality will be equally important for the building cannot be sold or let if the quality is not appropriate to the market. For a factory, a successful outcome might be completion of his building on time in order to commence scheduled production needs. In contrast, the public sector client, because of public accountability, is likely to focus upon cost prediction and will be more concerned about the level of certainty associated with the tender sum.

Other variance between clients could be the organizational structure of the firm which will affect the nature of the decision making process especially publicly funded clients. Thus it is hypothesised that these variables will influence the client's selection of the procurement method for the project and subsequently the performance of the project.

The Designer Characteristics

1. Designers type - inhouse / outside professionals
2. Designers experience

The architect is considered to be the leader of the building team and the advisor of the client organization and it is expected that different designers characteristics will influence the selection of the building team and consequently project performance. In certain cases, sophisticated clients had their own professionals and it is assumed that an outside or an in-house designers may influence project performance.

Closely linked with the professional characteristics box could be the concept of attitude of designers to appreciate their experience with the new procurement method. The move away from the conventional procurement procedures has meant that organizations have changed to match this new market. Likewise experience professional practices have, for example, adopted new positions to meet new expectations from the management contracting market. The changes of the role of the architect or consultant in the new procurement method may be identified as :-

1. The design organization had to retain full responsibility for design and for specifying the quality to be achieved.

2. The designers should change their attitude towards new procurement methods in order to accept the input from the contractor.

3. The designers role in construction supervision is reduced, but still has to be responsible for quality control. the level of involvement depends on the nature of the project.

The Project Characteristics

1. Building type - industrial / commercial
2. Construction type - new / refurbishment
3. Complexity / Building rate
4. Size - cost / area

1. Projects may be distinguished by their level of constructional complexity or technology ie. building type, new or other than new construction. The more constructionally complex the project is, the wider range of services and expertise needed. These differences can impress a greater managerial pressure upon the building team and may require different procurement methods to op imize success in the building of the project.

2. The cost and area of the project can be a measure of the size of the building and to some extent it might be an indication of how complex the project is, ie. if the project is very costly and spacious, it might be complex or it can be argued that the projects is just big. In the former circumstances it may requires a suitable procurement method to achieve higher success.

The Project Procedure

1. Competition - open / selected tender
2. Direct negotiation

This element could influence the selection of the appropriate building team and subsequently affect the success of the project. Project procedures involve the process of documentation and contractor selection (competitive or negotiation). The procedure envisaged for a project will influence the selection of the procurement method.

Procurement Method

1. Traditional approach
2. Management contracting
3. Project management
4. Design and build

After the client with the architect establish his needs and priorities, and identify the characteristics of the project, they will then decide on a suitable method to procure the project. This is the process in most building procurement, except for project management and some MC where the contractor is appointed at the very early stages. Therefore, the procurement method selected will be a function of the variables discussed above. The research intention is to utilize these variables and others of the project performance as a base of comparing two of the above methods, management and traditional contracting.

Team Relationship

An additional factor which may be closely related to outcome is the team relationship which may be less visible when the project is finished but may be an important component of the overall assessment of a project by those closely associated with it.

Project Performance

Project performance is an assessment or evaluation of project delivery. It is generally seen as some combination of three factors: speed and the time taken from inception to completion; cost, ie the final cost paid per square metre of building; and quality, ie the standard of design and construction attained.

The success of a project is a subjective assessment as well as an objective measure. Whether or not a project is regarded as successful depends on whether it achieves what is required or expected. Success is, therefore, in large part a function of the needs and expectations of the relevant parties. Thus, although in absolute terms one job may take longer to complete than another similar job, this does not necessarily imply that those involved on the former will be less satisfied than those on the latter. Thus, performance measures in this research include the following factors:-

1. Site start or pre-construction time
2. Building time
3. Total project duration

4. Speed of construction (area per week)

5. Unit cost (cost per sqm)

6. % overrun on time

7. % overrun on cost

8. Client satisfaction on time

9. Client satisfaction on cost

10. Client satisfaction on quality

The Environment

During the past twenty to thirty years there have been a dramatic changes in the environment we are living in. The term environment describes all external influences on the building process. It could be a meteorological factor, economical, political and technological and they are usually interrelated.

The changing environment could create uncertainty, not only in terms of prices. but also in terms of investment within the work of an organization which will affect the demand for building. The demand depends on the needs and priorities of the client and in certain cases the needs may not had been forcasted. In these circumstances the client require an immediate action to meet his production programme which in turn influences the procurement method that needs to be selected to cope with the changing environment.

3.5 THE RESEARCH HYPOTHESIS

The research model stimulates two central hypotheses, which are:-

1 . "MANAGEMENT CONTRACTING CAN SATISFY CLIENTS WHO NEED THEIR PROJECTS QUICKLY AND FOR PROJECTS THAT ARE LARGE AND/OR HIGHLY COMPLEX"

This leads to a second hypothesis:

2. "PROJECT PERFORMANCE IS A FUNCTION OF THE CHARACTERISTICS OF THE CLIENT, THE PROJECT, THE DESIGNERS, THE CONTRACT PROCEDURE EMPLOYED AND THE PROCUREMENNT METHOD ADOPTED FOR THE PROJECT".

For the purpose of comparing, specifically, management contracting with the traditional form of contracts, the major hypotheses are further expressed into more detailed sub-hypotheses. These are:-

1. The client

1.1 Procurement method is a function of client characteristics.

1 2 Project performance is a function of client characteristics.

2. The project

2.1 Procurement method is a function of project characteristics.

2.2 Project performance is a function to project characteristics

3. The designers

3.1 Procurement method is a function of design professional characteristics.

3.2 Project performance is a function of design professional characteristics.

4. The contract procedure

4.1 Procurement method is a function of project procedure.

4.2 Project performance is a function of project procedure.

5. Project performance and procurement method

5.1 Project performance is a function of the procurement method adopted.

5.2 Performance measures are interrelated with one another.

3.6 DEFINITIONS AND MEASUREMENTS OF VARIABLES

CLIENT CHARACTERISTICS

Client types (C1) were defined as the source of project funding and were categorised as either private funds (given numeral 1), or public funds (numeral 2), for statistical purposes.

Client experience (C2) was measured as the number of similar projects they have commissioned in the past. Those with no previous experience were given a low score of L (or ranked 3). Those with some previous experience (ie., clients who has been involved with one or two buildings) were given M (or ranked 2), and those who had considerable experience (ie., been involved with more than two) were given a score of H (or ranked 1).

Client business (C3) was defined as the client's purpose for commissioning the building and were categorised as either a bespoke client (ie., building for the primary use of the company) and given numeral 1, or speculative developers (given numeral 2).

Client criterias (C4) were measured for time, cost and quality, where they were scored L (or ranked 3) for less important factors. Scored M (or ranked 2) for moderately important and scored H (or ranked 1) for highly important factors.

DESIGNERS CHARACTERISTICS

In-house / outside designers (C5) are used to describe the source of building design input as some sophisticated clients may have their own professional team of experts, depending on the scale of their activities. Projects with an In-house design input were given numeral 1, and those designed by an outside professionals were given numeral 2.

Designers experience (C6) was measured in a same way like the client experience.

PROJECT CHARACTERISTICS

Building types (C7) were divided into commercial type (given numeral 1), or industrial type building (given numeral 2).

Construction types (C8) were categorised as either new construction (numeral 1), or refurbishment (numeral 2).

Project size was defined by building cost (C9) and gross floor area in square metre (C10). Those < £5m and < 7000sqm were considered normal size projects and those > £5m and > 7000sqm as large projects. In order to make a fair comparison, the classification on less than or greater than boundary was decided after considering the frequency distribution of the data that will be included in each group .

Project complexity (C11) was defined in terms of physical complexity, services and number of sub-contractors involved in the execution of the project. The building rate (C12), which is the value of building over the construction period was used as an indication of how technically complexity the project was and it represents the average turnover per week for the project. Those projects with over £50,000 per week were considered having a high building rate. It must be stressed however, that an attempt was made to measure project complexity in more detail but it became apparent that this is a very difficult task to include with this research.

CONTRACT PROCEDURE

Contract procedures (C13) were classified into three types, competitive open tendering (indicated by numeral 1 in the data sheet), competitive selected tendering (numeral 2) and negotiated contracts (given numeral 3).

PROCUREMENT METHOD

Procurement methods (C14) were of four types, two of which were studied, management contracting (numeral 1) and the traditional approach (numeral 2).

In the questionnaire, management contracting was defined as a method of carrying out a construction project by appointing a contractor at the pre-construction stage and paid on a fee basis, to manage and deliver the project. The fee comprises a percentage for profit and fixed overheads. All construction work is carried out by subcontractors, competitively selected and appointed in consultation with the client and his professional advisors.

The traditional approach was defined as a method of procuring a building in which independent professionals (ie. architects, engineers, quantity surveyors) are employed by the client to complete the design work and then the client enters into a seperate contract with a building contractor who construct the designed building.

PROJECT PERFORMANCE

Pre-construction time (C15) was calculated as the number of weeks from start of detailed design to start of construction. This is due to the effects of planning approvals, permits, and public enquiry which made it difficult to identify a clear starting point for a number of projects.

Construction time (C16) was calculated as the number of weeks from start on site to practical completion of the project.

Total time (C17) was calculated as the number of weeks from start of design to completion of the project and does not always equal the addition of design time and construction time because of design/build overlap for management contracts.

Speed of construction (C18) was defined by the gross floor area divided by the construction time in weeks.

Time and speed performances were measured by grouping the projects into three separate contract size (< £2m, 2--5, > £5m) and the mean for each group was calculated. The range of time where 60% of the projects fall into represents average performance, value below are faster and above are slower. In certain cases the range of time was taken as 70% depending on the cluster of the projects around the mean. Each project was then studied individually and the number of slow, average and fast projects were calculated . For example, say a project took 100 w eks to build and 60% of the total projects, for that particular group, fall within the range of time of say 60-80 weeks, that project would then had to be considered as slow.

Unit cost (C19) was defined by the cost of building divided by the square meter of gross floor area. All project tender and final account data was first indexed to the second quarter 1984 using BCIS tender price index. The method for measuring cost performance was similar to the BCIS cost comparison. After grouping the projects, the mean cost/sqm for each group was calculated and also the range of cost where 60 % of the project fall into (in certain cases 70% range). Projects fall above the top 60% range were considered highly expensive, within the range were average and below the bottom 60% range were cheap. For example, say a project cost £900/sqm and 60% of the total projects, for that particular group, fall within the range of costs of say £380-£700sqm, that project would then had to be considered as very expensive.

Time overrun (C20) for each project was measured by the percentage increase or decrease on the estimated programme in weeks (%+/-TIME), and percentage cost overrun (C21), measured by percentage increase or decrease on budget in pounds (%+/-COST). This was calculated after the +/- authorized value of variations by the client was taken into account. Projects fall within +/- 5% of the estimated time and cost were considered as average performance for < £5m building, and 8% for > £5m. Otherwise the contract was categorised as high overrun. This percentage reflect a measure of the certainty of the time and cost to the client as quoted at the outset.

The subjective measures of client satisfaction on time (C22), cost (C23) and quality (C24) were each given a high score H (or ranked 1) , where there was a high level of satisfaction. Ranked 2 where there was a moderate level of satisfaction and ranked 3, where there was a low level of satisfaction.

3.7 THE RESEARCH METHODOLOGY

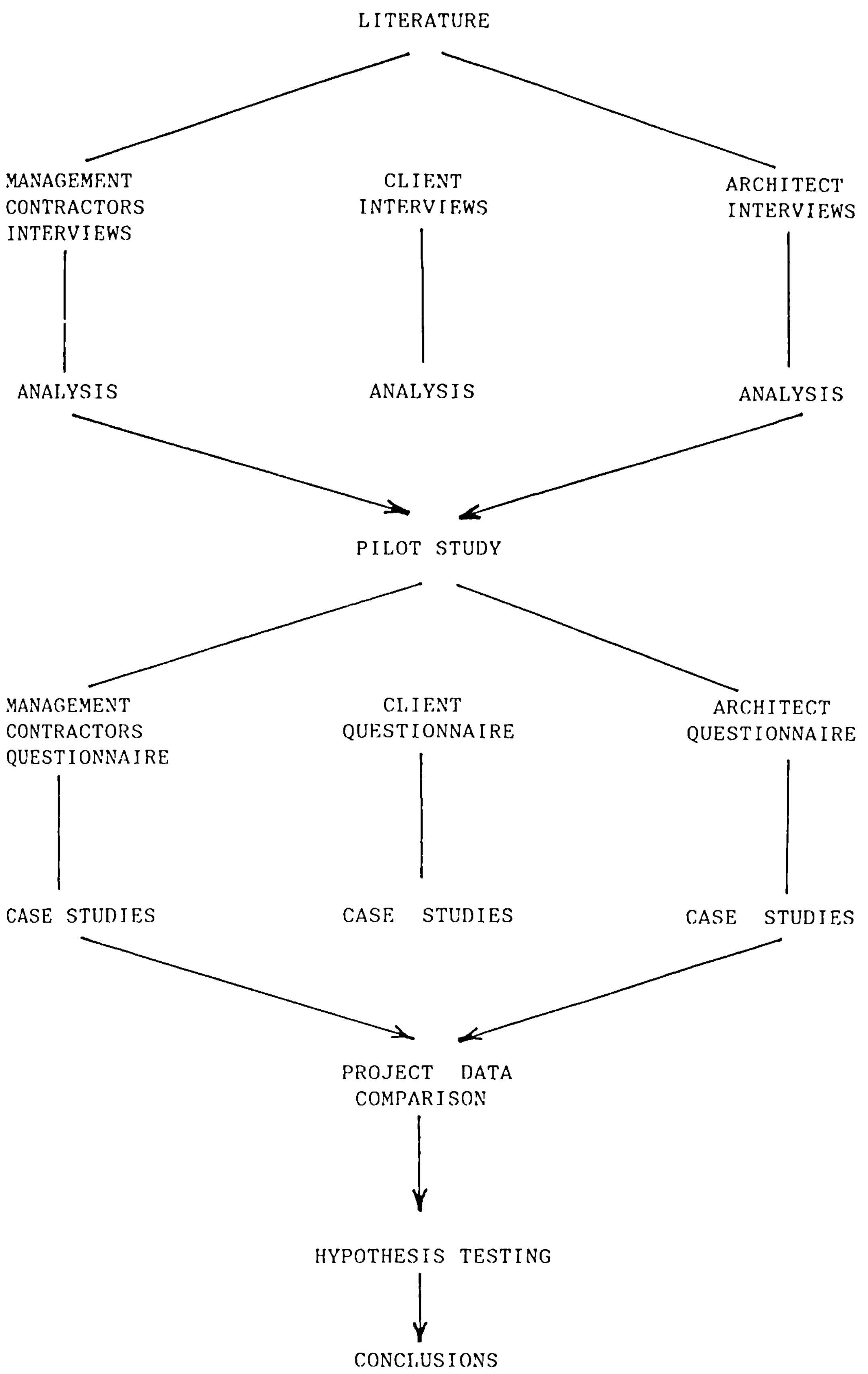
The sequence of research is outlined diagrammatically in figure 3.2. The two main subjects of the research are the client and the building team and the form of data collected - subjective and objective. The data collection took the form of interviews and questionnaire to test the research hypothesis.

The nature of this research is a comparable one and there are, broadly speaking, four methods to conduct the study. These can be condensed below, based on Vroom (1971) and previous researchers:-

1. In one, data from one sample is collected and analysed and then compared with what is already known from another sample.

2. Longitudinal study. Here, the data is collected directly from site using a semi-structured interviews to gather the necessary information. This method was used by Nahapiet (1985) in case studies from the USA and UK, and by the DHSS (1986) in comparing two management contracts and one traditional contract.

3. To match one sample against another by collecting comparable data using interviews, questionnaires and project documentations. This is the method used by the author and it is similar to that used by the Slough Estates Limited (1976), Chartered Institute of Quantity surveyors (1979), Sidwell (1982) , NEDO (1983) and Rowlinson (1987).



THE RESEARCH SEQUENCE FIGURE 3.2

4. An attitudinal survey and this is used widely in social sciences.

The author chosen the third method because it was felt that, within the scope of this research, the comparison would not be fair and valid in the first one due to unmatched samples. The second method can be used for small samples only and involve a great deal of confidentiality and research time . The fourth method (attitudinal survey) were not appropriate because of the subject matter and the uncertainty over validity. (Validity in terms whether the attitude scale measures what it is supposed to measure. In this respect, Oppenheim (1966) says:-

"....behaviour is often not a simple manifestation of an underlying attitude, and so there are dangers and pitfalls in this approach. At the present, there is no way of making sure that an attitude scale is valid.")

The research methodology is summarized below:-

Pilot Study

Like any similar comparative study, the precursor to successful research is be the pilot study. The pilot study was conducted, after a review of the literature had been undertaken, took the form of interviews with managers and directors of companies who were known to have commissioned projects under a 'pure' management contracts. List of names and addresses were collected from personal contacts, Building Trade Journal and the Building Magazine. The interview questionnaire is attached as Appendix 6 . A pilot study was conducted with nine Management Contractors, ten Clients and four Architects, to validate the form and content of the questionnaire before the main survey was undertaken. The suitability of the form and areas of particular interest to each participant highlighted and the set of criteria evolved from these interviews. The results emanated from the interviews with the management contractors and the clients were published in the CIB-W65 (1984) and subsequently in the ASCE (1987). The materials were largely edited and discussed throughout Chapter 2, and used to support results of the main study in Chapter 4.

The Main Study

The pilot study has prepared the ground for case studies for harder and more empirical data to compare the performance of management contracts and traditionally organized projects. The principal management contractors, clients and architects interviewed at stage one were asked. at the end of each interview, whether they would be prepared to provide details of recently completed projects undertaken on a management contract. Almost all the interviewees showed interest to the subject of investigation and were willing to assist. Some respondents provided details of more than one project, and were also prepared to provide details of similar work undertaken using the JCT form of contract from their traditional contracting division.

Other project names and details were obtained from the contract news and building magazine (Building Dossier). The managing director of the companies were approached, asking for their co-operation for that particular project.

The validity of the case study questionnaire was first tested by visiting ten co-operative firms to answer the questions. Some modifications were made and Appendix 7 gives typical case study questionnaire.

After modification, a postal questionnaire was sent to the appropriate personnel who were actually involved in the project ie. project manager, contract manager etc. In certain cases, telephone discussion and/or interviews had to be conducted after the postal questionnaire to clarify misunderstandings.

Designing the outline of the questionnaire started in Summer 1984, immediately after the management contractor's interviews. Detailed case study questionnaire was finalised and start of data collection took place in Autumn 1985, after the client and architect interviews. Analysis of the data started in December 1986.

3.8 THE MAIN STUDY SAMPLE

In total the number of case studies collected was 61 and further 8 project details were obtained in collaboration with a research fellow (Rowlinson 1986) who conducted a similar study into industrial buildings at Brunel University.

No particular bias was intended in the choice of management and traditional projects and the sampling can be regarded as random which gives equal chance for each sample to include various characteristics and different level of performance. However, there were certain boundary in selecting the type of building, client and the contractor, these of which are explained below.

The use of random sampling in this kind of research is generally preferable (Armitage 1971 and Hill 1962), because chances can be equal. In certain studies, the researcher may chose one well known contractor and draw the whole sample from, but the number will be limited and conclusions may not be general.

It was intended at the commencement of the research to collect a large sample under both management and traditional system, in order to make a valid comparison. Most statistician consider N equal or over 30 as large. It was also apparent that, in recent researches, the trend to obtain a large number of detailed case tudies is increasing (32 cases in Sidwell's study, 49 in Rowlinson, 52 in the CIRIA report, 55 in the NEDO report). Of course, the choice of numbers depends on the kind of objectives and goals set by the researcher intend to find out and, above all, the quality of the responses .

A. The building type used as a basis of comparison

After the market for management contracting was surveyed, commercial and industrial buildings were considered to be the most appropriate basis for the comparison, firstly, because these range of building type were available in large numbers than others such as hospitals, houses, airports etc. Secondly, by limiting the type of buildings and concentrating on two only, variables of project characteristics will be reduced, in which case the investigation would prove to be harder and consequently more valuable.

B. The client type

The constraint imposed on the research in that most of the projects collected were applied to large client organizations which meant that the research is totally confined to large companies. However, clients vary in their familiarity with contracts, their nature (public or private), classification and purpose for building.

C. The contractor

In order to compare the traditional contracting with 'pure' management contracting, it was attempted to confine the case studies to the principle management contractors that were identified during the course of the study. They were all of large national and/or international contracting companies, undertaking projects on different type of contracts.

3.9 CHARACTERISTICS OF THE CASE STUDY SAMPLE

Of the 69 case studies 39 were management contracts and 30 traditional contracts. Table 3.1. 3.2, 3.3 & 3.4 give further categorization by client characteristics, designers characteristics . project characteristics and procedures respectively.

TABLE 3.1 - THE RESEARCH SAMPLE. SHOWING PROCUREMENT METHOD AN CLIENT CHARACTERISTICS

CLIENT CHARACTERISTICS		PROCUREMENT METHOD: MANAGEMENT CONTRACT CASE NO.	SUB-TOTL	TRADITION CONTRACT CASE NO.	SUB-TOTL	TOTL
CLIENT TYPE	PUBLIC	2.4,5,6.20 23,25,26	8	5.9,11,14. 22	5	13
	PRIVATE	REMAINDER	31	REMAINDER	25	56
TOTALS			39		30	69
CLIENT EXPERIENCE	HIGHLY	2.3,5.6. 15.21,22 24.25.28 30.34,35	14	2,4.6,7.9. 12,13,15, 16	9	23
	MODERATE	1,4,8,9, 10.11.12. 14.16,18, 19,20.23. 26,27.31, 33	17	3,5,8,10. 11.12,14, 16,18,19, 20.23.26. 27,31,33	9	26
	LOW	13.17,29. 32	4	1,14,19, 26	4	8
	NUMBER AVAILABLE		35		22	57
	TOTAL NOT AVAILABLE	36.37.38 39	4	11.18.20, 21,22,23, 30	8	12
TOTALS			39		30	69

TABLE 3.1 (CONTINUE)

CLIENT CHARACTERISTICS		PROCUREMENT METHOD: MANAGEMENT CONTRACT CASE NO.	SUB-TOTL	TRADITION CONTRACT CASE NO.	SUB-TOTL	TOT
CLIENT BUIS-NESS	BESPOKE	1,2,6,7,8. 9.15,23,24 26,27,29, 32.34,35.36 37,38,39	19	1,3,4,8, 12.13.14. 15,16,18, 21,23,24, 27,29,30	16	35
	SPECULA-TIVE	REMAINDER	20	REMAINDER	14	44
TOTALS			39		30	69

TABLE 3.2 - THE RESEARCH SAMPLE, SHOWING PROCUREMENT METHOD AND DESIGNERS CHARACTERISTICS

DESIGNERS CHARACTERISTICS		PROCUREMENT METHOD: MANAGEMENT CONTRACTS CASE NO.	SUB-TOTL	TRADITION CONTRACTS CASE NO.	SUB-TOTL	TOTL
DESIG SORCE	IN-HOUSE	2.4,5,7,9 13,14,15, 19,23.24, 25,37	13	2,4,6,7,8 13,22,25, 26,28,30	11	24
	OUTSIDE	1,3,6,8, 10.13,16. 17,18,20. 21.22,29, 30,31	15	1,3,5,9, 10.12,14. 15.16,17. 18,19.27. 29	14	29
	MIXED	REMAINDER	11	REMAINDER	5	16
TOTALS			39		30	69

TABLE 3.2 (CONTINUE)

DESIGNER EXPERIENCE	HIGH	1,6,7,8, 9,11.13. 15,16,21, 23.24.26, 29,34,35, 36,38	18	2,6,7,12 13,16,27	7	25
	MODERATE	2.3,10.12 17,18,19, 20,22,25. 30,31	12	1,8.9,25 26,28,29	7	19
	LOW	4,5,27, 28.32	5	5,10,14, 15.17,22	6	11
	NUMBER AVAILABLE		35		20	55
	NOT AVAILABLE	14.33.37.	4	3.4.11,18 19,20,21, 23.24.30	10	14
TOTALS			39		30	69

TABLE 3.3 - THE RESEARCH SAMPLE. SHOWING PROCUREMENT METHOD AND PROJECT CHARACTERISTICS

PROJECT CHARACTERISTICS		PROCUREMENT METHOD: MANAGEMENT CONTRACTS CASE NO.	SUB-TOTL	TRADITION CONTRACTS CASE NO.	SUB-TOTL	TOTL
BUILDING TYPE	COMMERCIAL	1---26	26	1---8 25---29	13	39
	INDUSTRIAL	27---39	13	7---24	17	30
TOTALS			39		30	69

TABLE 3.3 (CONTINUE)

GROSS FLOOR AREA	LESS THAN 3000 SQM	6,23,38,39	4	3,5,12,14, 15,16,17, 20,27	9	13
	3000 TO 10000 SQM	1,2,3,7,8, 10.12,13,15 16,17,19,21, 27.29,30,31, 32,34,36,37	22	1,6,10,11, 18.19,21, 23,24,30	10	32
	MORE THAN 10000 SQM	4,5,9,11,18, 22,24,25,26, 28,33,35	12	2,4,7,8,9, 13,22,25, 26,28,29	11	23
	NUMBER AVAILABLE		38		30	68
	N/A	14	1	-	-	1
TOTALS			39		30	69

BUILDING COST	LESS THAN £2.0M	6,10,27, 34,36,39	6	11,12,13, 15-21,23 24,27,30	14	20
	£2.0M TO £5.0M	7.8,13.15 21,23,31, 32.37,28	10	3.5,6,10, 14,26	6	16
	MORE THAN £5.0M	1-5.9,11,12 14,16-20,22 24-30.33,35	23	1,2,4,7,8 9,22,25, 28,29	10	33
TOTALS			39		30	69

TABLE 3.3 - THE RESEARCH SAMPLE, SHOWING PROCUREMENT METHOD AND PROJECT CHARACTERISTICS (CONTINUE....)

PROJECT CHARACTERISTICS (CONTINUE)		PROCUREMENT METHOD: MANAGEMENT CONTRACTS CASE NO.	SUB-TOTL	TRADITION CONTRACTS CASE NO.	SUB-TOTL	TOTL
BUILDING RATE (VALU/W)	LESS THAN 25000 £ / WEEK	10	1	12,15,16, 18,20,23, 27.30	8	9
	26,000 TO 50,000	6,8,20,21 27,32,34, 36,39	9	1,3,5,10 11,13,14, 17,19,21, 24,25,26	13	22
	51,000 TO 75,000	1,7,13,17 23.31,38	7	6,9	2	9
	76,000 TO 100,000	2,5,12,16 19,24,29, 30,35.37	10	22.25,28	3	13
	101.000 TO 125,000	10.15,33	3	2,8	2	5
	126,000 TO 150.000	18,28	2	7	1	3
	151,000 TO 175,000	NILL	0	NILL	0	0
	176,000 TO 200.00	3,9,22,25	4	4	1	5
	MORE THAN 201.000	4,11,14,26	4	NILL	0	4
TOTALS			39		30	69

PROJECT COMPLEXITY	HIGH	1,2,3,7, 9,10,11, 12,13,14, 15.18,19. 22,24,25, 26.29,37	19	4,6,7,8, 22,25,26, 28	8	27
	MEDIUM	4.6.8,16 17,20,21, 28,30,31. 33,35	12	1.2.5.15 21,24,29	6	18
	LOW	5.23,27. 32.34.36	6	3,10,11, 12.13.14. 16,17.18, 19,20,23, 27,30	14	20
	NUMBER AVAILABLE		37		28	65
	N/A	38.39	2		2	4
TOTALS			39		30	69

TABLE 3.4 - THE RESEARCH SAMPLE. SHOWING PROCUREMENT METHOD AND CONTRACT PROCEDURES

CONTRACT PROCEDURE	PROCUREMENT METHOD				
	MANAGEMENT CONTRACTS CASE NO.	SUB-TOTL	TRADITION CONTRACTS CASE NO.	SUB-TOTL	TOTL
OPEN TENDER	23.25.27. 28,29,37.38	7	1--5,9,10 11,13,14, 16,20.22	14	21
SELECTED	1--18.20.24	21	6.7.8,12 15,21,27	7	28
NEGOTIATION	19.22,24.26 30--36	11	17.18.19,23 24,25,28.29 30	9	20
TOTALS		39		30	69

3.10 METHOD OF ANALYSIS TO TEST THE HYPOTHESIS

The method for analysing data of the main study can be condensed into the following stages, these are:-

1. Data from the survey was first imputed manually on a data sheet with coded variables. Appendix 8 gives the entire data for the whole sample.

2. Data from the 69 case studies were then analysed and evaluated using statistical techniques with the help of a statistical computing package MINITAB running on an Apricot Xi microcomputer.

3. The management contracting data were then separated from the traditional ones to examine if there is difference in performance scores for various type of clients and projects. The differences are presented in Chapter 5 (conclusions) as an implication to clients.

4. It might be worth to note here that, during this research, it was intended to utilize principal component analysis for the analysis of data available as a statistical package on the SPSS X computer program. This advanced technique in data reduction and interpretation, regrettably, had to be abandons and the technique is recommended as an initiative for future researchers.

Different statistics have been selected and used depending on the type of data to be analysed and the hypothesis that need to be tested. These are:-

3.10.1 Spearman's Rho coefficient

The Spearman's test was chosen for the rank correlation among the client criteria for project performance because the data was originally of an ordinal measure and ranking was not tied for this section. The average of individual ranks of the respondents was taken for the two samples separately and the difference/similarity of the ranking between the two samples were then tested using Spearman's Rho coefficient of rank correlation.

3.10.2 Chi Square and Fisher's Exact Probability Tests

The association between the research variables were tested using the chi-square test because the variables measured comply with the conditions of non parametric statistical test shown by Siegel's chart (1956) (ie. independent variables and nominal), and with Greene's decision chart (1987) (i.e. forming categories to test their significant differences). Both charts are given in Appendix 9 and results of the Chi-square tests are given in Appendix 10.

The use of 'Parametric Tests' like the T and F test were not applied to test the significant difference, although the mean, standard deviation and the number of case studies were calculated for each section in the results chapter. This is so because parametric tests can be best chosen for small sample (N is less than 30) and have a variety of strong conditions underlying their use (Siegel 1956). Amongst all conditions, the observations must be drawn from normally distributed populations and this is extremely difficult to obtain with a large sample study. However, if no other test can be applied, the researcher may assume normality and can calculate significant difference between the means.

3.10.3 Pearson's Correlation Coefficient

In addition to the chi square test, the relationship between the ordinal data were also examined using the Pearson's correlation coefficient (Siegel 1956) and tested using computer based statistical package. Appendix 11 gives the correlation coefficient for the entire matrix of the 69 case studies. The correlation expresses the strength of association and were used to support the chi square test.

3.10.4 Graphs

A number of graphs were produced to observe the spread of the date to be measured and each dot in the graph represents the performance of two variables for each project.

3.10.5 Performance scores matrix

As noted earlier, the conclusion chapter presents a performance score matrix to give an indication of the percentage aggregate scores for the performance measures in the two samples. The matrix row represent 14 various categories of clients and projects and the columns represent the 10 project performance measures (see Appendix 12). Methodology of scoring is as follow:-

1. The 69 case studies is separated into two groups, those costing < £5m and those > £5m.

2. Calculating the average figure of each group for various performance measures e.g. design time, build time, unit cost etc.

3. The 14 categories were examined for the 10 performance measures and each cell in the matrix has a score. Those with high performance i.e better than the average figure were given a high score (3). Those within +/- 5 % from the average were given (2), and those performed poorly scored low (1).

4. Adding all scores for the columns and rows to give the totals.

5. Extracting a table for both management and traditional contracts which show the maximum possible scores, actual scores, percentage actual scores and percentage aggregate scores like the one presented in the conclusion chapter.

6. Best performance and low performance has then been interpreted.

3.11 LIMITATIONS OF THE RESEARCH

The nature of this research is cross-sectional study and this has imposed certain limitations upon a number of variables. These are:-

1. Sub-contractors - It was the intention of this research to gather information about the sub-contractors involved in the projects but this could not be dealt with appropriately by this study because data about the use of sub-contractors was not stored efficiently. However, a number of sub-contractors were interviewed throughout this research to evaluate their views, but the analysis had to be abandoned because the sample was small and increasing the number would have extended the time span of the research.

2. Organizational structure - Information about the organizational structure were not well documented and could not be recalled easily.

3. Fees - It would have been interesting to show if there is a relationship between the contractor's fee and project performance under a management contract. This could not be dealt with in this study because most participants consider the issue of fees as highly confidential.

4. Project type - Civil engineering projects were not studied in this research because of their limited use of management

contracts. It is said on many occasions that MC is at its most useful when speed is of the essence, and where the design is not developed when construction starts (Cottam 1985). Neither of these factors generally apply to civil engineering work, which usually have been in the pipeline for many years before construction starts. Therefore, the study was confined into building projects only.

5. Environmental influences - It was reported earlier in this chapter that the effect of the environment and team relationship may be an important components of the overall assessment of a project by those associated with it. These variables were very difficult to measure in this research and require large scale nation-wide longitudinal study to be conducted.

To conclude, the main limitations of this research were the reluctance of certain companies to give confidential information and the lack of records and uncertainties concerning the dominant variables.

CHAPTER FOUR - RESULTS AND ANALYSIS

This chapter analyse the results of 39 management contracts and 30 traditional contracts and in particular them within the elements of the research model. The central hypothesis is broken down into sub-hypothesis as reported in chapter 3 which in turn divided into null hypothesis (of no relationship) to allow the use of the statistical tests. The main statistics used are the chi-square test and the correlation coefficients . The statistic tables by Murdoch and Barnes (1979) was used in showing the significant level and the null hypothesis was rejected for results having a significance of P = 0.05 and below. Some relationships may show high correlation but were not considered conclusive because , when applying the chi-square test, it suggests that chance could have played a part in the relationship.

1. THE CLIENT

SUB-HYPOTHESIS 1.1 PROCUREMENT METHOD IS A FUNCTION OF CLIENT CHARACTERISTICS AND HIS REQUIREMENTS.

Null hypothesis 1.1.1 There is no difference in type of funding (ie. public or private) between management and traditional contracts.

Null hypothesis 1.1.2 Management contracting clients and traditional clients do not differ in their experience, defined by the number of similar projects constructed in the past (see also section 3.8 in chapter 3).

Null hypothesis 1.1.3 There is no difference in the type of client between management and traditional clients ie. bespoke or speculative.

Null hypothesis 1.1.4 There is no difference in ranking the criteria for project performance . defined by time. cost and quality between management and traditional clients.

The research study did not produce enough evidence to show that the characteristics of management contracting clients differ significantly from those using the traditional approach. except for their criteria to project performance which is discussed in Table 4.1 below (see chi-square test no. 1. 2 & 3 applied to the research sample in Appendix 10). It should be remembered though that there were certain constraints in randomizing the client sample in this research for reasons highlighted in Chapter 3. indicating the need for further investigation with a larger sample.

Nevertheless. the CCMI analysis (1985) confirmed that. in recent years. the characteristics of clients using management contracting covers quite a wide range. In their survey there were 33% public and 67% private clients and they varied from in-experienced (50%) ie. with no past involvement in building, moderate (30%) ie. built 1 or 2 before. and highly experienced clients (20%) ie. built more than two buildings. Additionally, a list of MC projects, provided by the management contractors interviewed throughout this research , agree with the CCMI findings and showed the following classification of clients:-

1. 50% of the clients seeking purpose built premises of which the following can be segmented:-

a) Department stores = 6%
b) Bankers/merchant bankers = 7%
c) Industrial and commercial = 16%
d) Government client premises = 5%
e) Other purpose-built clients = 16%

2. 10% were public or private clients who commissioned premises for commercial or public use.

3. 18% were property developers.

4. 9% were investment companies.

5. 13% were Council, Borough and Public Health Authority.

Table 4.1 gives specific criteria and their ranking for project performance (taking the average of individual rankings of the respondents) for the two samples. The figures show that there is difference in emphasis in the ranking between management and traditional contracts. The ranking between the two samples were statistically tested using Spearman's Rho. and the correlation was found not to be significant (r = 0.29). This indicates that high ranking in one procurement method does not always correspond to high ranking in the other and vice versa. Therefore, null hypothesis 1.1.4 can be rejected and conclude that the criteria for project performance differ between the two systems.

TABLE 4.1 - RANKING OF CRITERIA FOR PROJECT PERFORMANCE

CRITERIA	MANAGEMENT CONTRACTING CLIENTS	TRADITIONAL CONTRACTING CLIENTS
A. MINIMIZING PROJECT TIME	2	5
B. RELIABILITY TO TIME AND COST	1	1
C. CHEAPEST COST OF BUILDING	5	2
D. FUNCTION OF BUILDING	8	4
E. QUALITY	7	3
F. VARIATION	3	7
G. MANAGEMENT FOR LARGE/COMPLX BUILD	4	8
H. CONFIDENCE IN THE CONTRACTOR	6	6

It can be seen from Table 4.1 that management and traditional clients both placed a great concern to the reliability of time and cost (see criteria B). The criteria of cheapest cost was given low priority by the management contracting clients, presumably because clients prefer to be given a reliable estimate and for the contractor to be bound by the estimate rather than given a low price and ending up with overrun on cost.

However, management contracting clients placed a higher priority on minimizing time, variation (ie. flexibility to change their requirements during construction) and management (ie. more control for large and complex buildings) as opposed to traditional clients (see A,F&G). This can probably be explained by the fact that those clients who uses a management contract normally respond rapidly according to the industry's market and economy of the country e.g fast investment, occupation during construction, sectional completion etc. These factors undoubtedly call for greater speed and flexibility of the construction process. The results also correspond with the early view of Mintzberg (1979) who notes the importance for the organizational form to respond quickly to an environment which is becoming dynamic.

On the other hand, traditional clients placed a higher priority on cost and quality of building as compared with management clients (see criteria C, D & E). This means that in certain cases the traditional process is favoured because the work accounting for greater part of the cost can then be let in competition. This seems less easy with management contracting, although some views of the industry believe that competition for the work packages is possible, like George Neate (1985) and Woolf (1985). Under the argument of quality, Hillebrant (1985) stated "clients are aware that by using a management contract the architect may have less time to develop the design because he is under greater pressure from the contractor and sub-contractors. Thus the quality may suffer as a result."

The above results also seem to correspond closely with the management contractor perceptions of the factors which satisfy management contracting clients. Table 4.2 indicates a list of possible criteria and their resulting ranking reported by Naoum and Langford in a paper emanating from the initial research of this thesis (1984). It will be seen that the analyses sought to distinguish industrial and commercial work to assess if the characteristics of the client (as perceived by the management contractor) altered the desired criteria of success.

TABLE 4.2 - RANKING OF A SURVEY OF CLIENTS' CRITERIA (BY MC'S)

INDUSTRIAL CLIENTS	CLIENT CRITERIA ACCORDING TO THE MANAGEMENT CONTRACTORS	COMMERCIAL CLIENTS
1	A. RELIABILITY OF THE ESTIMATED TIME.	1
2	B. RELIABILITY OF THE ORIGINAL PRICE.	2
3	C. THE MINIMIZATION OF THE PRE-BUILD TIME.	7
4	D. MANAGEMENT CONTRACTORS INVOLVEMENT DURING THE DESIGN.	4
5	E. RELIABILITY OF ESTIMATED PRE-BUILD TIME.	3
6	F. FUNCTION OF BUILDING	8
7	G. FLEXIBILITY OF THE MC SYSTEM.	5
8	H. MAINTENANCE COST.	6
9	I. A HIGH DEGREE OF PERSONAL CONTROL OF SPECIAISED WORK.	9
10	J. CHEAPEST COST.	8
11	K. AESTHETIC	10

The survey in Table 4.2 indicates that management contractors believe that both industrial and commercial clients place special emphasis upon the reliability of construction time and the original price. Clients also regard as important the pre-construction time, MC involvement during the design stage, flexibility of the system and the maintenance cost.

Management contractors feel that other criteria as activities (I to K) have only a moderate impact upon clients when using MC.

Generally speaking, it appears that the weight each client gives to various priorities varies considerably at the time of construction and thus suitability of management or traditional contracting to meet these priorities will alter accordingly. For instance, the client in case study 30 had to build his factory in a busy area, and had emphasized the need for production while construction is in progress. Therefore he appointed a management contractor. On the other hand, a client who is having a factory built on new site, may in theory, not consider this as a priority.

SUB-HYPOTHESES 1.2 PROJECT PERFORMANCE IS A FUNCTION OF CLIENT CHARACTERISTICS.

Relationship between performance measures and client characteristics are expressed in term of null hypotheses and the correlation coefficients are given in Table 4.3. Definitions and classification of client type, experience and business are as described in chapter 3 (Research design and methodology).

TABLE 4.3 - CORRELATION BETWEEN PERFORMANCE MEASURES AND CLIENT

CLIENT CHARACTERISTICS	PERFORMANCE MEASURES: PRECONST TIME	BUILD TIME	TOTAL TIME	SPEED A / W	UNIT COST	TIME OVER	COST OVER
TYPE	.023	.243	.146	-.067	.275	.184	.206
EXPERIENCE	-.07	-.02	-.02	-.161	-.07	.098	.126
BUSINESS	-.06	.072	-.19	-.232	-.16	-.21	.207

CLIENT CHARACTERISTICS	PERFORMANCE MEASURES (CONTINUE): CLIENT SATISF. ON TIME	CLIENT SATISF. ON COST	CLIENT SATISF ON QUALITY
TYPE	-.128	-.089	.245
EXPERIENCE	.308 a	.360 b	.168
BUSINESS	.226	.246	-.148

THE STATISTICAL TABLES BY MURDOCH & BARNES (1979), TAKEN FROM FISHER AND YATES (1974), SHOW THE FOLLOWING LEVEL OF SIGNIFICANCE:

a SIGNIFICANT AT P < 0.025
b - SIGNIFICANT AT P < 0.050

Table 4.3 and the chi square test no. 4 and 5 in Appendix 10 show that experienced clients are more satisfied than others in respect to time and cost, possibly because they (experienced clients) may have a larger organization and tend to employ higher level of in-house professional expertise which lead to better control of time and cost. Moreover, experienced clients may be in a better position to judge project success than those moderately and inexperienced ones.

Although Table 4.3 indicates that building time, unit cost and the satisfaction on quality differ between public and private clients, these could not be analysed by the chi-square test because the category of publicly funded projects were very small in number (13) when compared with privately funded ones (56). However, a previous research by Rowlinson (1987) confirmed that public sector contracts are constructed more slowly than those for private sector clients (significant at 0.024 level) and that public sector clients are less satisfied with the quality of the building produced. Also, a research by Sidwell (1982) found that public clients were less satisfied on cost performance and their projects were more likely to overrun the budget than projects for privately funded clients.

The difference in building time performance between privately and publicly funded projects support the early analysis of 170 projects into management contracting, collected throughout the pilot study (see Table 4.4). 55% of the public premises were constructed longer than the average compared with only 19% private buildings when using a management contract. Average construction time, longer and shorter than the average are measured as described in chapter 3.

TABLE - 4.4 CLIENT TYPE AND CONSTRUCTION TIME UNDER A MC.

CLIENT TYPE	CONSTRUCTION TIME % OF PROJECTS		
	LONGER	AVERAGE	SHORTER
PRIVATE SECTOR	19	55	26
PUBLIC SECTOR	55	32	13

HIGHLY SIGNIFICANT @ 0.001 LEVEL (CHI SQUARE TEST NO. 6)

The Wood Report (1975) also stated that the traditional approach did not always obtained value for money when time and cost are considered together but time is often insufficiently weighted in decisions of many public-sector clients.

On the other hand, the private sector is often more concerned with construction time, particularly for industrial buildings, and may place more emphasis on certainty of cost than on lowest cost (Hillebrandt 1984). Thus he imposes more pressure on the contractor and on the professionals to ensure getting the building built within his estimated period.

2. THE DESIGNER CHARACTERISTICS

SUB-HYPOTHESIS 2.1 PROCUREMENT METHOD IS A FUNCTION OF PROFESSIONAL CHARACTERISTICS OF THE DESIGN ORGANIZATION.

Null hypothesis 2.1.1 The organization that design a management contract project and those design a traditional projects do not differ in their experience, as defined previously.

Null hypothesis 2.1.2 The degree of in-house expertise input, as measured in section 3.8, do not differ between management contracts and traditionally organized contracts.

Chi-square test no. 7 & 8 in Appendix 10 and the correlation coefficient supports null hypothesis 2.1.1 and 2.1.2 concluding that there is no difference in the characteristics of the professionals and both procurement methods. Similarly to the client characteristics, this suggests a more comprehensive survey with a larger sample needs to be conducted to tackling this area separately.

SUB-HYPOTHESIS 2.2 PROJECT PERFORMANCE IS A FUNCTION OF PROFESSIONAL CHARACTERISTICS OF THE DESIGN ORGANIZATION.

Performance measures and the design characteristics studied are expressed in terms of null hypothesis and Table 4.5 gives the correlation coefficients.

TABLE 4.5 - CORRELATION BETWEEN PROJECT PERFORMANCE AND DESIGNERS

DESIGNER CHARACTERISTICS	PERFORMANCE MEASURES						
	PRECONST TIME	BUILD TIME	TOTAL TIME	SPEED A / W	UNIT COST	TIME OVER	COST OVER
EXPERIENCE	-.306 c	.118	.241	.021	.109	-.345 b	-.348 b
SOURCE	-.005	-.09	-.020	.571 a	.159	.288	.243

IE. DESIGNED BY CLIENT'S IN HOUSE TEAM OR BY AN OUTSIDE DESIGNER.

DESIGNER CHARACTERISTICS	PERFORMANCE MEASURES (CONTINUE)		
	CLIENT SATISF. ON TIME	CLIENT SATISF. ON COST	CLIENT SATISF ON QUALITY
EXPERIENCE	.331 b	.273	.357 b
SOURCE (DITTO)	.455 a	.197	.198

a - SIGNIFICANT AT P < .01 b - SIGNIFICANT AT P < .025
c - SIGNIFICANT AT P < .05

The survev results showed that higher degree of designers experience resulted in corresponding higher performance in a number of performance measures. Pre-construction time, the higher certainty and higher degree of client satisfaction on time and quality were all found to be significant in relation to the designer experience (see also chi-square test no. 9.10.11.12 and 13 respectively). The survey results also shows that higher degree of in-house expertise input resulted in higher performance with respect to speed (chi-square test 14). The significant relationship between designers and project performance could possibly be explained by the following:-

a) A resourceful and knowledgable professional team will ensure that client's requirement brief is thorough, properly implemented and monitored.

b) Highly experienced professionals can keep the client constantly informed of the well-being and progress of his project; such that any deviation or problem can be dealt with quickly and effectively to achieve higher level of client satisfaction and a smooth going project.

3. THE PROJECT CHARACTERISTICS

SUB-HYPOTHESIS 3.1 PROCUREMENT METHOD IS A FUNCTION OF PROJECT CHARACTERISTICS.

Variables of project characteristics and both procurement methods were examined in terms of null hypothesis (of no difference) and results of the chi-square suggest that there is an association between size (in terms of cost only) and complexity for management and traditional projects. Management contracts are used on higher cost (chi-square 15). and projects with higher complexity and building rate dichotomised at $50,000 per week (chi-square 16 & 17). The analysis did not produce enough evidence to support the view that the gross floor area differs significantly between procurement methods.

SUB-HYPOTHESIS 3.2 PROJECT PERFORMANCE IS A FUNCTION OF PROJECT CHARACTERISTICS.

The correlation coefficients between performance measures and project characteristics are given in Table 4.6.

TABLE 4.6 - CORRELATION COEFFICIENT BETWEEN PROJECT PERFORMANCE AND PROJECT CHARACTERISTICS

PROJECT CHARACTERISTICS	PERFORMANCE MEASURES						
	PRECONST TIME	BUILD TIME	TOTAL TIME	SPEED A / W	UNIT COST	TIME OVER	COST OVER
BUILDING TYPE	-.252[d]	-.434[c]	-.408[c]	-.178	-.360[c]	.186	.082
NEW BUILD V OTHER	-.026	-.133	-.146	-.137	-.030	.353	.249
COMPLEXITY	.104	.305[c]	.114	-.184	.448[c]	.077	.123
BUILDING RATE	.184	.505[b]	.381[c]	.728[a]	.380[c]	.129	.081
GROSS FLOOR AREA	.612[b]	.679[b]	.744[a]	.848[a]	.069	.103	.161
BUILDING COST	.431[c]	.825[a]	.699[b]	.631[a]	.287[d]	.03	.229

PROJECT CHARACTERISTICS	PERFORMANCE MEASURE (CONTINUE)		
	CLIENT SATISF. ON TIME	CLIENT SATISF. ON COST	CLIENT SATISF QUALITY
BUILDING TYPE	.074	-.244	.158
NEW BUILD V OTHER	.260	.041	.223
COMPLEXITY	.123	-.179	.060
BUILDING RATE	-.194	.145	.046
GROSS FLOOR AREA	-.054	.078	-.026
BUILDING COST	-.123	.133	-.004

a - SIGNIFICANT AT P < .0.01 b - SIGNIFICANT AT P < .010
c - SIGNIFICANT AT P < .025 d - SIGNIFICANT AT P < .050

Table 4.6 shows that significant correlation exists between building type, project size in terms of G.F.A and cost, and pre-construction time, build time, total time and speed of construction. Commercial buildings and Projects that have larger area and higher cost, took longer time to build and produced higher rate of work on site, measured in SQM of gross floor area / WEEK.

Surprisingly, build time and unit cost were the only significant figures found in relation with project complexity (see chi-square 18 and 19) indicating that increasing complexity does not necessarily result in low project performance and in particular to overruns and the level of client satisfaction. Similar results were found with relationship between building rate and performance measures.

The results that overruns and client satisfaction were not correlated with other project characteristics may suggest that the project can be successful and the client can be satisfied irrespective to project characteristics provided the proper procurement method was selected to the project.

4. CONTRACT PROCEDURE

SUB-HYPOTHESIS 4.1 PROCUREMENT METHOD IS A FUNCTION OF CONTRACT PROCEDURE.

Null hypothesis 4.1.1 The process for selecting a management contractor do not differ from selecting a traditional main contractor.

The two main variables of contract procedure were selecting the contractor either by competition or by negotiated tendering process. Results of chi-square no.10 did not show difference in procedure between procurement methods, but when competitive tendering were further separated into open and selected procedure. a management contractor tend to be appointed more by a selected tender competition and the traditional main contractor was more selected by open tendering. This states the obvious since the number of contractors offering a MC service are limited in number and hence. an open tender is most unlikely under a MC.

SUB-HYPOTHESIS 4.2 PROJECT PERFORMANCE IS A FUNCTION OF CONTRACT. PROCEDURE.

Table 4. 7 give results of correlation between performance measures and procedure adopted.

TABLE 4.7 - PROJECT PERFORMANCE AND CONTRACT PROCEDURE

PROCEDURE ADOPTED	PERFORMANCE MEASURES						
	PRECONST TIME	BUILD TIME	TOTAL TIME	SPEED A /W	UNIT COST	TIME OVER	COST OVER
COMPETITION & NEGOTIATION	-.369 [a]	-.116	-.258	.059	-.246	-.116	-.298

PROCEDURE ADOPTED	PERFORMANCE MEASURE (CONTINUE)		
	CLIENT SATIS. ON TIME	CLIENT SATISF. ON COST	CLIENT SATISF. ON QUALITY
COMPET. & NEGOT.	-.294	-.335 [b]	-.037

a - SIGNIFICANT AT P < .025 b - SIGNIFICANT AT P < .050

Table 4.7 show that a number of correlations exist between contract procedure and project performance, but when the chi-square test was applied, pre-construction time and client satisfaction on cost were the only variables found to be significant. Nevertheless, there are two other interesting results, though not statisticaly proven, observed from the case studies, these are:-

1. Good cost performance was achieved when projects followed a path of selective competition and using the firm price tender with full bill of quantities e.g., traditional case study no. 24,26,28 and 29.

2. It was also observed in traditional case study no 2 (highly successful on cost and on time) that the plan of work and construction contract were based on the American Institute of

Architect's (AIA) standard procedures. The AIA form is that the contractor is in possession of all the consultants' information and shop drawings at the tender stage. In this case firm price tender obtained from selected tenderers was the procedure adopted and the tender based on bill measured in accordance with the international principles of measurement.

5. PROCUREMENT METHOD AND PROJECT PERFORMANCE

SUB-HYPOTHESIS 5.1 PROJECT PERFORMANCE IS A FUNCTION OF PROCUREMENT METHOD ADOPTED.

Within sub-hypothesis 5.1 relating performance measures and both procurement methods. there are 10 null hypothesis linking the variables together. all of which are examined in full details.

1. PRE-CONSTRUCTION TIME

Null hypothesis 5.1.1 There is no difference in pre-construction time between management and traditional contracts.

The mean pre-construction time for both systems is illustrated in Table 4.8 and shows that management contracts had less pre-construction periods than traditional ones. To test the significance difference. the pre-construction time for the 69 csse studies was examined and Table 4.9 show that 79% of the management contracts had short pre-construction time compared with 38% for traditional contracts. Long, average and short times were measured as described in section 3.6 in Chapter 3. About 50% of the traditional case studies projects needed one year of detailed design and for 70% of management contracts the projects had pre-construction period of less than six months. The Chi Square test and correlation coefficient show that the difference in pre-construction time performance was statistically significant (see Chi Square Test No.21 in Appendix 10). We therefore, can reject null hypothesis 5.1.1 and conclude that management projects are remarkably quicker during the pre-construction stage than traditional projects.

TABLE 4.8 - PROCUREMENT AND MEAN PRE-CONSTRUCTION TIME (WEEKS)

CONTRACT VALUE	MANAGEMENT CONTRACTS			TRADITIONAL CONTRACTS		
	X	SD.	N	X	SD.	N
LESS THAN £2.0M	11	4.3	5	18	8.0	7
£2.0 - £5.0M	14	6.9	9	55	29.6	5
OVER £5.0M	25	18.8	19	66	31.3	8

TABLE 4.9 - PROCUREMENT METHOD AND PERCENTAGE OF PROJECTS SHORTER, LONGER OR WITHIN AVERAGE PRE-CONSTRUCTION TIME, MEASURED AS DESCRIBED IN CHAPTER 3 SECTION 3.6

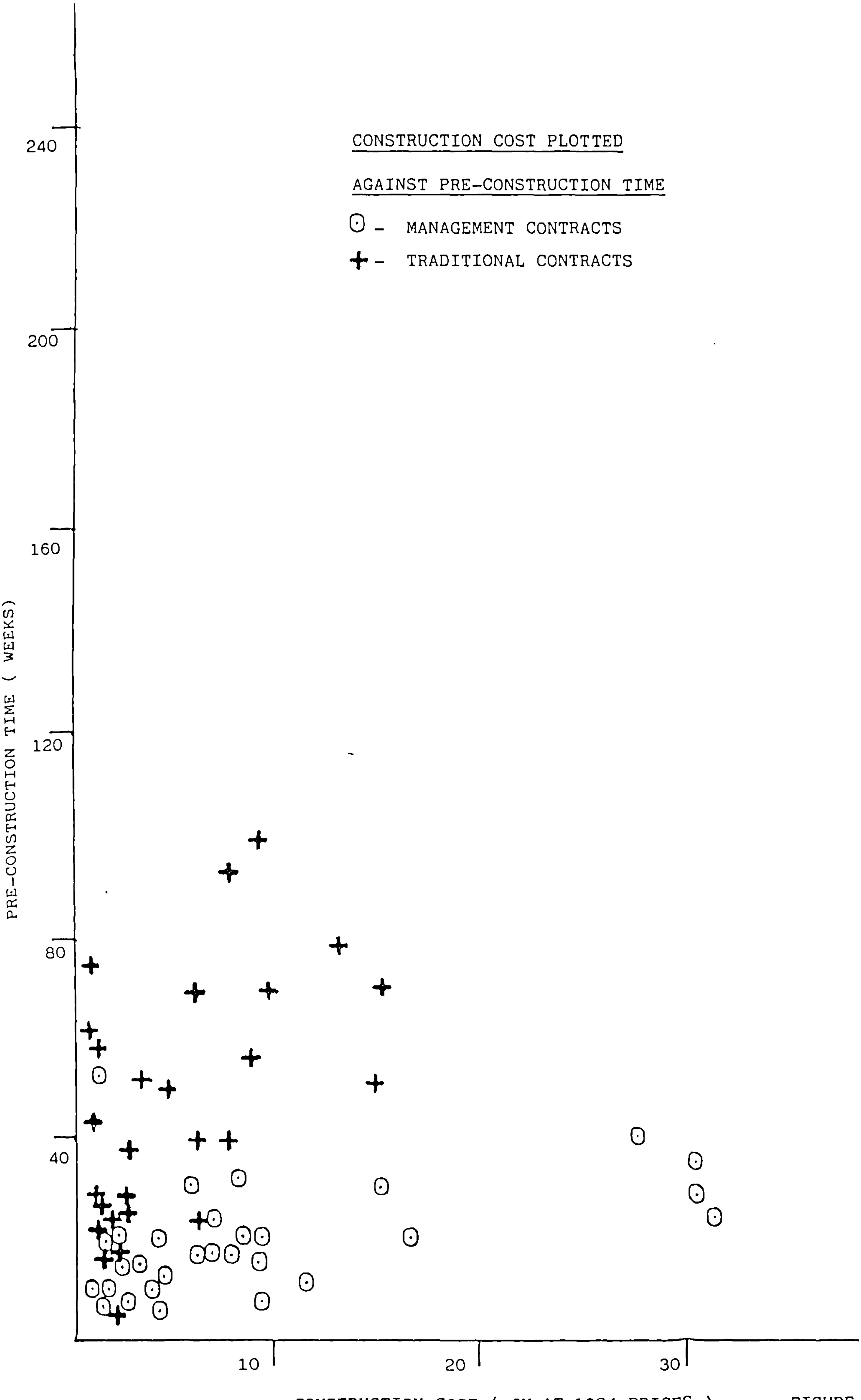
PRE-CONSTRUCTION TIME	MANAGEMENT CONTRACTS (% OF NUMBER OF PROJECTS)	TRADITIONAL CONTRACTS
LONG	9	33
AVERAGE	12	29
SHORT	79	38
TOTALS	100	100

SIGNIFICANT @ 0.02 LEVEL (CHI SQUARE TEST NO. 21 - APPENDIX 10)
(CORRELATION COEFFICIENT = -.405)

The graph in Figure 4.1 show another interesting feature in that within the management contracting sample, seven projects are of a considerably higher cost than any of the comparable traditional projects, yet these projects had still pre-construction time shorter than half of traditional projects contained within the range of $10 million (case study 4, 10, 11, 20, 24, 28 and 35). This could be because of the greater complexities of the design and procedures involved in the traditional contracts, to get the building designed according to a particular quality standard.

The nature of the project had a substantial bearing on the systems used for each client. In the traditional contracts, it is more likely for the design characteristics to be more important than for management contracting projects (as noted by the ranking criteria in Table 4.1). In this case the larger the traditional project is, the more important for the client to have a wider choice of designers, whether architects or engineers, and sometimes need to resort to design competition. On the other hand, a management contracting project has, presumably, a greater complexity in the construction process and the contractor's contribution to the design is greater to obtaining flexibility and early start on site than obtaining a sophisticated design.

This finding regarding early start of construction with management contracting stresses the views of the clients that were discussed in Chapter 2 and indeed with the findings of previous surveys. The pre-construction time has been investigated on a number of occasions, notably in the Sidwell paper (1983) and


CONSTRUCTION COST PLOTTED
AGAINST PRE-CONSTRUCTION TIME
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
PRE-CONSTRUCTION TIME (WEEKS)
240
200
160
120
80
40
10
20
30
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE

the Faster Building For Industry (1984). Sidwell studied the nature of the building process and found that a management contract saved nine months when compared with a similar traditional contract because of separation of the management element and phased design.

In the Faster Building For Industry report, the overall process time was examined. one in ten of the case studies projects work started on site within 5 months of the decision to build and for the separate stages the faster 10% of times were less than 2 months.

To ascertain whether pre-construction time can affect or could had been influenced by other variables, the relationship between both procurement methods and other key variables were investigated and the significant ones are filtered in Table 4.10 Key variables are such as building type, client's experience and project success. The investigation showed that pre-construction time is highly correlated with similar variables to both systems, except for the unit cost. This could be because management contracting clients may find the risk of having an expensive building is a sufficient trade-off to complete the project earlier. On the other hand traditional clients are more concerned to obtain a cheap building and have less opportunity to reduce the pre-construction time.

TABLE 4.10 - SIGNIFICANT CORRELATION BETWEEN PRE-CONSTRUCTION TIME AND OTHER KEY VARIABLES

PROCUREMENT METHOD	PRECONST TYPE	BUILD TIME	TOTAL TIME	BUILD COST	PROCE -DURE	COST/ SQM
MANAGEMENT CONTRACTING	b -.421	a .786	a .853	a .640	b .443	c -.371
TRADITIONAL CONTRACTING	b -.473	a .676	a .943	a .804	d .395	.133

THE STATISTIC TABLE BY MURDOCH AND BARNES (1979) SHOWED:-

a - SIGNIFICANT AT P < .001 b - SIGNIFICANT AT P < .01
c - SIGNIFICANT AT P < .020 d - SIGNIFICANT AT P < .05

2. CONSTRUCTION TIME

Null hypothesis 5.1.2 There is no difference in construction time between management and traditional contracts.

Construction time was calculated as the number of weeks from starting on site to practical completion of the project. Unsurprisingly, Figure 4.2 show that construction time for both management and traditional contracts are scattered because construction time depends on other parameters, such as, building type, size, complexity etc. However, Table 4.11 categorically show a detailed breakdown for the mean construction time of three contract values.

The association is tested in Table 4.12 and the results was found just significant at a conventional level P=0.05 (See Chi-square no.22 in Appendix 10). Therefore it can be concluded that this

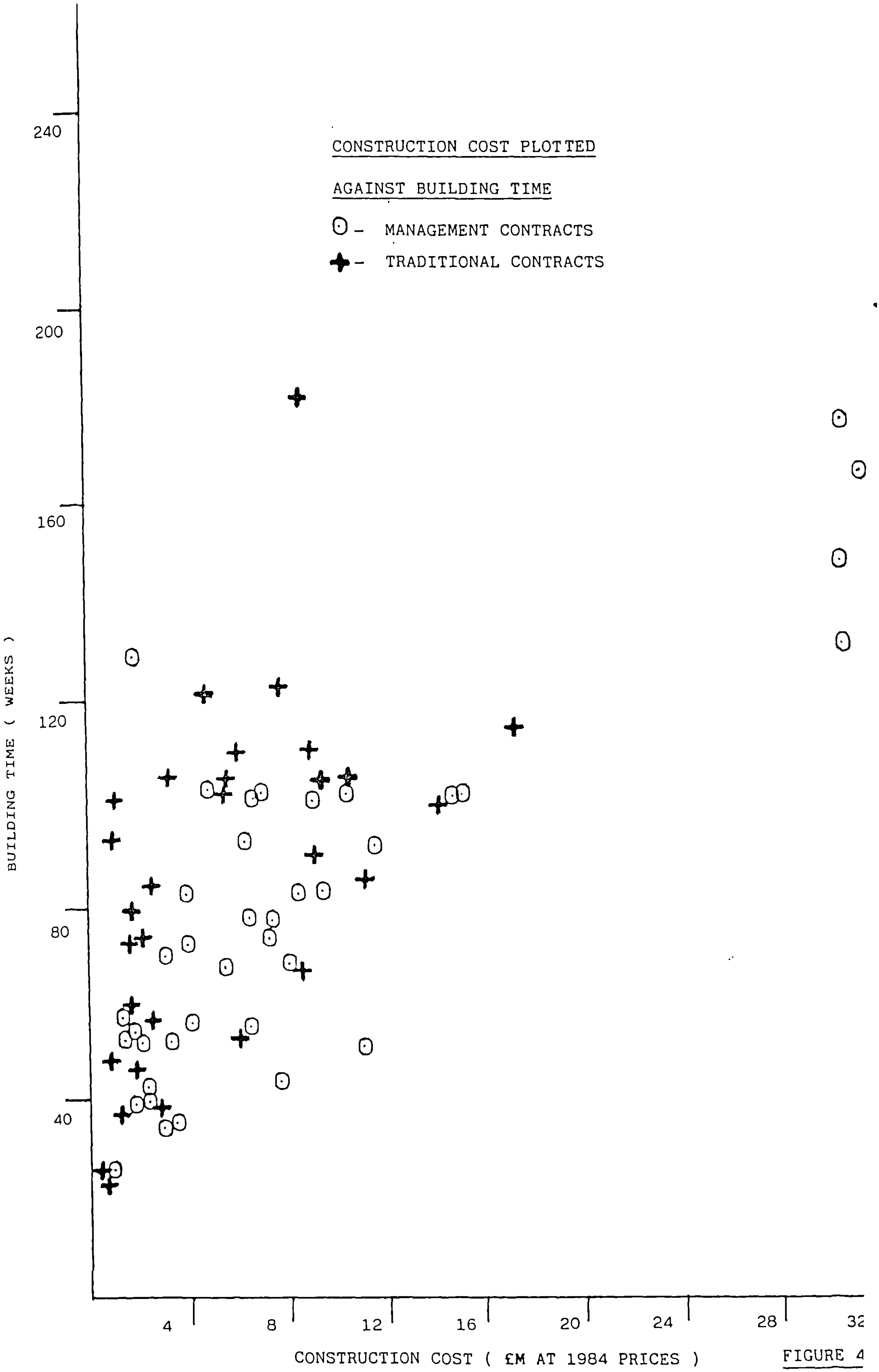

CONSTRUCTION COST PLOTTED
AGAINST BUILDING TIME
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
BUILDING TIME (WEEKS)
240
200
160
120
80
40
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4

research produced a slight evidence that the construction duration is shorter under a management contract than it is under the traditional ones.

TABLE 4.11 - PROCUREMENT METHOD AND MEAN CONSTRUCTION TIME (WEEKS)

CONTRACT VALUE	MANAGEMENT CONTRACTS			TRADITIONAL CONTRACTS		
	X	SD.	N	X	SD.	N
LESS THAN £2.0M	41	12.5	6	44	11	14
£2.0M - £5.0M	52	14.8	10	63	29.6	5
£5.0M - £20.0M	88	20.0	13	101	37.3	9

NOTE: FIVE PROJECTS WERE EXTREMELY LARGE SO THEY HAD TO BE ISOLATED FROM THE ANALYSIS

TABLE 4.12 - PROCUREMENT METHOD AND PERCENTAGE OF PROJECTS SHORTER. LONGER. OR WITHIN AVERAGE CONSTUCTION TIME. MEASURED AS DESCRIBED IN CHAPTER 3 SECTION 3.6.2 (A)

PERFORMANCE	MANAGEMENT CONTRACTS	TRADITIONAL CONTRACTS
	(% OF NUMBER OF PROJECTS)	
SHORT TIME	37	14
AVERAGE	44	54
LONG TIME	16	32
TOTALS	100	100

JUST SIGNIFICANT @ 0.05 LEVEL (CHI SQUARE 22 IN APPENDIX 10)

To a certain extent, the above results support the views of the clients and sub-contractors who participated in this research. They claimed that a management contract does not always result in shorter construction time. it depends on the type of construction and the level of control the client wishes to exercise in a given project.

The reason for shorter construction time could be attributed to the following:-

1. Under a management contract the building may get the benefit of achieving a higher level of standarization due to the involvement of the contractors at the design stage and can be more effective for larger project.
2. Difference in construction time can be due to the nature of the project i.e the cases are not all strictly comparable, some of them being manufacturing and warehousing facilities while others are office and commercial developments (See also Table 4. correlating project characteristics and build time).

Under the variable construction time, an interesting results was also found significant when analysing the 170 management contracts collected throughout the pilot study. Table 4.13 show that under a management contract. a greater proportion of projects representing refurbishment projects were built shorter compared to new type of construction for similar cost distribution.

TABLE 4.13 CONSTRUCTION TYPE AND CONSTRUCTION TIME UNDER A MC.

CONSTRUCTION TYPE	CONSTRUCTION TIME % OF PROJECTS		
	LONGER	AVERAGE	SHORTER
NEW CONSTRUCTION	27	56	16
OTHER THAN NEW	12	35	53

SIGNIFICANT AT 0.01 LEVEL (CHI-SQUARE TEST NO. 23)

The good performance of management contracting for refurbish jobs was also supported by the management contractors interviewed in that the system can be used for projects that cannot be readily handled within the orbit of the measured work concept.

A refurbish job, as described by the management contractors. consist of a number of work packages need to be re-build or added to an existing building and normally these packages are not properly described. Consequently the work to be carried out by the sub-contractors will not be properly described either. If one examines the characteristics of a management contract which tackles the job by sub-contracting all the work and allow flexibility to design during construction, each element of the refurbish work can be efficiently designed to the client's need concurrent with construction. This benefit can be more utilized when the refurbish job is large and complex because it consist of a higher number of packages that need to be co-ordinated and properly controlled.

In an interview with the client of case study no. 6. the in erviewee stated that, "with the amount of changes our organization made for the last 20m refurbish job it would have been a disaster if we had used the traditional form of contract instead of management contracting'.

In contrast. the client of case study no.2 (a national and international banker). undertake mainly refurbishment work of existing premises costing between £0.1 million and £1.2 million.

The organization did not find management contracting as the best method for the majority of their work mainly because their views that management contracting is definitely not suitable for small refurbishment jobs. In their case. the premises must be occupied while construction is in progress. Therefore, with little packages the job would be too 'messy' ie. a great deal of interaction between the sub-contractors.

3. OVERALL PROJECT TIME

Null hypothesis 5.1.3 — There is no difference in total time between management and traditional projects.

Total time is the number of weeks from start of design to completion of the project (see Figure 4.3). The mean total time are shown in Table 4.14 and Table 4.15 gives the percentage of projects in the three performance levels. The results are similar to pre-construction time, in that traditional projects took longer total time than the management contracting ones. This may suggest that the difference between the overall project time of both systems is marked on the design time more than the build time. When the Chi-Square test was applied the difference in total time performance was found highly significant and the Null hypothesis can be rejected concluding that management contracts led to shorter overall project time than traditional ones (see Chi Square no.24 in Appendix 10).

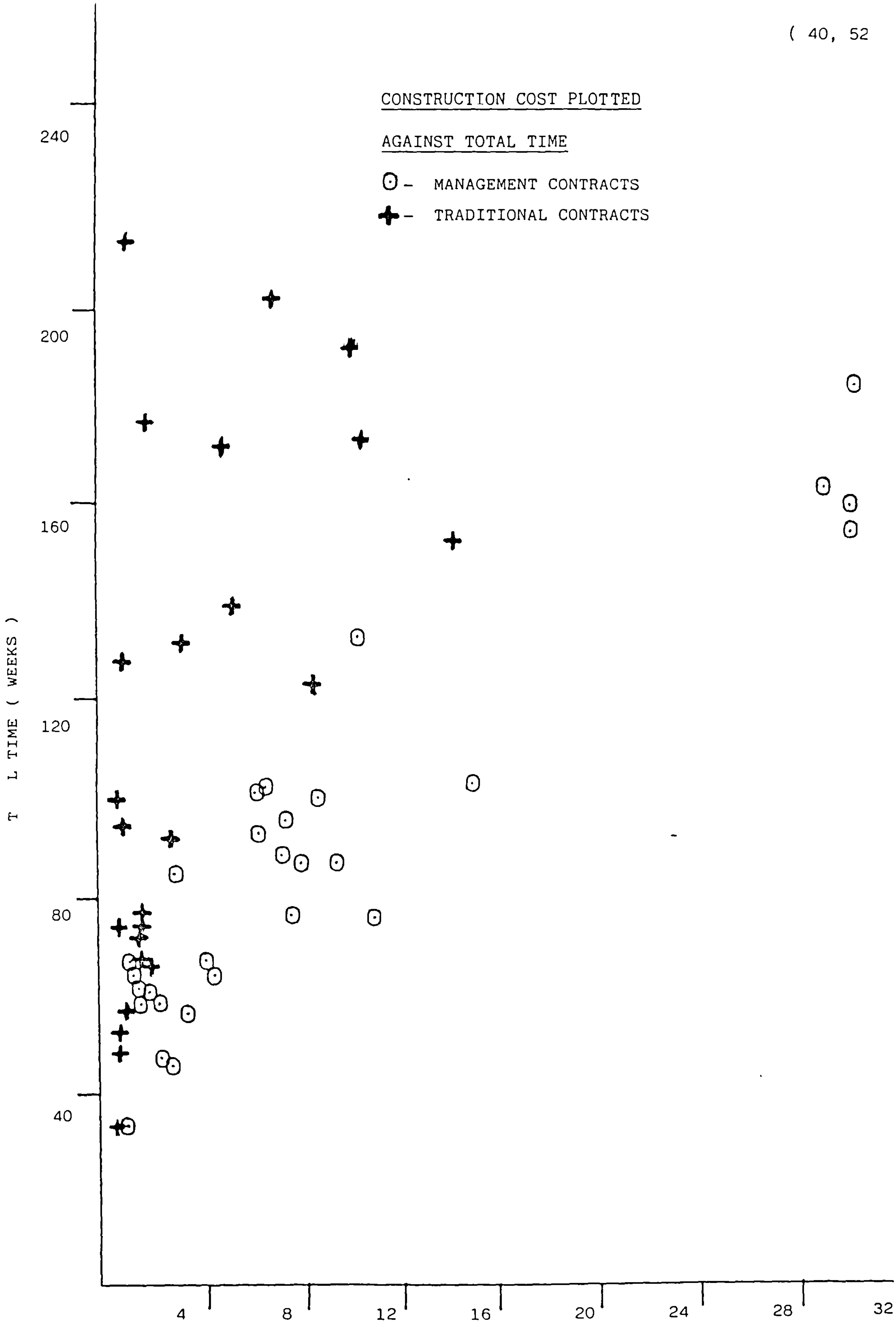

(40, 52
CONSTRUCTION COST PLOTTED
AGAINST TOTAL TIME
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
T L TIME (WEEKS)
240
200
160
120
80
40
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4.3

TABLE 4.14 - PROCUREMENT METHOD AND MEAN TOTAL PROJECT TIME (WEEKS)

CONTRACT VALUE	MANAGEMENT CONTRACTS			TRADITIONAL CONTRACTS		
	X	SD.	N	X	SD.	N
LESS THAN £2.0M	73	38.2	6	75	23.5	14
£2.0 £5.0M	80	9.6	7	157	59.6	5
OVER £5.0M	107	23.4	13	163	54.0	9

TABLE 4.15 - PROCUREMENT METHOD AND PERCENTAGE OF PROJECTS SHORTER, LONGER OR WITHIN AVERAGE TOTAL TIME, MEASURED AS DESCRIBED IN CHAPTER 3 SECTION 3.6

PERFORMANCE	MANAGEMENT CONTRACTS (% OF NUMBER OF PROJECTS)	TRADITIONAL CONTRACTS
SHORT TIME	22	10
AVERAGE	63	50
LONG TIME	15	40

SIGNIFICANT @ 0.025 LEVEL (CHI SQUARE 24 IN APPENDIX 10)

The causes, apart from the size of the project and complexities of the procedures to be adopted, for long pre-construction time can be attributed to the following:-

1. There are factors outside the influence of the team like statutory approvals, grants, and to some extent finance and land purchase.

2. The client's expectations determine of how long pre-construction will take and consequently the time he allows and prepared to accept. If the actual period corresponds with that planned, then that at least gives him certainty. On the other

hand there are cases where uncertainty plays a major role for long pre-construction time. for example as to whether planning permission or government assistance will be obtained, whether finance will be available and at what price. The greater these uncertainties the more likelihood that the client may postpone commencing other activities which lead to longer pre-construction time.

3. There will be long pre-construction time because of inadequate performance by some members of the building team including the client. for example. delay in finalizing the brief. in acquiring the site or unacceptable sketch designs. The study by CIRIA (1983) found that there were many instances of unduly long tender adjudication periods or schemes being shelved after tendering or re-tendering. These have caused a delay in starting on site.

However the above explanations are typical and does not mean that when a client is in a hurry for a project he cannot obtain his building quickly. He can do this, as the case in a management contract. by undertaking many of the activities simultaneously. A management contract utilises the technique of fast tracking. This technique allow the design and construction to run concurrently to facilitate an earlier start to construction. The technique of fast tracking may however have a detrimental effect on the finished product in terms of inadequate design and pre-planning. Null hypothesis 4.1.10 will discuss this point in further details.

The results in null hypothesis 5.1.2 into construction time take into account only the cost of the project and did not consider size in terms of gross floor area. Appendix 10 contain details of the size of each project in square metres and the speed of construction in square metre/week. A matrix of speed / unit cost was constructed as shown in Table 4.16.

4. SPEED Of CONSTRUCTION

Null hypothesis 5.1.4 There is no difference in rate of work on site between management and traditional projects, defined by gross floor area constructed in SQM/WEEK.

TABLE 4.16 PROJECT PERFORMANCE - COST AND SPEED

		SPEED (AREA/WEEK)		
		HIGH	MEDIUM	LOW
	LOW	MC13.14,22,26,27 MC28.33.34.36 TR 2.4,8.13,22. TR 30	MC24,31,32,35 TR 9.10.12.17. TR 18,19.21,23 TR 25.26,28	MC10 TR 1,11.20 TR 29
COST PER SQUARE METER	MEDIUM	MC4.5.9	MC1.7.8.11.15. MC19,39 - T24	MC21 T15
	HIGH	MC37	MC2,3,12,15.17 MC17.18.23,25. MC30 TR 6.7	MC6,20,29, MC38, TR 3,5,14, TR 16,27

KEY

COST	SPEED
A - FOR LESS THAN £2M	
LOW = LESS THAN £500 PER SQM	LOW = LESS THAN 50 SQM/WEEK
MED = £500 - 650 PER SQM	MED = 50 - 100 SQM/WEEK
HIGH= MORE THAN £650 PER SQM	HIGH= MORE THAN 110 SQM/WEEK
B - FOR £2M - £5M	
LOW = LESS THAN £650 PER SQM	LOW = LESS THAN 60 SQM/WEEK
MED = £650 - 850 PER SQM	MED = 60 - 130 SQM/WEEK
HIGH= MORE THAN £850 PER SQM	HIGH= MORE THAN 130 SQM/WEEK
C - FOR OVER £5M	
LOW = LESS THAN £750 PER SQM	LOW = LESS THAN 100 SQM/WEEK
MED = £750 - 1000 PER SQM	MED = 100 - 190 SQM/WEEK
HIGH= MORE THAN £1000 PER SQM	HIGH= MORE THAN 190 SQM/WEEK

Results from Table 4.16 show higher proportion of management contracts buildings (84%) were constructed faster or with medium speed during construction compared with those of traditional contracts (66%) (see the graph in Figure 4.4). The difference in speed performance was statistically tested and the result was significant at 0.05 level only (see Chi Square Test NO. 25).

Those projects which were faster than the average were then analysed to identify any common factors leading to this situation. The following could be observed :-

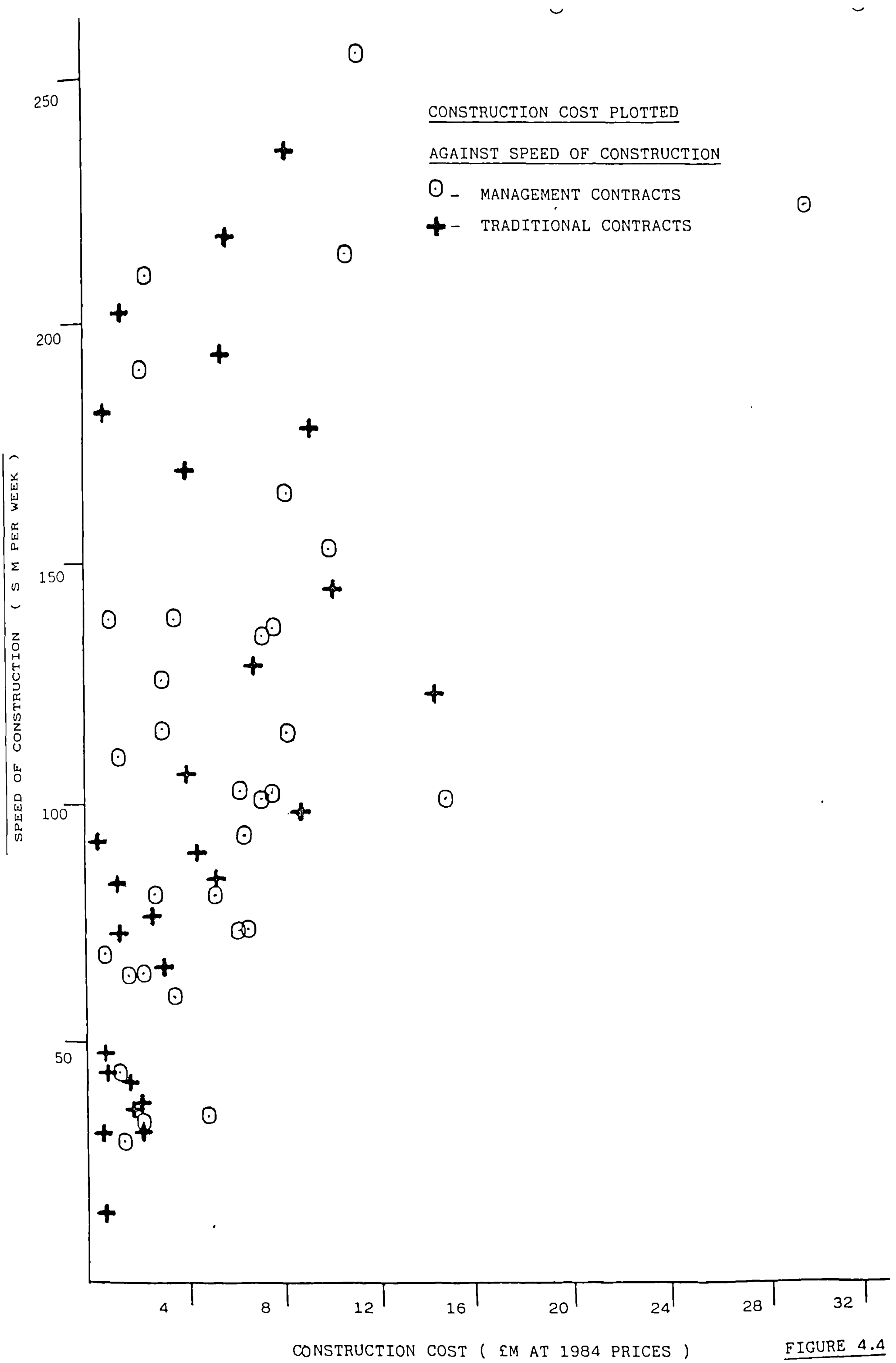

CONSTRUCTION COST PLOTTED
AGAINST SPEED OF CONSTRUCTION
- MANAGEMENT CONTRACTS
- TRADITIONAL CONTRACTS
SPEED OF CONSTRUCTION (S M PER WEEK)
250
200
150
100
50
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4.4

A. Faster construction was achieved when the client made a substantial investment appointing a project manager / controller acting on his behalf on site (MC9,23, 24,39, T13,21 and26).

B. Fast construction techniques developed from the management contractor's input were valuable in saving time. For example, MC26 cost £10.0 million and took 50 weeks to build used a steel frame superstructure technique. A sizeable overlaps between design and construction were achieved and all 765 tons of steel were erected in only eight weeks.

Other factors may also contribute to speedy projects. namely:

1. the knowledge and experience of the client together with his ability to make decisions quickly (Nahapiet 1985):

2. under the traditional arrangement the architect is given enough time to prepare a detailed brief which lead to faster project, by contrast, under management contracting the architect establish flexible arrangements permitting quick responses to changes;

3. the good working relationships between the main parties to the contract:

4. the simplification and standarisation of construction features.

6. COST OF CONSTRUCTION

Null hypothesis 5.1.5 There is no difference in unit cost between management and traditional projects. defined by building cost over sqm of gross floor area.

The spread of cost performance across the cases is relatively wide, and a large proportion of the varience can be explained by major differences in the nature of the buildings and the level of quality standard that has been specified by the client at the outset of the project.

Table 4.17 gives the mean unit cost of the 69 case studies for management and traditional contracts, segmented into three size projects. The analysis reveal that the mean cost of traditional contracts is lower than of management contracts. but this difference seem to be marginally marked on small size projects rather than medium and large ones. When analysing the data further. it was apparent that 70% of the small traditional contract cases were industrial buildings which . presumably, would have less quality finishing than commercial ones.

The association was statistically tested and it was found that the difference in unit cost between management and traditional contracts was significant at 0.05 when dischotomised at (L&M) VS High unit cost (see Chi-Square Test No.26 in Appendix 10).

TABLE - 4.17 PROCUREMENT METHOD AND AVERAGE UNIT COST

CONTRACT VALUE	MANAGEMENT CONTRACTS			TRADITIONAL CONTRACTS		
	X	SD	N	X	SD	N
LESS THAN £2M	498	381	6	380	196	15
£2M - £5M	616	356	10	520	220	5
OVER £5M	784	379	14	650	286	9

The scattered diagram in Figure 4.5 show the potentially interesting feature. that in the management contracting sample, large buildings have relatively cheaper cost/sqm than smaller buildings. This could be because management contracting can achieve economies of scale and benefits from the repetition inherent in large buildings. However. this observation is too crude to allow conclusion to be drawn. but the possibility of economies of scale in construction could be examined in any subsequent study.

Of the reasons offered by the clients as to why management contracting could be more expensive than a competitive traditional tendering contract. the most plausible ones were:-

1. There is a tendency for greater involvement of the professional consultants. "The architect and the Q.S. get involved more than they should in some work which is the management contractor's job". This overlapping responsibility can reflect in higher fees being paid and can be very noticable on smaller projects.

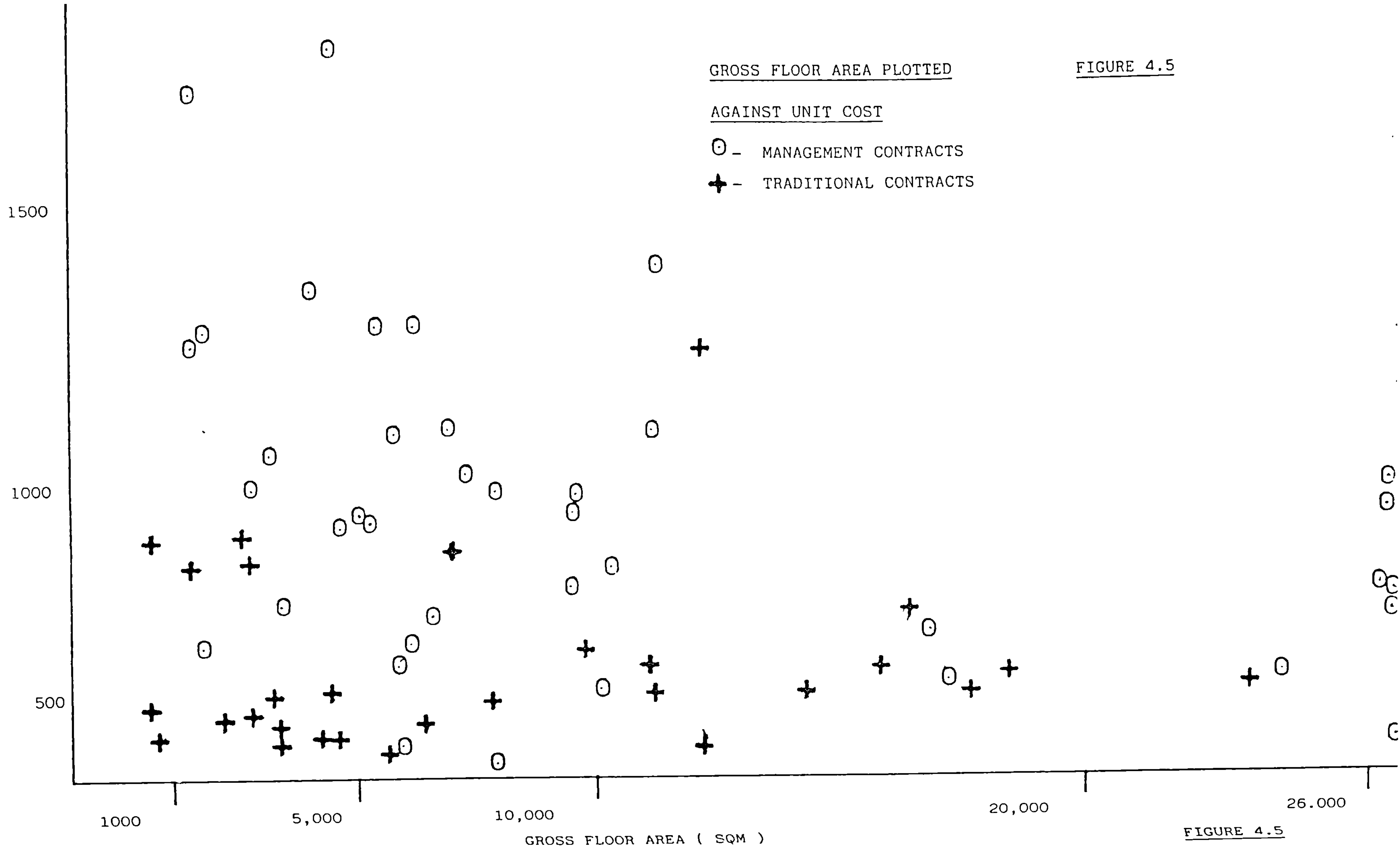

GROSS FLOOR AREA PLOTTED
AGAINST UNIT COST
FIGURE 4.5
⊙ - MANAGEMENT CONTRACTS
+ - TRADITIONAL CONTRACTS
1500
1000
500
1000
5,000
10,000
20,000
26.000
GROSS FLOOR AREA (SQM)

FIGURE 4.5

2. Most of the staff members have long been involved with the traditional system and their roles are frequently transposed when management contracting is adopted.

3. In an interview with a banker client (case study no.2) the organization conducted an internal cost analysis which found. that under a management contract the client pays more than the traditional system partly because of a large competitive tendering situation at the outset of the project and partly because of higher costs of preliminaries and paper work. Once again this extra cost can be more influential on small jobs and proportionally less on larger projects.

In addition to the above explanation , it must be stressed however, that this could be very much attributed to the fact that the management case studies had larger costs compared to the area constructed , were more complex and had higher building rate than traditional contracts (see analysis of sub hypothesis 3.1 and management contracting case studies 3,6,12,20.21.29.30.37and 38 in Appendix 7).

Another study by the DHSS has been conducted to compare the performance of management and traditional contracts based on three projects. The study team has concluded that:

"there is no type of expenditure which exists in the management contracting arrangement which does not exist conventionally. Those types of expenditure which are likely to be larger in management contracting are outweighed by the reduction in cost and risk which can be achieved if the management contractor performs well".

Although the two management contracts of the DHSS produced higher final cost, the study team did not conclude that this is attributable to the use of management contracts.

The DHSS study has enabled the factors to be isolated which are likely to increase or decrease costs and enable specific answers to be worked out when applying a future project. The cost outcome on any particular project depend upon the particular incidences of these factors and upon the particular client's view of the risk/cost trade-off. The factors isolated include:-

1. A likelihood that there will be more man-hours applied to site management using a management contract than a conventional. In practice there is no intrinsic reason why this should occur with respect to work that is normally subcontracted by conventional main contractors.

2. The studied projects gave no evidence of significant duplication of management as a direct result of the use of a management contract. Significantly more management time expended by both management contractor and sub-contractors than was usual, but was mainly attributable to the efforts made to recover construction programme delay. It is the study team's view that the additional management effort which may be expended because of the use of a management contract is unlikely to be harmful to the client's interest.

TIME AND COST OVERRUNS

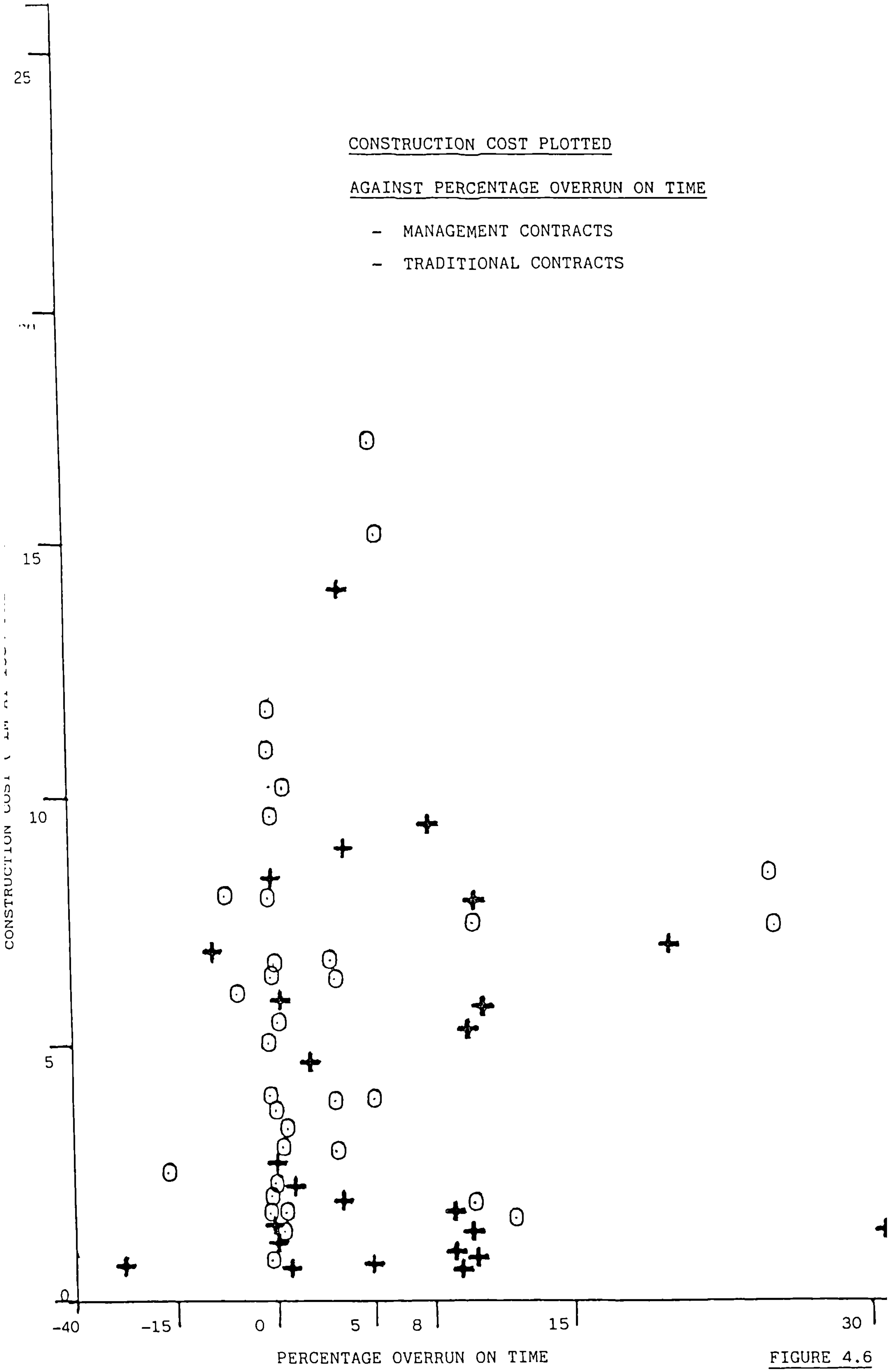
6. TIME OVERRUN

Null hypothesis 5.1.6 There is no difference in the level of percentage time overrun between management and traditional contracts. defined by the ratio between the actual building time and that estimated at the outset of the project.

7. COST OVERRUN

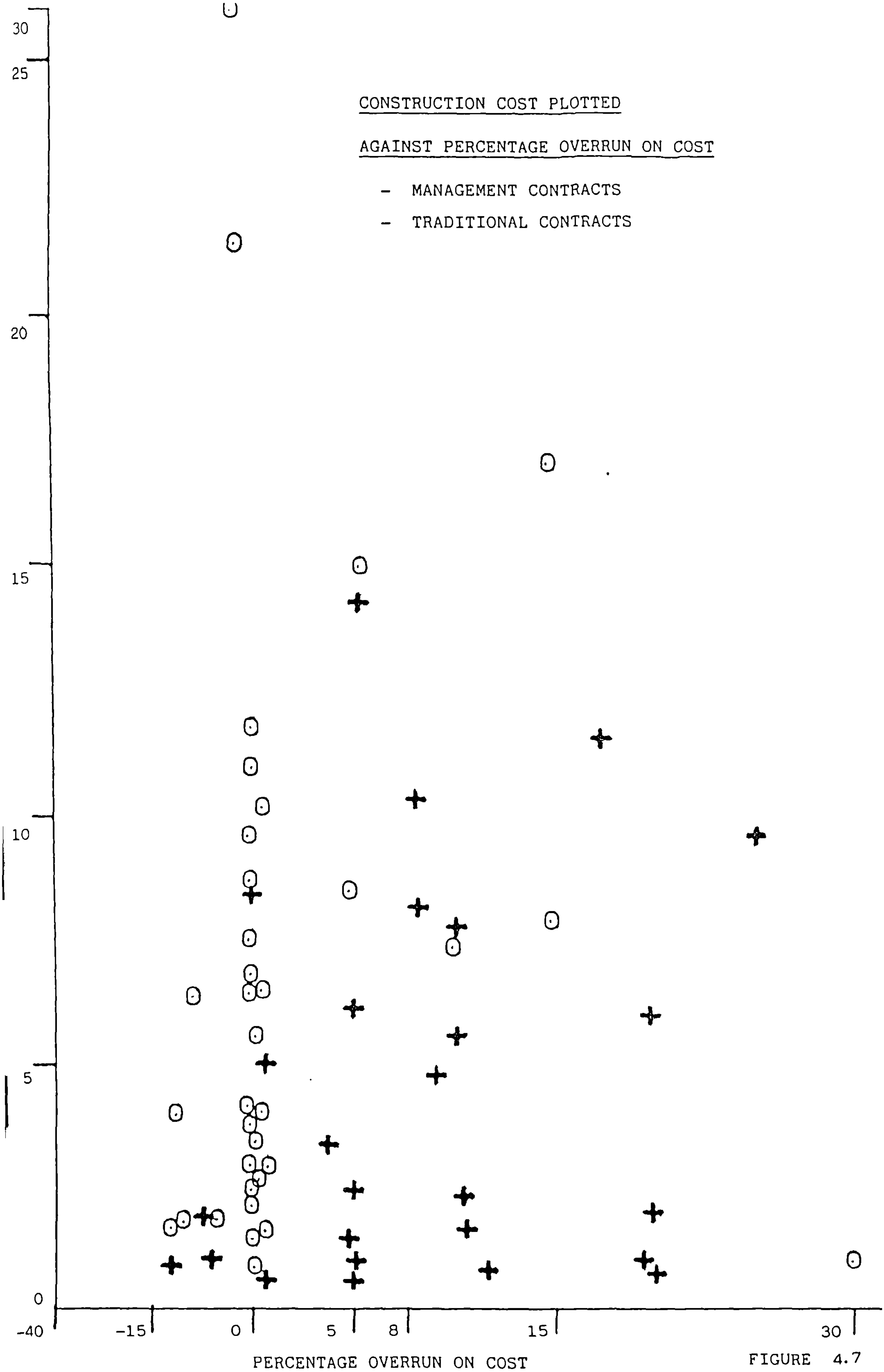
Null hypothesis 5.1.7 There is no difference in the level of percentage cost overrun between management and traditional contracts. defined by the ratio between the actual final cost and that budgeted at the outset of the project.

The distribution of the data for percentage time and cost overrun can be seen from the graph in Figures 4.6 and 4.7 which indicates more likelihood for traditional contracts to overrun on time and on cost than management contracts (see also Tables 4.19 and 4.20). Table 4.18 show that projects procured based on traditional contract registered an average time overrun of a mere 8% compared to an average of 5% using management contracting.



25
CONSTRUCTION COST PLOTTED
AGAINST PERCENTAGE OVERRUN ON TIME
– MANAGEMENT CONTRACTS
– TRADITIONAL CONTRACTS
15
10
5
0
-40
-15
0
5
8
15
30
PERCENTAGE OVERRUN ON TIME

FIGURE 4.6



CONSTRUCTION COST PLOTTED
AGAINST PERCENTAGE OVERRUN ON COST
– MANAGEMENT CONTRACTS
– TRADITIONAL CONTRACTS
30
25
20
15
10
5
0
-40
-15
0
5
8
15
30
PERCENTAGE OVERRUN ON COST

FIGURE 4.7

However, the association for time overrun was tested and it was found that the difference was significant at a conventional level P=0.05 (see Chi-Square Test No.27). Categories for Higher overruns and within time or cost are as described in chapter 3 section 3.6.

Similarly, management contracts outperformed the traditional method in respect of cost overrun and the difference was highly significant (Chi Square Test No. 28). The former averaged a cost overrun of only 3% compared to 7% recorded by traditional method. Therefore, it could be concluded that management contracts are more reliable on time and on cost than traditional contracts.

TABLE 4.18 - TIME AND COST OVERRUNS

	MANAGEMENT CONTRACTS	TRADITIONAL CONTRACTS
TIME OVERRUN	5%	8%
COST OVERRUN	3%	7%

TABLE 4.19 - PROCUREMENT METHOD AND TIME OVERRUN

TIME OVERRUN	% MANAGEMENT CONTRACTS	% TRADITIONAL CONTRACTS
HIGH	13	38
WITHIN	77	55
UNDERRUN	10	7

SIGNIFICANT @ 0.05 LEVEL (CHI -SQUARE TEST NO. 27)

TABLE - 4.20 PROCUREMENT METHOD AND COST OVERRUN

COST OVERRUN	% MANAGEMENT CONTRACTS	% TRADITIONAL CONTRACTS
HIGH	10	47
WITHIN	77	43
UNDERRUN	13	10

SIGNIFICANT @ 0.001 LEVEL (CHI-SQUARE TEST NO.28 IN APPENDIX 10)

The above results seem to reinforce the view that phasing the construction work into packages is a valid approach and provide flexible and useful indication of successful project performance.

However, it can be argued on the other hand whether the estimated time and cost were the right ones at the outset of the project. Under this argument, Sidwell (1984) contends that "clients are often puzzled by the various terms used within the industry, there are cost plans, tenders, final accounts and fees. Essentially the client is interested in the early prediction of the total amount he will have to pay and the variance between this figure and the final sum.... . For example one reason for the success of package deals is that they are more positive about the final cost to the client.... . There is no guarantee that it (the predicted cost) was the right one."

Nevertheless, there are a number of reasons for the overruns on time and on cost, namely:-

1. The client may alter his mind and introduce variations. These, if not substantial, will undoubtably affect performance. One problem is that it is very difficult for the client to find out in advance what the effect of a variation will be. Some experienced clients make substantial allowances in their budgets for cost overruns. Others apply a system where changes can be manipulated without exceeding the budget.

2. There is little incentive under the traditional system for the contractor to deal with the causes of time and cost overruns or to compensate for their effects by, for example, better liaison with the architect's office on provision of drawings and catching up on lost time. At the present time, from the moment a contract is signed the contractor keeps careful record of the evidence on which he is to base his claim for increased cost.

A study on construction times for industrial building by the BRE (1984) comprises a very valuable piece of research. An important conclusion is that:-

"It is not the form of contract which primarily determines whether targets are met but the attitude of the parties to which the form of contract may contribute. The standard form of contract offers penalties for delays but not incentives for speed. Industry and customers should look for ways of sharing the benefits from improved performance".

3. The better performance of management contracting over the traditional method could be attributed to the following features in the management contracting itself, such as:-

a. A management contract provide a higher integration of the various disciplines in the construction industry. By breaking down the 'us and them' syndrome (Turner 1986), the professionals and the management contractors are able to pool together their once fragmented expertise for the overall benefit of the project. Thus for once the participants in the construction industry can work together as a team rather than being excessively concern with their own individual roles, vice a versa other participants (EDC 1978).

Undoubtedly, greater integration will give rise to better communication among the team members which leads to greater co-ordination and managerial control of the construction process.

b. under a management contract there is one professional body that is responsible for managing the building process and he is fully and solely work for the client's interest. His commercial awareness of this will compel him to ensure that every management effort is directed towards achieving the performance criteria as laid out in the contract, especially with regards to time and cost overrun.

3. Finally, there may be something that is within the field of the contractor to organize better or anticipate, such factors were mentioned by Hillebrandt (1984) like bad industrial relations and

plain bad management. It may be bad luck, for example, the weather, or a strike in some other industry and the like.

SUBJECTIVE ASSESSMENT TO PROJECT PERFORMANCE

At the end of each case study questionnaire the respondents were asked to express the level of client satisfaction concerning time, cost and quality on a three point scale. The respondents assessed the time performance on three matters regarding pre-construction time, speed and time overrun. Cost performance cover the unit cost, cost control and overruns. The quality scale includes the function of building, quality of the construction operations and the finishes.

8. CLIENT SATISFACTION ON TIME

Null hypothesis 5.1.8 There is no difference in the level of satisfaction with time between management and traditional clients

Table 4.21 gives the client satisfaction to overall time in three levels for management and traditional contracts samples. The chi square test, based on the number of clients that are highly satisfied against moderately and dissatisfied clients, show that management clients are greater in the highly satisfaction cell at a significant level P=.025. Further analysis of the data suggests that the differences amounted to commercial buildings more than industrial ones. This is so, perhaps, because industrial buildings in the sample were relatively smaller and less complex. In this case the project is a straightforward one and the traditional method can control project time within a stipulated overall time and fast enough for the client to be satisfied.

TABLE 4.21 - PROCUREMENT METHOD AND CLIENT SATISFACTION ON TIME

LEVEL OF SATISFACTION	% MANAGEMENT CLIENTS	% TRADITIONAL CLIENTS
HIGH	79	52
MODERATE	13	28
LOW	8	20
TOTAL	100	100

SIGNIFICANT @ 0.025 LEVEL (CHI-SQUARE TEST NO.29 IN APPENDIX 10)

9. CLIENT SATISFACTION ON COST

Null hypothesis 5.1.9 There is no difference in the level of satisfaction with cost between management and traditional clients.

Table 4.22 indicated no difference in the level of satisfaction with regards to cost between management and traditional clients. Given the facts from null hypothesis 5.1.5 and 5.1.7. that the probability for a management contract to exceed the budget is less than the traditional method but can cost the client more. this can emphasis the suggestion at the beginning of this chapter which account for a great concern placed by the management clients on the importance of cost reliability rather than cheapest cost to project success.

TABLE 4.22 - PROCUREMENT METHOD AND CLIENT SATISFACTION TO COST

LEVEL OF SATISFACTION	% MANAGEMENT CLIENTS	% TRADITIONAL CLIENTS
HIGH	55	53
MODERATE	26	28
LOW	19	18
TOTAL	100	100

NOT SIGNIFICANT (CHI-SQUARE TEST NO.30 APPENDIX 10)

10. CLIENT SATISFACTION TO QUALITY

Null hypothesis 5.1.10 There is no difference in the level of satisfaction with quality between management and traditional clients.

The quality of building is very difficult to compare, firstly because it is difficult to define precisely what is meant by quality and secondly because their is no successful objective measure which can compare both systems. Therefore in this research quality was measured subjectively as the function of b ilding and quality of the finishes. From Table 4.23 their seems to be no difference in the level of satisfaction with quality between the management and traditional contracting clients.

However, those clients who were interviewed feel that there are some snags in the management system which affect the quality of building. None of the clients felt that management contracting produce a better building design but it can be similar to the traditional method. The clients added that they did not choose a management contract for that reason in the first place and that is why no difference appeared in quality satisfaction in Table 4.33. This evidence refutes the CIRIA (1983) conclusion that clients who use management contracting frequently want the management contractor to be responsible for managing the design. The clients have noted the following as criticisms for design and quality of management contracting:

1. A property developer client said that management contracting does not provide a better design because of conflict between the management contractor and the architect. Such conflict may come from the commercial orientation of management contractors being countered by the professional attitudes held by other client advisors.

2. There is the problem of who has to decide quality standards (unlike the traditional method where the architect is responsible).

3. A banking client commented that with management contracting 'there can be an element of jealousy by the professional consultants by the fact that the management contractor is taking their roles and authority as a team leader. The issue of dominance within the project team is often the most vexatious and is the subject of ongoing research (see implication for other researchers in chapter 5).

TABLE 4.23 - PROCUREMENT METHOD AND CLIENT SATISFACTION TO QUALITY

LEVEL OF SATISFACTION	% MANAGEMENT CLIENTS	% TRADITIONAL CLIENTS
HIGH	65	72
MODERATE	24	20
LOW	11	8
TOTAL	100	100

NOT SIGNIFICANT (CHI-SQUARE TEST NO.31 IN APPENDIX 10)

SUB-HYPOTHESIS 4.2 VARIABLES OF PERFORMANCE MEASURES ARE INTERRELATED WITH ONE ANOTHER.

The correlation coefficient between the 10 performance measures are shown in Table 4.24 . they are not expressed in detail but all take the null form.

Results of linking the performance measures together show the following:-

1. The time factors are significantly related with one another. projects that take a long time to build tend to have longer pre-construction time. longer total time and produce higher rate of work on site (SQM/WEEK) (also see relation between variables 1,2.3 & 4 in Table 4.24).

2. The correlation also show that overrun on time is associated with overrun on cost, but this association was found significant only with the traditionally organized projects

3. Finally , Table 4.24 indicates that the level of client satisfaction increases as the certainty of the project with respect on time and cost increases. All other variables are not significantly related.

TABLE 4.24 - CORRELATION COEFFICIENT BETWEEN PERFORMANCE MEASURES

	PRECONST TIME 1	BUILD TIME 2	TOTAL TIME 3	SPEED A / W 4	UNIT COST 5	TIME OVER 6	COST OVER 7	TIME SATS 8	COST SATS 9
BUILD TIME	.507 [b]								
TOTAL TIME	.879 [a]	.853 [a]							
SPEED A / W	.326 [c]	.365 [c]	.399 [c]						
UNIT COST	.043	.178	.066	.214					
TIME OVER	.264	.150	.219	.016	.211				
COST OVER	.183	.106	.160	.018	.092	.340 [c]			
TIME SATISF	.161	.112	.183	.104	.004	.659 [a]	.410		
COST SATISF	.202	.180	.246	.068	.253 [d]	.179	.677 [a]	.410 [b]	
QUALTY SATISF	.058	.012	.069	.009	.003	.170	.134	.117	.28

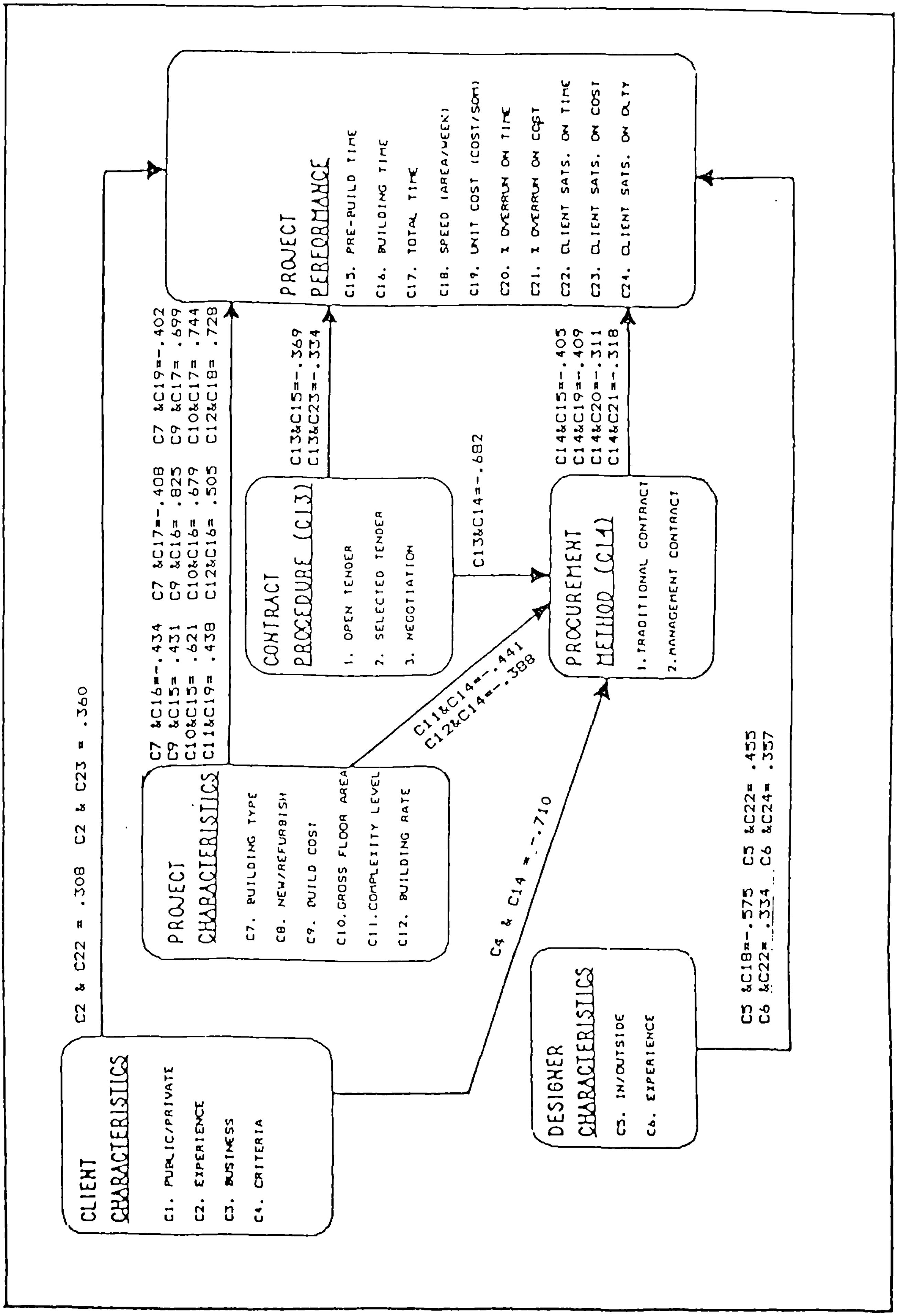
a - SIGNIFICANT AT P < .001 b - SIGNIFICANT AT P < .01
c - SIGNIFICANT AT P < .025 d - SIGNIFICANT AT P < .05

SUMMARY

Figure 4.8 gives the most significant relationships annoted on the research model, which shows that project performance is influenced by a number of variables. Contract procedure and procurement method can be an important variables in affecting project performance but not by themselves are the only determinate.

The independent variables of project and designer characteristics also seem to have a greate weighting in determining project performance, particularly on the time factor. For instance, objective measures of time (C15, C16, C17, C18) are dependent on building type and the size of the project. Commercial building and project with high building cost and G.F.A. take a long time to design and build, whilst industrial projects were relatively less complex which were controlled within a stipulated overall time, and fast enough to satisfy the client.

However, procurement method as an intervening variable can be a factor assisting in optimizing project performance. For instance, total timing of the building process, for commercial building, were reduced by appointing a management contractor. The reduction in time was not so much accounted during construction rather it was due an early start on site by overlapping the design and construction.



THE ESTABLISHED CORRELATIONS ANNOTED ON THE RESEARCH MODEL FIGURE - 4.8

Moreover, it was also stated that the project can be successful and the client can be satisfied even if the project is highly complex, provided the appropriate procurement method was selected to the project and according to the client requirements. In this research management and traditional contracts were good examples. The management contracting system was employed on higher cost building projects with higher complexity and building rate and yet a significant number of those projects were found to be completed on time, within the estimated budget and the client was satisfied. Similarly, when the traditional contracts were selected for projects with low or moderate level of complexity and according to the client prioraties, these projects were successful and the client was also satisfied. In general, the results presented in this research do support the central hypothesis.

CHAPTER 5 - CONCLUSIONS AND IMPLICATIONS

INTRODUCTION

The opening chapter of this thesis discussed problems facing the construction industry , it looked at the weaknesses and strength of the traditional approach and management contracting. The aim of the research has been to identify variables that lead to selecting a management or traditional contract and which would influence project performance.

The author looked at various models of previous researchers and postulated the relationship between the identified variables in a model similar to the one presented by Sidwell (1982). The variables were discussed under six main headings:-

1. Client characteristics and requirements.
2. Designer characteristics.
3. Project characteristics.
4. Contract procedure.
5. Procurement method.
6 Project performance.

Two central hypothesis were drawn:

1. " Management contracting can satisfy clients who need their projects quickly and for projects that are large and/or highly complex."

This led to a second hypothesis,

2. " Project performance is a function of the characteristics of the client, the project, the designers, the contract procedure employed and the procurement method adopted for the project.

The research model was applied over 69 case studies to examine the evidence of the main hypothesis and two sets of measures have been used: objective. absolute measures; and subjective measures of client satisfaction.

The following are the main conclusions drawn from this research:

5.1 TEST FOR MAIN HYPOTHESIS ONE

Results of sub-hypothesis 5.1 in Chapter 4 and the clients' perception toward management contracting strongly support the first proposition of hypothesis one, ie. a management contract can satisfy clients that need their projects quickly.

79% of the management contracting projects had a short pre-construction time (PCT) as defined by the number of weeks from detail design to start on site. The corresponding figure for traditional contracting was 38%. Short, average and long times were measured depending on cost of building as described in Chapter 3.

Moreover, Table 5.1 show an extract from Appendix 12 for the scoring matrix of project performance. This matrix was constructed from data of 69 management and traditional contracts as a guide to clients who wishes to know how both systems were performed for different categories of clients and projects. The scoring method is as described in Chapter 3, section 3.10.5. In summary, the method is based on giving a scoring level for each category of client or project against each of the ten performance measures. Those performed high were scored 3, Those showed a figure which lie between +/- 5% from the mean were scored 2 and low performance were given a score of 1 (see section 3.10.5 in Chapter 3 for more details).

Table 5.1 reinforce the better performance of management contracting on the time factor, indicating that management contracting projects had highest aggregate scores for timing the overall building process and the client satisfaction with it (32%). The corresponding figure for traditional contracts is 22%.

These results provide ample confirmation for the earlier case studies discussed in Chapter 2 that buildings let by a management contract are constructed more quickly than buildings let by the traditional approach.

TABLE 5.1 - MANAGEMENT CONTRACTING AND PERFORMANCE MEASURES IN SCORES

PERFORMANCE MEASURES	MAXIMUM POSSIBL SCORES	ACTUAL SCORES	PERCENTAGE ACTUAL SCORES	PERCENTAGE AGGREGATE SCORES
1. PCT + BT + TT	126	116	92	16
2. SPEED(A/W)	42	37	88	15
3. UNIT COST(C/SQM)	42	26	62	11
4. % + TIME & COST	84	70	83	14
5. SATISF. ON TIME	42	39	93	16
6. SATISF. ON COST	42	39	93	16
7. SATISF. ON QULTY	42	31	74	12
TOTALS		358	585	100

TABLE 5.1 (CONTINUE) - TRADITIONAL CONTRACTING AND PERFORMANCE MEASURES IN SCORES

1. PCT + BT + TT	126	69	55	9
2. SPEED (A/W)	42	35	83	15
3. UNIT COST(C/SQM)	42	41	97	17
4. % + TIME & COST	84	58	70	12
5. SATISF. ON TIME	42	31	74	13
6. SATISF. ON COST	42	40	95	17
7. SATISF. ON QULTY	42	41	97	17
TOTALS		315	571	100

COMPUTATION OF CHI-SQUARE TEST FOR OVERALL PERFORMANCE MEASURES

	ACTUAL SCORES						
	TIME	SPEED	C/SQM	OVERUN	S TIME	S COST	S QULTY
MANG. CONT.	116	37	26	70	39	39	31
TRAD. CONT.	69	35	41	58	31	40	41

$X^2 = 16.39$ D.F. = 6   SIGNIFICANT AT $P < 0.02$

The second proposition of main hypothesis one can be examined by linking sub-hypothesis 4.1 and 4.2 in Chapter 4 (the results). Analysis of sub-hypothesis 4.1 showed that management contracting tend to be employed on higher cost buildings, projects with higher complexity and building rate, and yet sub-hypothesis 4.2 indicated that the client satisfaction was not significantly associated with increasing project complexity. This means that the project can be successful and the client can be satisfied even if the project is highly complex. provided the appropriate procurement method was selected to the project and according to the client requirements (in this research a management contract). Therefore the second proposition of hypothesis 1 can be valid in that management contracting can be successful for highly complex projects but its superiority relevance to large simple project is still open to question. Although Appendix 12 show that large projects scored high under a management contract, a number of traditional contracts were also observed as produced good performance. In particular, case studies no. TR3 (costed £41.0M) and no. TR27 (costed £14.2M) both were constructed under the traditionally organized team. These projects were assessed as large but simple and although produced a slight overruns. other performance measures were successful and the clients were satisfied.

5.2 TEST FOR MAIN HYPOTHESIS TWO

Main hypothesis two is tested under the following two factors:-

1. the factors that affect the selection of a management and traditional contract;

2. the factors that affect project performance.

5.2.1 FACTORS THAT AFFECT SELECTION OF A MANAGEMENT AND TRADITIONAL CONTRACTING

Two factors in particular were identified as affecting the choice and application of management and traditional contracting. These are:-

A. Null hypothesis 4.1.4 in Chapter 4 examined the client criteria for project performance measured in terms of time, cost and quality. It was found that the selection of both systems are associated by the different requirement of clients to project performance. The management contracting clients are concerned to minimize time, facilitate variations (ie. flexibility to change their requirements during construction) and provide extra management (ie. more control for large and complex projects). In contrast, traditional clients are more concerned to achieve the cheapest cost and maximize quality. Tighter budget induce a more conservative procedure and one which is sufficiently flexible to control their budget and maintain high standard of quality of the building.

The complexity of the client's organizational structure was seen to influence the selection of the procurement method and subsequently project performance. As noted in Chapter 3, data could not be collected in the main study but interviews throughout this research correspond closely with this proposition. It was stated in Chapter 2 that the difference between clients' criteria and their organizational structures has influenced their views and attitudes towards management contracting. If the organizations own procedures are not matched to project requirements, the client may lose the advantages of MC. The client could delay progress if his approvals are not matched to the speed of the management contractor's work.

B. The major factors in the different project characteristics of the two samples, is the greater degree of complexity and higher final building costs associated with management contracting projects. Results of analysing the sample indicates that management contracting is used on large buildings as defined by building cost greater that £5 million. and for complex projects requiring a building rate greater than £50,000 of work a week. These factors create the need for specialized sub-contractors, specialized materials, tools etc. as cited by the introduction of new technology within the building industry.

5.2. FACTORS AFFECTING PROJECT PERFORMANCE

The main conclusion to be drawn from this research with regards to project performance is that management contracting perform better in some respects than traditional contracting, but there are other factors affecting project performance which are highly significant.

Within the scope of this research Table 5.2 shows the significant relationship between performance measures and other characteristics of the building process, which is derived from the correlation coefficient matrix in Appendix 11. From Table 5.2 the following conclusions can be drawn:

1. The duration of pre-construction and construction is dependent on building type and the size of the project. Commercial buildings and projects with high building cost and gross floor area take longer time to design and build than industrial and small size projects. However, the timing of the building process can be reduced by appointing a management contractor. The reduction in time is not so much accounted during construction rather it is due an early start on site by overlapping the design and construction.

2. The spread of cost performance across the cases was relatively wide. Although the mean unit cost of traditional contracts were lower than management contracting , a large proportion of the varience had been explained by major differences in the nature of the buildings and the level of quality standard that could be specified by the client at the outset of the project.

3. The major factors which affect time and cost overruns are the procurement method adopted and the designers experience, measured by the number of similar type of work constructed in the past. Highly experienced designers and a MC can provide buildings with higher certainty to time and cost than traditional contracts.

TABLE 5.2 - SIGNIFICANT CORRELATION COEFFICIENT BETWEEN PERFORMANCE MEASURES AND OTHER CHARACTERISTICS.

PERFORMANCE MEASURES	FACTORS SIGNIFICANT AT P LESS THAN .001 LEVEL	C.C.	.025 LEVEL	C.C.	.050 LEVEL	C.C.
1. PCT TIME	G.F.A.	.621	PROCEDURE	-.369	BLD. TYPE	-.252
	BLD COST	.431	DS. EXP.	-.306		
	P. METHOD	-.405				
2. BLD TIME	BLD COST	.825	COMPLEXITY	.305	P. METHOD	-.293
	G.F.A	.679			CLNT TYPE	-.243
	BLD RATE	.505				
	BLD TYPE	-.434				
3. TOTL TIME	G.F.A	.744	BLD RATE	.381	P. METHOD	-.297
	BLD COST	.699			PROCEDURE	-.258
	BLD TYPE	-.408			DS. EXP.	-.241
4. SPEED(A/W)	G.F.A	.848			P. METHOD	-.244
	BLD RATE	.728				
	BLD COST	.631				
	DS SOURCE	-.575				
5. UNIT COST	COMPLEXITY	.438	BLD. RATE	.380	PROCEDURE	-.246
	P. METHOD	-.409	BLD. COST	.287		
	BUILD TYPE	-.402	CLT. TYPE	-.275		
6. % + TIME			DS. EXP.	-.353		
			P. METHOD	-.311		
			DS. SOURCE	-.288		
7. % + COST			DS. EXP.	-.348	DS SOURCE	-.249
			P. METHOD	-.318		
			PROCEDURE	-.298		
8. TIME SATS	DS. SOURCE	.455	DS. EXP.	.334	P. METHOD	.243
			CLT. EXP.	.308		
			PROCEDURE	-.294		
9. COST SATS			PROCEDURE	-.334	DS. EXP.	.273
					CLT.EXP.	.260
10. QLTY SATS			DS. EXP.	.357		

Projects procured based on traditional contracts registered an average time overrun of 8% compared to an average of 4% using management contracting.

The average cost overrun for management contracts was 3% compared to 7% recorded by the traditional method.

It was reported in Chapter 4 that the higher integration and management control inherent within the system of management contracting had contributed to greater certainty. But it was also stated that since management contracting has a high market orientation it could be argued whether the estimated time and cost were the right ones at the outset of the project.

4. There was no clear evidence to indicate that the level of client satisfaction on quality is associated with the other variables studied. except with the designer experience (see Table 5.1). Nevertheless, under a MC the clients criticized the system for not producing a higher standard of quality in the building for reasons attributed to the conflict between the management contractor and the architect, and to the problem of who has to decide quality standards (see also the higher scoring of quality under the traditional contract in Table 5.1).

To summarize the conclusion, procurement method is not the only variable affecting project performance. The designers, the characteristics of the project and the contract procedures employed, all had their relative effect on certain performance measures and in certain cases more significant than the procurement method adopted.

5.3 OTHER RESEARCH

Sidwell (1982) concluded that managerial control (classed as project procedure) was a key element in achieving project success. being significantly related to all measures of success. Ireland (1983) found similar results for managerial action.

This research agrees with the above conclusions in that higher management control, as a factor considered to be inherent within the system of management contracting, can provide higher level of management, thus reduces the risk of overruns and deliver projects in a shorter time.

The conclusion of this research findings could also be hinged on the contingency theory, but it would be surprising if it did not :-

That is : there is no one method of the two that supersedes the other in all performance measures of time , cost and quality; each method has it's strength and weaknesses contingent on the the client's organization and requirements and the characteristics of his project.

Finally, although this research showed that there had been overruns on time and cost for some projects, the magnitude seem to have been reduced since the publication of the reports of Wilson (1974) and Wood (1975). This was also observed in a research by Rowlinson (1987) into package deal within the field of industrial buildings.

5.4 IMPLICATIONS

This research study has direct and important implications in relation to clients, those in the industry and those considering possible directions for further research.

5.4.1 IMPLICATION FOR CLIENTS

A) It is important that clients develop their precise requirements and priorities as early as possible and for the professionals to achieve a clear understanding of the client's project goals. Performance criteria specified by clients have a vital implications for the selection of procurement method. Most of the participating interviewees highlighted its greatest significance to project delivery (see also null hypothesis 4.1.4 as a guide).

B) A scoring matrix of performance was constructed as shown in Appendix 12 in an attempt to give the client some indication of how both systems scored for various types of clients and projects. Scoring method is as described in Chapter 3 (section 3.10.5). Table 5.3 gives extracts from Appendix 12.

TABLE 5.3 - TOTAL PERFORMANCE SCORES UNDER A MANAGEMENT CONTRACT

CLIENT & PROJECT TYPE	MAXIMUM SCORES	ACTUAL SCORES	PERCENT ACTUAL	PERCENT AGGREGATE
NORMAL SIZE PROJECTS IE. <£5M & <7000 SQM	60	49	81	12
LARGE SIZE PROJECTS IE. >£5M & >7000 SQM	60	53	88	13
NORMAL COMPLEXITY & < £50,000 BUILD RATE	60	47	78	11
HIGH COMPLEXITY & > £50,000 BUILD RATE	60	47	78	11
SPECULATIVE BUILDINGS < £5M	30	17	57	8
SPECULATIVE BUILDINGS > £5M	30	22	73	10
BESPOKE CLIENTS < £5M & > £5M	60	51	85	12
INDUSTRIAL PROJECTS < £5M & > £5M	60	53	88	13
COMMERCIAL PROJECTS < £5M & > £5M	60	46	77	11
TOTALS			697	100

TABLE 5.3 (CONTINUE)- UNDER THE TRADITIONAL APPROACH

CLIENT & PROJECT TYPE	MAXIMUM SCORES	ACTUAL SCORES	PERCENT ACTUAL	PERCENT AGGREGATE
NORMAL SIZE PROJECTS	60	46	77	12
LARGE SIZE PROJECTS	60	38	63	10
NORMAL COMPLEXITY	60	44	73	11
HIGH COMPLEXITY	60	34	57	9
SPECULATIVE < £5M	30	24	80	14
SPECULATIVE > £5M	30	21	70	11
BESPOKE CLIENTS	60	41	65	10
INDUSTRIAL PROJECTS	60	42	70	11
COMMERCIAL PROJECTS	60	42	70	11
TOTALS			632	100

The following could be a possible interpretation of Table 5.3 :

MANAGEMENT CONTRACTING

1. Best performance can be achieved under a management contract for a bespoke clients building an industrial projects with a cost greater than £5m and an area more than 7000 sqm.

2. High performance can also be achieved for speculative developer building commercial projects which are complex and costing more than £5m. A management contract should similar performance for Normal size projects with normal complexity .

3. Poorer performance was noted by speculative developers on building projects less than £5m.

TRADITIONAL CONTRACTING

1. The traditional approach can provide best performance for speculative developers on building projects of normal size with a low level of complexity.

2. Clients who are building industrial or commercial projects costing less than £5m of normally complexity also showed good performance within the traditional contracting sample.

3. Poor performance under the traditional contracting was evident for bespoke clients who were building large projects with a high level of complexity.

B) Another important task that the client should examine before selecting a procurement method is his experience and ability in managing his project. It seems that the selection of a management contractor can be ideal for inexperienced clients which do not have the appropriate level of in-house expertise to manage a project. Having studied the characteristics of a management contract, the client can have the advice of a person experienced in the industry acting as his agent.

C) The one feature which stand out in the successful management contract is the considerable commitment by clients in their projects. This does not mean involvement in the minute of projects, but the ability to structure their organization in order to make decisions quickly when unforeseen problems arise.

5.4.2 IMPLICATION FOR THE INDUSTRY

A) From the evidence available, we must conclude that (unsurprisingly), neither of the systems; management nor traditional contracting is the solution to all of the problems facing the construction industry. To achieve project success the parties need to match the various organizational forms to the type of clients, his criteria and priorities in respect to time, cost and quality. Similarly the characteristics of the project and, to a certain extent, the characteristics of the professionals need to be matched.

B) Even though attitudes of the clients discussed in chapter two are influenced by the experiences of individual clients it seems that there is room for improvement in the management contracting system. One such shift would be for the industry and in particular the management contractors to adopt a professional-as opposed to commercial-role. Yet this change may be shaped by clients who can do much to fashion events by matching their own procedures to the requirements of the procurement method they have chosen. Project success is often elusive but the appropriate mix of client control and procurement method can make it less so.

C) Whatever form of procurement method is selected, there need to be an increase in employing an independent advice services in UK to providing project planning and progress function services. These services can give the client a tremendous control over planning and programming of a given job and, moreover, total control to the contractor. With these services, inexperienced clients will obtain similar inputs to these who are experienced with in-house technical and managerial facilities.

5.4.3 IMPLICATIONS FOR OTHER RESEARCHERS

A) Now the JCT has published a model document for a management contract, the author suggest that there is likely to be particular value in further exploration of the following :-

i) looking to the area of defining the responsibility of the parties involved in the contract in legal sense eg. what changes or effect is the changing role of the architect have on the contract.

ii) looking to the problem of quality control. Who is responsible for the quality supervision and control. If it is the architect then where does the management contractor stand and vice versa.

iii) looking to the area of tendering document i.e., what informations are needed for the sub-contract jobs and where does the sub-contractor stand in the contractual document and tenders.

Appendix 3 enclose the standard form of management contract that was published by the JCT in Dec. 1987. This can be used as a guide in investigating the above areas.

B) The model used in this research was found very useful to point those variables which had to be measured and controlled in data collection and analysis. The research, however, is immediately applicable to the field of industrial and commercial buildings and, particularly, new construction. Thus, the author suggests that the model can also be used to compare other forms of procurement methods or procedures on other types of buildings.

The methodology used in this research was a cross-sectional one and has provided a sound basis for comparing the performance of management contracts and the traditional methods of building procurement. However, other useful information on the difference between procurement methods could be collected using a longitudinal study. For example, to choose one contracting organization, constructing two identical type of building, one for each procurement, and following their projects through to completion. By this approach, the study of the environment and the relationships can be fully understood. The quality of the relationship between team members is increasingly recognised as a particularly critical factor of building team performance and is, as far as it is known, relatively little researched.

To be effective, such a methodology will require extensive collaboration between all those involved in commissioning and procuring the buildings. However, it is only through analysis to ongoing projects, from their very earliest stages through to completion, that it will be possible to develop a better understanding of the influences on the building process and, in particular, project performance.

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APPENDIX ONE

ROLE OF THE MANAGEMENT CONTRACTOR

SOURCE : WOOLF PROJECT MANAGEMENT

1. INTRODUCTION

Having developed Management Contracting in the United Kingdom over the last fourteen years, our Managing Director is committed to this form of contracting and will personally ensure the success of every project undertaken by us. Management Contracting as applied to major construction projects, was introduced in 1968 with the Horizon Project at Nottingham for the John Player Company. Our Managing Director,David Woolf, was Resident Project Director on this scheme and has been to the fore in the development of Management Contracting ever since.

This form of contracting has become increasingly recognised throughout the industry as a logical and commercially attractive alternative to traditional tendering. It has been particularly designed to meet the most stringent requirements of public authority accountability. The Management Agreement ensures that the contractor forms part of the client's team from the outset, responsible for co-ordinating on his behalf the construction planning, management and execution of the project. It means what it says: Management by Contract, on a fixed fee negotiated in advance. It creates an identity of interest between the members of the design and building team and, because of the involvement in the project from the start, design, tendering and construction periods overlap, with a considerable saving in time and cost.

Building is the only major industry in this country in which design and execution are normally divided. A Management Contract bridges the gap; above all, it means that throughout the whole project the main contractor is on the client's side.

Because of early involvement it means that the real cost of the project is exposed at an early stage and appropriate action can be taken where it is most needed. The Managing Contractor is able to ensure that the project benefits from the most economical methods of design, construction, site procedures and materials handling. Claims can be minimised by anticipation and by taking action before they become unavoidable.

The works are broken down into Sub-Contract Elements. Benefits from competition can be maximised since all Sub-Contractors are selected by competitive tender. The Managing Contractor, because he is working on a fee basis, can act in the client's best interests and without the adverse influence of profit motivation. In our experience the Management Contract is the cheapest and quickest way of getting large, complex projects

1. INTRODUCTION cont'd

constructed and applies equally to projects which would be largely sub-let whatever form of contract was adopted.

2. THE ROLE OF THE MANAGING CONTRACTOR

The professional team of Architect, Quantity Surveyor, Structural Mechanical and Electrical Engineers is selected and appointed directly by the client as is normal in traditional tendering.

A Managing Contractor therefore is responsible to the client and his professional advisers for the entire project, including construction planning, management and execution. The Managing Contractor supplies extensive pre-building services to the professional team. The exact nature and extent of these services will vary with the character of the project, but will usually include the assessment of design from the point of view of construction management; the feeding of real cost *information* to the design team; the assessment of design alternatives from the points of view of cost, time, ease of construction and achievement of the highest quality standards; the preparation of pre-contract networks; the establishment of the availability of materials and labour; and the planning and management of the project.

While the Managing Contractor's relationship with this client is one of main contractor, all physical work on site is undertaken by bona fide sub-contractors selected in competition. The Managing Contractor's role is, therefore, one of control and co-ordination of all activity on the site. With the client's Quantiy Surveyor, he will police the cost plan and maintain up to date records of committed and probable actual cost. During the later stages of the execution phase he will be concerned with the preparation of the draft final account, which in the majority of cases will emerge rapidly and without argument, the individual points within it having *been sorted out at the time of the event* rather than left to be dealt with after completion.

The Managing Contractor will be paid a fee for his services. This fee will probably be in two parts, dealing first with the pre-contract service, and second with the managerial and co-ordinating roles, undertaken during the actual project. Such division allows the client to terminate the arrangement or indeed to postpone it, without creating a situation in which an unqualified claim for services can be made.

2. THE ROLE OF THE MANAGING CONTRACTOR

If the Managing Contractor is competent and the project an appropriate one, his employment should reduce the overall cost of the project, firstly by making the design more buildable and thus achieving an earlier completion and secondly by securing the best price in competition for each of the elements.

His role should not be interpreted as one of the client's agents. He is responsible for completion in accordance with the contract and is liable for liquidated and ascertained damages for any overrun of contract not covered by extension of time. The traditional relationships with the client's professional team are maintained and the Managing Contractor works under the Architect's direction. The Architect's role is considerably strengthened because the Managing Contractor's team is totally integrated with the professionals from the earliest possible date. When the contract has commenced, all parties are totally aware of what is expected of them in practical as well as contractual terms.

3. ENSURING COMPETITION

During the evolution of the design, lists will be drawn up in conjunction with the professional team of appropriate sub-contractors for the execution of the various elements of work, under the overall management and control of the Managing Contractor. Tenderers for each major package are interviewed and a short list prepared of keen and capable tenderers. Appropriate documentation is prepared for each package which more fully describes what is expected of the tenderer and bids are sought. Following the preparation of a tender analysis an order is placed on the successful tenderer.

4. FIRMING UP THE COST PLAN

One of the significant benefits of the Management Contract is that the team can choose the most *beneficial time to obtain sub-contract tenders.* This may mean that they would delay obtaining prices for certain elements of work until it was agreed that the time was commercially rights, or that certain elements were sought earlier to gain other specific advantages.

At an early stage the whole team is committed to working within the agreed cost plan. If subsequent tenders fall outside the allowance, then it must be accepted that that design must be *re-examined* to

4. FIRMING UP THE COST PLAN cont'd

achieve the necessary savings. The balance from tenders within the cost plan is put against the design contingency and reverts to the client if not used.

In normal overall tender contracting, the final account frequently bears little relation to the original bid. At least two thirds of this work will have been sub-let at not necessarily competitive rates. Attempts at cost control through design changes in such contracts may also have heavy time and cost penalties.

5. ROLE OF MANAGING CONTRACTOR DURING THE EXECUTION OF THE WORK

Although design leadership and ultimate responsibility remain with the Architect, the main burden of executive effort falls upon the Managing Contractor during construction.

He is responsible for maintaining activity on the site at the required level to comply with the overall programme. The Managing Contractor will chase the sub-contractors before their arrival on site to ensure that when they start they execute their work with the maximum effectiveness. He will maintain co-ordination between the various sub-contracted activities. He will supply if need be a small multi-service gang for unloading, attendances or other appropriate tasks.

He will monitor the production and issue of any drawings or information still outstanding. He will ensure that events which might in any way affect the sub-contractor's final accounts are cost monitored and agreed with the professional Quantity Surveyor at the time of their happening. (Procedures for this and for its enforcement will have been included in sub-contract documentation in the pre-contract phase).

The Managing Contractor will continuously police the cost plan with the Quantity Surveyor and will be in a position at all times to make available reports about committed cost, probable completion dates and any unresolved points which may be at issue.

6. THE FINAL ACCOUNT

With the system of packaging sub-contracts, the Management Contract makes it possible to settle final accounts progressively and speedily. Good

6. THE FINAL ACCOUNT cont'd

documentation throughout the project means that towards the end of the construction of any particular element it will be possible to prepare a draft final account. During the first few weeks after completion this draft will be finalised for the Quantity Surveyor's aproval and auditing, if required.

What the Client pays

The final account is a summation of the following:-

(a) the Management Fee
(b) site Preliminaries
(c) common services
(d) sub-contractors' agreed final accounts

7. THE FEE

This is a fixed fee, pre-determined at the outset, for the Managing Contractor's overheads and profit. The profit content in the fee can be exposed and shown to be at a much lower level than with traditional overall tendering. There are no further profits added to sub-contractors' quotations and no other monies hidden to cover contractor's risk. Each fee is established by negotiation for individual contracts. In considering the fee, account should be taken of the fact that all trades cash and other discounts are reimbursed to the client. This effectively reduces the fee by as much as 2%. The Management Fee is not an extra. It is part of the total construction cost.

8. PRELIMINARIES

These comprise the Managing Contractor's site-based project staff including contract managers, site agents, planners, services engineers and whoever else is established as necessary for the execution of the work. A full schedule of site staff together with costs and also salary details is agreed with the client's Quantity Surveyor at the outset of the scheme. The effect is to ensure that the co-ordination of the contract is centralised, minimising any duplication of the supervision elements within sub-contractors' quotations.

It is, therefore, reasonable to expect that sub-contractors' prices will be considerably keener than would be the case in a traditional situation because they are only concerned with the supervision of work within their own disciplines.

9. COMMON SERVICES

Other than preliminaries, the only direct costs which the Managing Contractor incurs are services which are not peculiar to any one sub-contract trade. For instance:-

(a) welfare and canteen facilities for all sub-contractors

(b) scaffolding which is required for more than one trade

(c) craneage and other plant on similar basis

(d) multi-service gang unloading and attendance in order to avoid interface problems between sub-contractors

The common services costs are established between the Managing Contractor and the client's profesional team and the full schedule is provided as part of the cost plan. The main criteria for the provision of these services is to avoid the conflict between sub-contractors which inevitably arises on large contracts which are dealt with by traditional means.

10. SUB-CONTRACTORS' COSTS

All physical work on site is sub-let in appropriate elements and the client can be certain that he is obtaining the cheapest possible price for every sub-trade. This is in distinct contrast to a traditional contract where the lowest main contract tenderer would not necessarily give the lowest individual price on every sub-trade.

There are no nominated sub-contractors to the Managing Contractor, which effectively means that the Client has more protection than in traditional contract. This risk which is taken by the Managing Contractor is counteracted by the fact that he will be the prime mover in the sub-contractor selection process for all trades. He will ensure that the risk is minimised by providing the sub-contractors with far more information than they could reasonably expect in a traditional situation.

11. THE INCENTIVE FOR THE MANAGING CONTRACTOR

The Managing Contractor's Fee is his only source of income and cannot be enhanced by renegotiations with sub-contractors. He, therefore, devotes his entire attention to ensuring that the client is satisfied in every possible way. Our staff ...

11. THE INCENTIVE FOR THE MANAGING CONTRACTOR cont'd

totally experienced in working within competitive markets and thus they fully understand the importance of ensuring proper sub-contractor documentation and proper sub-contract control.

The Managing Contractor will secure repeat orders if he satisfies the client and professional team. If the contract cost overruns the Managing Contractor's fixed fee, considered as a percentage to turnover, will decrease.

12. RISK ACCEPTED BY THE MANAGING CONTRACTOR

Under our Management Agreement there are no nominated sub-contractors and we are totally rsponsible for all activities carried out on site. We thus ensure that we are able to act always with the same motivation as the client by carefully documenting the sub-contract tender and controlling sub-contracted activities on site.

13. FORM OF CONTRACT

There is an increasing body of opinion in the United Kingdom which suggests that the JCT or Standard Form of Building contract is unsuitable for use on many categories of buildings. Many projects require substantial pre-contract involvement by the contractor and to optimise results it is essential that the contractor, the client and his designers all act as a unified team. Our Management Agreement has been drawn up by our Managing Director following fourteen years of successful use of this type of contract.

14. MANAGEMENT CONTRACTOR'S CONTRIBUTION DURING DESIGN DEVELOPMENT

We will, with the design team, investigate and make recommendations on all construction methods envisaged, testing alternative techniques and design solutions. Account is taken of economical plant, materials and labour utilisation with particular emphasis on operational simplicity and mechanisation.

All alternative design solutions will be evaluated in respect of building costs and future maintenance.

Together with the design team, we will evolve all temporary works requirements, including the control of water and unstable ground, bridging structures, ...

14. MANAGEMENT CONTRACTOR'S CONTRIBUTION DURING DESIGN DEVELOPMENT cont'd

We shall denote and assist in determining all special building work, structural loadings, fixings or accommodation requirements for temporary construction plant and equipment.

Together with the services designers, we shall assist in development of design of all installations *and commissioning* procedures to ensure that effective co-ordintion in time of the *various services* can be achieved and that economic and practical design options are employed.

We shall assist in the selection of materials and components. We shall maintain a continuous review of building materials in respect of cost escalations, availability and market trends. We shall investigate alternative sources of supply as required and monitor and report regularly on the projected availability of materials resources.

We shall assist *in the preparation of* specifications for the work, including the performance requirements of components. We shall, as necesary, at the design stage visit the works of prospective suppliers to inspect standards, witness tests and determine production capacity.

Advice will be given on design details and working drawing production, particularly in respect of ease of reference and the application of an acceptable drawing and schedule monitoring system. In addition, the responsibility of drawing distribution will be determined at an early stage.

Assistance will be given to the design team in supplying information for approvals. Particular attention will be paid to developing acceptable site traffic density routing and access. Car parking for operatives, hoarding, sight lines and all statutory authority approvals for temporary hutting, water, electricity and telephones and drainage services will be sought direct, or in conjunction with the design team as appropriate.

15. INFORMATION CO-ORDINATION

In conjunction and with the agreement of the Architect and Engineers (services and civil) a schedule will be parpared of all the drawings and specifications that are likely to be required for the whole project. Similarly the content of the packages required for tenders is agreed upon. The dates for tender are established from the overall

15. INFORMATION CO-ORDINATION cont'd

monitor is prepared. This is in bar chart form. From this chart the numbers and types of drawings required by a particular time can be established. This programme is again drawn up after close consultation with the various designers.

By this means and by closely monitoring the programme it is possible to monitor the resources of the number of designers involved on the project, to achieve the full benefits of this system within the framework of a team attitude between the Managing Contractor and the consultants.

16. COST CONTROL

Introduction

The management form of contract permits the client to obtain the management expertise without prejudice, at the same time ensuring that the building work is obtained at more competitive rates than more traditional forms of contract, each separate element being tendered for by selected specialist firms.

Pre-Contract Planning

Upon appointment, the Managing Contractor provides expertise to assist the designers in advancing the design, programming the cost planning of the project with advice on current availability and suitability of materials, together with practical design aspects in relationship to construction and costs thus ensuring the establishment of an agreed budget.

Basis of Control

The basis of control will be the agreed budget for the project and this will be continuously compared with the value of sub-contracts placed, the cost of variations instructed and the cost of preliminaries.

From the contract programme details of specialist sub-contracts will be abstracted and tender lists compiled in conjunction with the designers. All tenders will be required to be submitted in accordance with the agreed sub-contract terms and conditions. The Managing Contractor will advise all tenderers of their individual programme requirements and will provide the designers with information regarding the proposed tenderers' resources.

16. COST CONTROL cont'd

Financial Monitoring

The Managing Contractor will provide information by cost analysis to maintain effective financial control and allow the design team to audit and adjust the cost plan as necessary to keep costs within the agreed budget.

Interim certificate applications will be collated and after adjustment for materials on site, etc. will be monitored against a turnover graph compiled in conjunction with the sub-contractor and prepared in accordance with the agreed programme. This will be used as a guide to the sub-contractor's progress on site. All interim payments to the sub-contractor will be agreed and made within the period stated in the contract.

A further turnover graph will be prepared based on the total achieved turnover of the project, assessed on the master programme. The resultant *information will be issued at regular intervals to allow cost reports to be submitted to the employer* at defined intervals.

Should any claims be submitted by sub-contractors these will be scrutinised by the Managing Contractor and the validity of any such claims will be established within the terms of the contract. Assessment of their value will be made and recommendations forwarded to the consultants.

Constant up dating of the information submitted to the consultants will provide the basis for the final account.

17. SURVEYORS' DUTIES

The client's appointed Quantity Surveyor's role is of paramount importance as it is that of a 'watch dog' on behalf of the client on all matters with regard to costs. He is intimately involved in cost and budgeting control systems, cash flow, as well as being responsible for certificates for payments on account and for the Final Account.

In general, the duties of the professional Quantity Surveyor assisted by the Managing Contractor's Quantity Surveyors are to:-

(a) input into the preparation of the tender documentation

(b) certify monies to be paid

17. SURVEYORS' DUTIES cont'd

(c) be aware of consultants' instructions to sub-contractors via the Managing Contractor

(d) receive, investigate and pass sub-contractors' claims where applicable

(e) agree the cost of variations to the works

(f) identify possible sources of variation or divergence of sub-contract

(g) agree value of claims under fluctuation clauses where applicable

(h) give advice periodically upon possible changes in the value of the sub-contract and probable final cost

(i) certify materials paid for in advance of delivery to site and arrange for inspection guarantees, etc.

(j) monitor payments made on behalf of specialists' suppliers

(k) obtain and pass to client probable monthly expenditure

(l) agree and certify the final account.

18. PLANNING PROCEDURES

The commitment of the Managing Contractor to effective planning and the implemenation of enforceable control procedures is a necessity, as all projects are unique and require a degree of selective control. He will, in conjunction with the design team, set up planning techniques to meet the requirements of a particular project.

The following outlines the planning controls which, if acceptable to all parties, could be implemented.

(a) Master Programme

Upon appointment, the Managing Contractor, in conjunction with the design team, will examine all resraints associated with the design together with the various activities, logic and resources dictated by the project and produce a 'micro' network. This network will illustrate the inter-relationship of the major design activities, tendering, purchasing, pre-construction, construction and commissioning of each major element of

18. PLANNING PROCEDURE cont'd

(a) cont'd
the contract. Being prepared in network form, it will show the earliest and latest start and finish times and the float associated with each activity.

This network, which can be prepared in precedence or conventional CPM form, will identify the key dates to be achieved for each major package of work and provide a basis for the preparation of a more detailed analysis, culminating in sub-networks and the development of a comprehensive programme of all activities. All programmes will then be presented in a bar chart form.

(b) Out to Tender Schedule

All packages of work will be identified and the Managing Contractor will complete schedules indicating dates for all tender activities.

Schedule dates or durations will be incorporated within the overall network programme.

Note: Initially an Out to Tender Schedule will be prepared indicating all packages and associated tender activities in order to ascertain the design team workload.

(c) Initial Time and Progress Schedules

Time and Progress Schedules are prepared as an integral part of the tender documenation and define particular restraints imposed upon individual sub-contractors in respect of time, phasing constraints and interface activities.

Every effort will be made to minimise such restraints in order to attract the skills and versatility of individual companies, allowing them to make best use of their resources and techniques, thereby maximising competition and obtaining enforceable tenders.

(d) Cash Flow Programme

In conjunction with the quantity surveyor the Managing Contractor will, based upon the master network, prepare a cash flow programme indicating the projeted monthly and cumulative expenditure.

18. PLANNING PROCEDURES cont'd

(e) Sub-Networks

All major packages of work, or sections of work as appropriate, will be subject to detailed examination.

Network programmes will be prepared in conjunction with both sub-contractors and the design team, respecting restraints imposed by the master programme. Sub-networks will be progressively introduced into the overall programme as the project develops.

(f) Computer Application

If required our computer can be utilised for critical path analysis, purchasing sequence and scheduling resource allocation.

19. SUB-CONTRACTORS

The selection of sub-contractors for key elements will be one of the most important factors in the successful completion of any project.

The choice of prospective sub-contractors should be made near to the time when each package of work needs to be let and the appropriate tenders obtained in order that account can be taken of the commercial situation operating at that time.

Tenders, on receipt, will be analysed by the Managing Contractor and his recommendations submitted to the designers for agreement.

All contract documents will include a provision that any variation to the works will be submitted within the stipulated time of that variation becoming apparent. Rigid adherence to this requirement ensures that realistic forecasts of final cost are reported to the employer.

20. PROCEDURE FOR THE SELECTION AND APPOINTMENT OF SUB-CONTRACTORS

(a) Out-to Tender Schedule

In collaboration with the design team the Managing Contractor will prepare a programme illustrating the timing and sequence of the following:-

(i) preparation of tender documentation

20. PROCEDURE FOR THE SELECTION AND APPOINTMENT OF SUB-CONTRACTORS

(a) cont'd

(ii) despatch of tender documentation

(iii) tender period and receipt date

(iv) tender consideration and analysis

(v) placing of order

(vi) provision for sub-contractor's details, shop drawings and associated approvals if appropriate

(vii) sub-contractor commencement date

(b) Selection of Prospective Tenderers

(i) In conjunction with the design team the Managing Contractor will prepare a list of prospective tenderers for all packages of work, based upon known performance characteristics and suitability for this particular project.

(ii) Where appropriate, prospective tenderers will be invited to attend interviews, comment on sub-contract terms, programmes, etc. and respond to questionnaires covering such aspects as labour practices, resource availability, etc.

(iii) Interviews will be chaired by the Project Manager and/or a Director and be attended by the Project Surveyor, Planning Engineer, Building Services Engineer and Construction Engineer as appropriate.

The design team should also be represented at all interviews, to provide a complementary role to the Managing Contractor who will be responsible for taking all interview meeting minutes and for their appropriate circulation.

Interviews will necessarily vary in subject content and emphasis, depending on the particular package under consideration.

(b) (iv) Subsequent to interviews with prospective sub-contractors and in conjunction with the design team the Managing Contractor will prepare lists of selected tenderers. Tenderers will be formally advised of their selection and the projected date for receipt of enquiry.

(c) Tender Documentation

The Managing Contractor will prepare and confirm the following for inclusion with tender documentation for each package of work:-

(i) acceptance of, or agreement to variation from, the standard sub-contract terms and conditions

(ii) appendix to general conditions setting out attendances to be provided by the Managing Contractor.

(iii) Time and Progress Schedule indicating sub-contract duration, intermediate restraints and associated activities

(iv) site layout indicating site conditions, access, space allocation, service plant and amenities to be provided by the Managing Contractor.

(v) details of long delivery materials, plant or components previously ordered by the Managing Contractor and to be assigned to the sub-contractor

Note: Prior to invitation to tender the Managing Contractor will prepare a detailed programme of works for each major sub-contract package, together with a report on preferred construction methods. Prospective sub-contractors will have the opportunity, if desired, to utilise in part or in whole the technical appraisal by the Managing Contractor in the preparation this tender and subsequent

(c) (vi) tender docuemnts will be assembled and despatched by the Quantity Surveyor. The Managing Contractor will be available throughout the tender period for discussions and elaboration of project requirements.

(d) Evaluation of Tenders and Appointments

Tenders will be opened and inspected by the Managing Contractor and the Design Team to establish the following comparative analysis:-

(i) examine and reconcile any deficiency in offer or basis of tender

(ii) note provision for working hours and overtime

(iii) check compliance with Time and *Progress Schedule*

(iv) evaluate any qualifications

(v) isolate pricing anomolies or deliberate 'weighting' of items

(vi) prepare tender report and recommend acceptance or further tender action as appropriate

(vii) inform successful and unsuccessful tenderers of results

(viii) sign sub-contract

(ix) efficiently progress the sub-contractor prior to start on site

(x) create a proper working atmosphere of integrity and co-operation by making efforts to ensure the efficiency of sub-contractors' work and maximising their profits within their tender price

(xi) assist with forward resourcing of labour

(xii) identify future bottlenecks

(e) Pre-Start Procedure

Prior to sub-contractors commencing work on site, the following activities will be carried out in conjunction with the sub-contractors to ensure their smooth progression to site:-

(i) finalise site organisation, e.g. canteen arrangments, work hours, etc.

(ii) set up efficient communications systems

(iii) obtain and agree informtion required charts and relay this information to the consultants

(iv) progress chase off-site works

(v) set up meeting structure and hold preliminary meetings

(vi) finalise method statements and detailed programmes

(vii) finalise delivery schedules

(viii) finalise all attendance items

(ix) detailed buildability advice

(x) prepare a schedule of visits to the off-site manufacturing plants for progress chasing, off-site testing, quality control and payment checks

(xi) finalise working drawings and manufacturing programmes

(f) Control of Sub-Contractors

The control of sub-contractors is achieved by the application of realistic and enforceable contractual documentation and by gaining the sub-contractors co-operation by assisting him to become more effective.

The following procedures are also regarded as fundamental in assisting sub-contractors to maintain acceptable progress and quality of workmanship, thus promoting efficiency and fitabilit :-

20. PROCEDURE FOR THE SELECTION AND APPOINTMENT OF SUB-CONTRACTORS cont'd

(f) (i) establish proper and effective lines of communications

(ii) set up production controls to maintain acceptable construction strategy and progress

(iii) implement and maintain procedures to control quality of all construction work and installations

(iv) provide a proper working environment to maximise output and promote good industrial relations

21. QUALITY CONTROL

(a) On-site the Management Contractor initially controls quality by ensuring that only sub-contractors with a proven history of jobs completed to the required standards and quality are invited to tender for this work.

The following functions in respect of quality control will normally be carried out:-

(i) ensure that the drawings and specifications are correctly interpreted and that construction follows the drawings and specifications

(ii) set standards, where possible, using sample areas of work as a yardstick or by entering into "contracts of sample".

(iii) check all work prior to the next activity being carried out

(iv) ensure that work sequencing allows high quality standards to be maintained

(v) check sections of work at completion

(vi) ensure correct measures are taken to protect work completed to high standards

(vii) where necessary, persuade sub-contractors to install additional quality controls without increasing the job cost.

21. QUALITY CONTROL cont'd

(b) Off-Site

Off-site visits to be made to check the quality of components being produced off-site and to witness tests of equipment, to ensure that they conform to the specifications.

22. INDUSTRIAL RLEATIONS

We fully recognise our responsibility towards good industrial relations and we take the initiative in creating and maintaining good working conditions. This philosophy hasresulted in continuing good relationships with union officials throughout the United Kingdom and has enabled us to show an exceptional record of work carried out without industrial unrest or disruption.

23. REPORTING PROCEDURES

Usually, a two-tier reporting system is adopted. The design and management team meet at two-weekly or monthly intervals to progress the project in accordance with the time and cost plan. We will then prepare a detailed report at agreed cut-off dates, which may be monthly or quarterly, to state the current situation. Typical contents include:-

(a) Design Progress
(b) Construction Progress
(c) Cost Plan
(d) Cost Control
(e) Forecasts of bottlenecks (with action recommendations)

Appendices will also be provided where necessary covering outline programmes, layouts, etc.

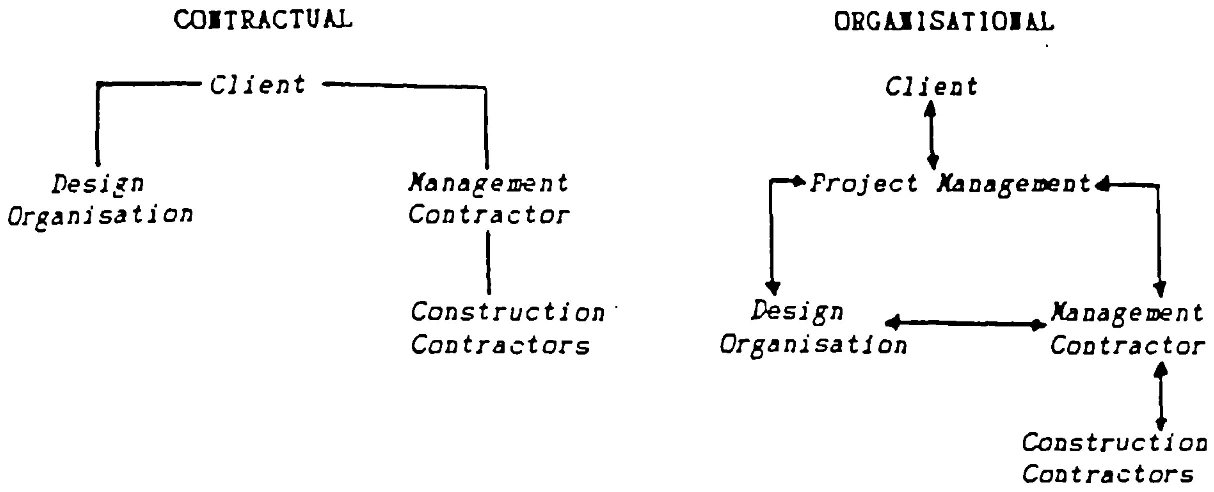
This report is then discussed by the principals involved in the scheme, the Client, the Design Team and ourselves. The Client is thus fully aware of the progress of the works at all times and contributes to the policy decisions being made.

APPENDIX TWO

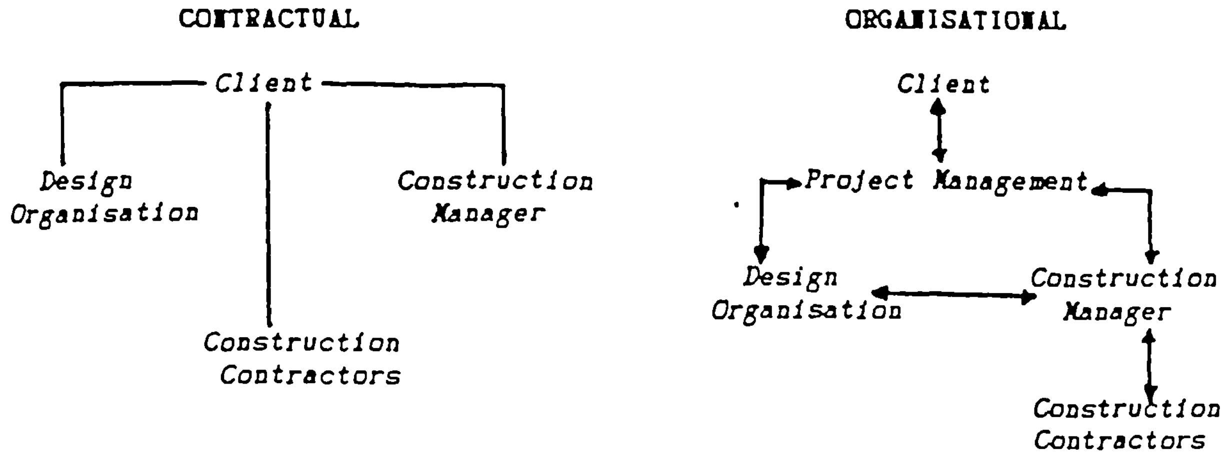
ORGANIZATIONAL DIFFERENCES

BETWEEN VARIOUS MCS

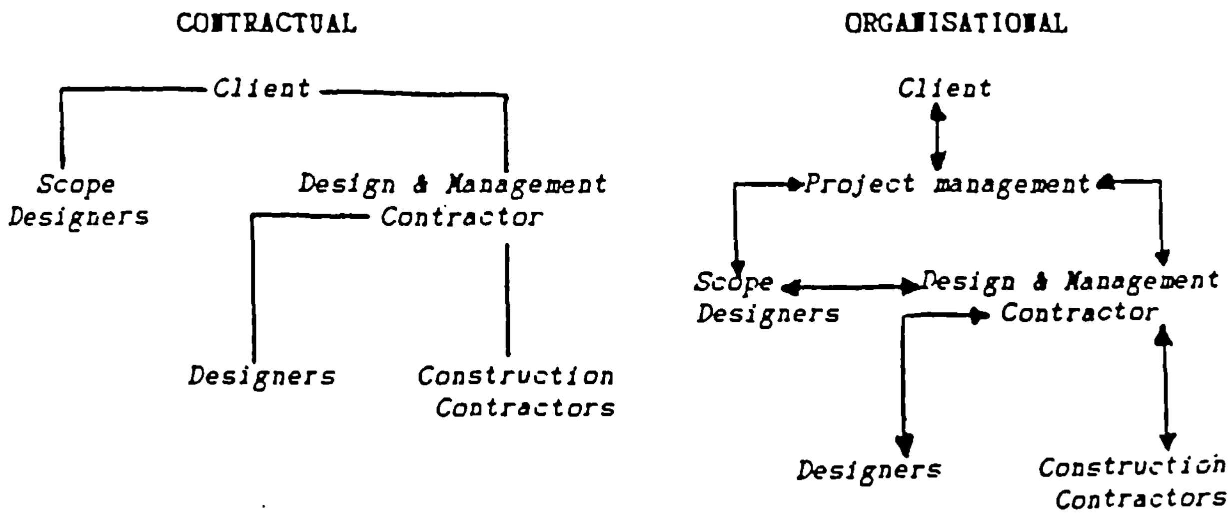
SOURCE : CIRIA REPORT 100



The management contract .



The construction management contract .



The design and management contract

APPENDIX THREE

FORM OF MANAGEMENT CONTRACT

<u>SOURCE</u> : JCT (1987)

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Articles of Agreement

made the __________ day of ______________________________ 19____

between ____

____

____

of (or whose registered office is situated at) ______________________________

____

____

(hereinafter called 'the Employer') of the one part

and ____

____

____

of (or whose registered office is situated at) ______________________________

____

____

(hereinafter called 'the Management Contractor') of the other part

Whereas

Recitals

First The Employer wishes to have constructed the building works described in the First Sche hereto (hereinafter called 'the Project') and has appointed professional advisers (herei called 'the Professional Team') for the design of and otherwise in connection with the Pr who have prepared or are preparing Drawings and a Specification for the Project herei called the 'Project Drawings' and the 'Project Specification';

Second the Project comprises works or items of work to be carried out under Works Contrac persons other than the Management Contractor in the manner hereinafter appearing tog with such site facilities and services to be provided by the Management Contractor a required by the Professional Team and recorded in the Fifth Schedule hereto in accord with Article 6 3,

7

Third the Employer and the Management Contractor have agreed that the Management Contractor will subject to the Conditions annexed hereto, co-operate with the Professional Team during the design stages and in the planning, programming and cost estimating for the Project, and will secure the carrying out and completion of the Project, and in so doing shall include

in the Pre-Construction Period the services as relevant set out in the Third Schedule hereto, and

in the Construction Period the services set out in the Third Schedule including any alterations made thereto by agreement between the Professional Team and the Management Contractor prior to the issue under clause 2 1 of the written notification by the Architect/the Contract Administrator of the date when it will be practicable to commence the construction of the Project

Fourth the Employer intends subject to the Conditions to give to the Management Contractor, and the Management Contractor is willing to receive and act upon, the written notice from the Employer referred to in clause 2 1 of the Conditions requiring the Management Contractor to continue such co-operation and to proceed to set out and secure the carrying out and completion of the Project in accordance with Article 1,

Fifth the status of the Employer for the purposes of the Statutory Tax Deduction Scheme under the Finance (No 2) Act 1975 or any amendment or re-enactment thereof as at the date of this Agreement is stated in the Appendix

Now Is hereby agreed as follows

nent

Article 1
For the consideration mentioned in Article 2 the Management Contractor will

ations

1 subject to the Conditions co-operate with the Professional Team during the design stages and in the planning, programming and cost estimating for, and in securing the carrying out and completion of the Project and in so doing shall include the services set out in the Third Schedule including any alterations made thereto by agreement between the Professional Team and the Management Contractor prior to the issue under clause 2 1 of the written notification by the Architect/the Contract Administrator of the date when it will be practicable to commence the construction of the Project, and

2 subject to receipt of the written notice from the Employer under clause 2 1 and subject to the Contract Documents, set out, manage, organise, supervise and secure the carrying out and completion of the Project on or before the Date for Completion or such other date as may be fixed under the Conditions inclusive of all such works or items of work as are to be carried out under and in accordance with the Works Contracts which the Management Contractor is required to enter into hereunder.

Article 2
Subject to the Conditions the Employer will pay to the Management Contractor the amounts due in accordance with section 4.

Article 3A [a] [b]
The term 'the Architect' in the Conditions shall mean

____

of ____

or in the event of his death or ceasing to be the Architect for the purpose of this Contract other person as the Employer shall within a reasonable time but in any case no later th days after such death or cessation nominate for that purpose being a person entitled use of the name Architect and *not being a person to whom the Management Contrac later than 7 days after such nomination shall object for reasons considered to be suffici an Arbitrator appointed in accordance with Section 9* [c] Provided always that no p subsequently appointed to be the Architect under this Contract shall be entitled to disreg overrule any certificate or opinion or decision or approval or instruction given or express the Architect for the time being

Contract Administrator

Article 3B [a] [b]
The term 'the Contract Administrator' in the Conditions shall mean

____

of ____

____

or, in the event of his death or ceasing to be the Contract Administrator for the purpose c Contract, such other person as the Employer shall within a reasonable time but in any ca later than 21 days after such death or cessation nominate for that purpose *not being a p to whom the Management Contractor no later than 7 days after such nomination shall obje reasons considered to be sufficient by an Arbitrator appointed in accordance with Section* Provided always that no person subsequently appointed to be the Contract Administrator u this Contract shall be entitled to disregard or overrule any certificate or opinion or decis approval or instruction given or expressed by the Contract Administrator for the time be

Quantity Surveyor

Article 4 [b]
The term 'the Quantity Surveyor' in the Conditions shall mean

____

of ____

____

or, in the event of his death or ceasing to be the Quantity Surveyor for the purpose c Contract, such other person as the Employer shall within a reasonable time but in any ca later than 21 days after such death or cessation, nominate for that purpose *not being a p to whom the Contractor no later than 7 days after such nomination shall object for re considered to be sufficient by an Arbitrator appointed in accordance with Section 9* [c]

Footnotes

[a] Article 3A is applicable where the person concerned is entitled to use the name 'Architect' under accordance with the Architects Registration Acts, 1931 to 1969 Article 3B is applicable in all other Therefore complete whichever is appropriate and delete the alternative. Where Article 3A is comple expression 'the Contract Administrator' shall be deemed to have been deleted throughout the Con Where Article 3B is completed the expression 'the Architect' shall be deemed to have been c throughout the Conditions.

[b] In cases where the Project is to be carried out under the direction of officials of the Local Authority ins names of such officials as are to perform the respective functions of 'the Architect'/'the C Administrator' and 'the Quantity Surveyor' under this contract

[c] Strike out words in italics in cases where 'the Architect', 'the Contract Administrator' or 'the C

Article 5

Professional Team

The term the Professional Team shall mean the Architect the Contract Administrator named in Article 3A/3B and the Quantity Surveyor named in Article 4 and

____

____

____

____

____

and such other persons as may be notified in writing to the Management Contractor by the Architect/the Contract Administrator.

Article 6

Project Drawings, Project Specification, Contract Cost Plan Appendix Part 2 and Third and Fifth Schedules

6·1 The Employer will cause the Project Drawings and the Project Specification which describe generally the scope of the Project, to be prepared as soon as reasonably practicable after the date of this Contract unless previously prepared.

6·2 The Employer will cause a Contract Cost Plan (to be annexed hereto) based upon the Project Drawings and the Project Specification to be prepared as soon as reasonably practicable after the date of this Contract by the Quantity Surveyor in collaboration with the remainder of the Professional Team and with the Management Contractor.

6·3 If the Management Contractor consents to:

the Contract Cost Plan and to the total thereof,

the entries inserted in the Appendix Part 2,

any alterations made to the Third Schedule

the entries in the Fifth Schedule as agreed between the Professional Team and the Management Contractor and completed by the Professional Team

he shall notify such consent to the Architect/the Contract Administrator and thereupon initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign the Appendix Part 2. If the Employer issues the written notice to proceed under clause 2 1 the Employer shall thereupon initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign and date the Appendix Part 2 and the Employer and the Management Contractor shall sign the Project Drawings, the Project Specification and the Contract Cost Plan.

Article 7

Drawings, specifications and bills of quantities for Works Contractors or otherwise

The Employer will cause such drawings and specifications and bills of quantities for Works Contracts or otherwise to be prepared and issued by or under the direction of the Professional Team as are necessary and in such a way as to enable the Management Contractor properly to discharge his obligations.

Article 8

Settlement of disputes – Arbitration

If any dispute or difference as to the construction of this contract or any matter or thing of whatever nature arising thereunder or in connection therewith, shall arise between the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor either during the progress or after the completion or abandonment of the Project, except on a decision of the Employer to state in the written notice under clause 2 1 that the Management Contractor is not to proceed or under clauses 5 9 to 5 17 (statutory tax deduction scheme) to the extent provided in clause 5 17 or under clause 3 of the VAT Agreement, such dispute or difference shall be and is hereby referred to arbitration in accordance with section 9.

ATTESTATION

Signed by or on behalf of the Employer [d1] ______________________

in the presence of

Signed by or on behalf of the Management Contractor [d1] ______________________

in the presence of

Signed, sealed and delivered by [d2]/The Common seal of [d3]: ______________________

in the presence of [d2]/was hereunto affixed in the presence of [d3]:

Signed, sealed and delivered by [d2]/The Common seal of [d3]: ______________________

in the presence of [d2]/was hereunto affixed in the presence of [d3]:

Footnotes

[d1] For use if Agreement is executed under hand

[d2] For use if Agreement is executed under seal by an individual or firm or unincorporated body

[d3] For use if Agreement is executed under seal by a company or other body corporate

THE CONDITIONS hereinbefore referred to

SECTION 1: Intentions of the Parties

Interpretation, definitions etc. (1·1 to 1·3)

Method of reference to clauses

1·1 Unless otherwise specifically stated a reference in the Recitals the Articles of Agreement the Conditions, the Appendix or the Schedules to any clause or section means that clause or section of the Conditions

Articles etc. to be read as a whole

1·2 The Recitals, the Articles of Agreement, the Conditions, the Appendix and the Schedules are to be read as a whole and the effect or operation of any recital, article or clause in the Conditions or item in or entry in the Appendix or in the Schedules must therefore unless otherwise specifically stated be read subject to any relevant qualification or modification in any other recital, article or any of the clauses in the Conditions or item in or entry in the Appendix or the Schedules.

Definitions

1·3 Unless the context otherwise requires or the Recitals or the Articles or the Conditions or an item in or entry in the Appendix or the Schedules specifically otherwise provides, the following words and phrases in the Recitals, the Articles of Agreement, the Conditions, the Appendix and the Schedules shall have the meanings given below or as ascribed in the recital, article, clause, section, Appendix item or the Schedule to which reference is made:

Word or phrase	Meaning
All Risks Insurance	see clause 6 2
Appendix:	the Appendix Parts 1 and 2 to the Conditions as completed, and with Part 2 signed, by the Employer and the Management Contractor.
Arbitrator:	the person appointed under section 9 to be the Arbitrator.
Articles or Articles of Agreement	the Articles of Agreement to which the Conditions are annexed or any one of the Articles.
Architect:	the person named in Article 3A or any successor duly appointed under Article 3A or otherwise agreed as the person to be the Architect.
Certificate of Completion of Making Good Defects:	see clause 2 6.
Completion Date:	the Date for Completion or any other date fixed under clause 2 12 or, if applicable, clause 3 6 6.
Conditions:	the clauses 1 1 to 9 7, and the Supplemental Provisions ("the VAT Agreement") annexed to the Articles of Agreement.
Construction Period:	the period starting with the day when the Management Contractor is given possession of the site and ending on the day named in the certificate of Practical Completion.
Construction Period Management Fee:	The amount which is part of the Management Fee and which is stated in the Appendix as the Construction Period Management Fee and which is adjustable, if applicable, in accordance with clause 4 10 2.
Contract Administrator:	The person named in Article 3B or any successor duly appointed under Article 3B or otherwise agreed as the person to be the Contract Administrator.
Contract Cost Plan:	the document referred to in Article 6 2 which is based upon the Project Drawings and the Project Specification and

1·3 *continued*

Contract Cost Plan Total:	the total of the Contract Cost Plan as stated in the Appe which total does not include the Management Fee
Contract Documents	the Project Drawings the Project Specification the Ar of Agreement the Conditions the Appendix the Cor Cost Plan annexed hereto and the Schedules
Date for Completion:	the date fixed and stated in the Appendix unde reference to clause 1 3
Date of Possession	the date fixed and stated in the Appendix unde reference to clause 2 3 1.
Defects Liability Period	the period named in the Appendix under the referer clause 2 5
Employer	the person named as the Employer in the Artic Agreement
Excepted Risks:	ionising radiations or contamination by radioactivity fro nuclear fuel or from any nuclear waste from the comb of nuclear fuel, radioactive toxic explosive or hazardous properties of any explosive nuclear ass or nuclear component thereof pressure waves caus aircraft or other aerial devices travelling at sonic or sonic speeds.
Final Certificate:	the certificate to which clause 4 12 refers
Instruction:	an instruction to the Management Contractor issued Architect/the Contract Administrator
Interim Certificate:	any one of the certificates to which clause 4 2 refers
Joint Names Policy:	a policy of insurance which includes the Mana Contractor and the Employer as the insured
Management Contractor	the person named as the Management Contracto Articles of Agreement.
Management Contractor's Manager on site:	The person named in the Appendix under the refer clause 3 13
Management Fee:	the sum of the Pre-Construction Period Managem and the Construction Period Management Fee
person:	an individual, firm (partnership), or body corporate
Practical Completion:	see clause 2 4
Pre-Construction Period:	the period starting on the date of execution of this and ending on the day immediately prior to the Possession.
Pre-Construction Period Management Fee:	the amount which is part of the Management Fee a is stated in, or is to be ascertained in accordance Schedule attached to, the Appendix
Preliminary Instruction:	an instruction referred to in clause 3 6 3
Prime Cost:	the cost of the Project ascertained in accordance Second Schedule.
Professional Team:	the persons referred to or named in Article 5
Project:	the building works briefly described in the First and shown and described generally in the Project and the Project Specification

[illegible]
the Project Specification

Project Drawings: the drawings for the Project listed in the Fourth Schedule hereto upon which the Contract Cost Plan has been based and which have been signed by or on behalf of the Employer and the Management Contractor.

Project Extension Items: see clause 2 13

Project Specification: the specification for the Project upon which the Contract Cost Plan has been based and which has been signed by or on behalf of the Employer and the Management Contractor

Quantity Surveyor: the person named in Article 4 or any successor duly appointed under Article 4 or otherwise agreed as the person to be the Quantity Surveyor.

Recital or Recitals: the Recitals or any one of the Recitals set out before Article 1.

Relevant Event: any one of the events set out in clause 2 10 of the Works Contract Conditions

Retention: see clause 4 7.

Schedules: the Schedules to the Conditions, that is the First and Second Schedules, the Third Schedule (including any alterations made thereto and initialled by or on behalf of the Employer and the Management Contractor), the Fourth Schedule; and the Fifth Schedule as completed and initialled by or on behalf of the Employer and the Management Contractor.

Site Materials: see clause 6 2.

Specified Perils: fire, lightning, explosion, storm, tempest, flood, bursting or overflowing of water tanks, apparatus or pipes, earthquake, aircraft and other aerial devices or articles dropped therefrom, riot and civil commotion but excluding Excepted Risks.

Statutory Requirements: see clause 5 1.

VAT Agreement: see clause 5 6.

Works: in respect of any Works Contract the works brief particulars of which are referred to in Section 1, and which are fully shown and described in the Numbered Documents listed in the second Recital of Section 3, of the relevant Works Contract/1.

Works Contract: the contract between the Management Contractor and a Works Contractor as referred to in clause 8 2·1·1 and defined in the Works Contract Conditions, clause 1 3 as: "The completed Sections 1, 2 and 3 of Works Contract/1 including the Numbered Documents listed in Section 3 and the Works Contract Conditions".

Works Contract Conditions: the Conditions (Works Contract/2) which are incorporated into the Works Contract by Article 1 2 in Works Contract/1, Section 3.

[illegible] an instruction or a Direction of the Management Contractor issued under the Works Contract

1 the alteration or modification of the design quality or quantity of the Works as shown in the Works Contract including

  1 the addition, omission or substitution of any work;

  2 the alteration of the kind or standard of any of the materials or goods to be used in the Works,

  3 the removal from the site of any work materials or goods executed or brought thereon by the Works Contractor for the purposes of the Works other than work, materials or goods which are not in accordance with the Works Contract

2· the imposition by the Employer or by the Management Contractor of any obligations or restrictions in regard to the matters set out in paragraphs 2 1 to 2 4 or the addition to or alteration or omission of any such obligations or restrictions so imposed or imposed ɪ the Works Contract in regard to.

  1 access to the site or use of any specific part of the site,

  2 limitations of working space,

  3 limitations of working hours,

  4 the execution or completion of the work in an specific order

Where clause 4 3 of the Works Contract Condition applies the term 'Variation' has the same meaning b in paragraph 1 of this definition delete 'design quali or quantity' and insert 'design or quality

Works Contractor see clauses 8 1 and 8 2.

Obligations of Management Contractor (1 4 to 1 8)

Co-operation with Professional Team — 1·4 The Management Contractor shall upon and subject to the Conditions co-operate with Professional Team as stated in Article 1

Specific obligations of Management Contractor — 1 5 The Management Contractor shall during the progress of the Project

1 prepare all necessary programmes for the execution of the Project.

2 enter into Works Contracts in sufficient time to enable the Project to be duly carried (and completed on or before the Completion Date;

3 ensure that all items of work to be carried out by Works Contractors as referred to clause 8 1 are carried out in accordance with the Project Specification and with t Works Contracts, using materials, goods and workmanship of the quality and standar therein specified, and that where and to the extent that approval of the quality of materi or the standards of workmanship is a matter for the opinion of the Architect/the Contra Administrator such quality and standards are to the reasonable satisfaction of t Architect/the Contract Administrator;

4 provide or secure the provision of such site facilities and services as are listed in the Fi Schedule or secure such site facilities and services as may be agreed with, or may instructed by, the Architect/the Contract Administrator.

1·5 *continued*

5 provide continual supervision of the Project and perform and provide everything necessary for the organisation and management of the Project.

6 ensure that the Project is carried out in an economical and expeditious manner and in accordance with the Contract Documents.

7 keep and make available all necessary detailed records in a form prescribed by or agreed with the Quantity Surveyor to enable the Quantity Surveyor to verify the Prime Cost

Obligations in Third Schedule — 1·6 Without prejudice to the generality of clause 1 5 the Management Contractor shall carry out the specific obligations listed in the Third Schedule

Management Contractor's liability to Employer — 1·7 Subject to clause 3 21 the Management Contractor shall be fully liable to the Employer for any breach of the terms of this Contract including any breach occasioned by the breach by any Works Contractor of his obligations under the relevant Works Contract.

Compliance with Instructions — 1·8 The Management Contractor shall forthwith comply or secure compliance with all Instructions save that where such Instruction is one requiring a Works Contract Variation within the definition of 'Works Contract Variation' the Management Contractor before securing compliance shall submit to the Architect/the Contract Administrator any written objection, or where relevant any written consent or withholding of consent, to compliance with the Instruction received by the Management Contractor from a Works Contractor under clause 3 4 1 of the Works Contract Conditions, and the Management Contractor need not comply or secure compliance with such Instruction to the extent that the written objection, or where relevant the written withholding of consent, of the Works Contractor to compliance with the Instruction is reasonable

Contract Documents – other documents – Works Contracts (1 9 to 1·12)

Custody and copies of Contract Documents — 1·9 The Contract Documents shall remain in the custody of the Employer so as to be available at all reasonable times for the inspection of the Management Contractor. Immediately after the execution of this Contract the Architect/the Contract Administrator without charge to the Management Contractor shall provide him (unless he shall have been previously so provided) with one certified copy of the Contract Documents.

Further drawings and details — 1·10 The Architect/The Contract Administrator without charge to the Management Contractor shall provide him with copies of such drawings and specifications and bills of quantities as referred to in Article 7 and of such further drawings, details, descriptive schedules or other like documents (in a form and by such reproduction methods as are agreed between the Architect/the Contract Administrator and the Management Contractor in writing) as are reasonably necessary either to explain and amplify the Project Specification or the Project Drawings or to enable the Project to be carried out and completed in accordance with this Contract.

Limits to use of documents — 1·11 None of the Contract Documents or the documents mentioned in clause 1·10 shall be used by the Management Contractor for any purpose other than this Contract and neither the Employer nor any member of the Professional Team shall divulge or use except for the purpose of this Contract any of the rates or prices in any Works Contract nor the Management Fee set out in the Appendix.

Copies of Works Contracts — 1·12 Immediately after the execution of each Works Contract the Management Contractor shall provide the Architect/the Contract Administrator (unless he shall have been previously so provided) with one certified copy of each Works Contract.

Certificates – issue – effect of Final Certificate – effect of other certificates (1·13 and 1·15)

Issue of certificates — 1·13 Except where otherwise specifically so provided any certificate to be issued by the Architect/the Contract Administrator under the Conditions shall be issued to the Employer and a duplicate copy thereof shall be sent at the same time to the Management Contractor.

Effect of Final Certificate — 1·14 ·1 Except as provided in clauses 1·14·2 and 1·14 3 (and save in respect of fraud) the Final Certificate shall have effect in any proceedings arising out of or in connection with this Contract (whether by arbitration under section 9 or otherwise) as

·1 conclusive evidence that where the quality of materials or the standard of workmanship stated in the Project Specification and/or in a Works Contract are to be to the reasonable satisfaction of the Architect/the Contract Administrator the same are to such satisfaction, and

1·14·1 *continued*

2 conclusive evidence that any necessary effect has been given to all the term this Contract with regard to payment save where there has been any accide inclusion or exclusion of any work materials goods or figure in any computatio any mathematical error in any computation in which event the Final Certificate s have effect as conclusive evidence as to all other computations, and

3 conclusive evidence that all and only such extensions of time if any as are under clauses 2 12 to 2 14 have been given and

4 conclusive evidence that the ascertainment of direct loss and/or expens respect of applications by Works Contractors as referred to in clause 8 5 and inclusion of such ascertained loss and/or expense in Prime Cost is in t settlement of all or any claims which the Management Contractor has or may h on behalf of Works Contractors arising out of any of the matters referred t clauses 4 46 1 to 4 46 7 of the Works Contract Conditions whether such clain for breach of contract duty of care, statutory duty or otherwise

2 If any arbitration or other proceedings have been commenced by either party before Final Certificate has been issued the Final Certificate shall have effect as conclu evidence as provided in clause 1 14 1 after either

  1 such proceedings have been concluded whereupon the Final Certificate shal subject to the terms of any award or judgement in or settlement of s proceedings, or

  2 a period of 12 months during which neither party has taken any further step in s proceedings, whereupon the Final Certificate shall be subject to any terms agr in partial settlement,

whichever is the earlier.

3 If any arbitration or other proceedings have been commenced by either party withi days after the Final Certificate has been issued the Final Certificate shall have effec conclusive evidence as provided in clause 1 14 1 save only in respect of all matter which those proceedings relate

4 The Final Certificate shall in no circumstances be conclusive as to the sufficiency of design for which any Works Contractor is responsible to the Employer under Employer/Works Contractor Agreement (Works Contract/3) or to the Manager Contractor under clause 1 7 4 of the Works Contract Conditions

Effect of certificates other than the Final Certificate — 1·15 Save as stated in clause 1 14 no certificate of the Architect/the Contract Administrator sh itself be conclusive evidence that any work materials or goods to which it relates ar accordance with this Contract.

Employer's notice requiring Management Contractor to proceed – possession of the site (2·1 to 2·3)

[...]oyer's notice [...]iring [...]agement [...]ractor [...]oceed

2·1 When the Architect/the Contract Administrator notifies the Employer in writing (with a copy to the Management Contractor) of the date when it will be practicable to commence the construction of the Project and the Management Contractor has initialled any alterations made to the Third Schedule, initialled the Fifth Schedule and signed the Appendix Part 2, the Employer, not later than 14 days from the date of that written notification (or not later than the expiry of such other period as may be stated in the Appendix) shall by notice in writing to the Management Contractor state whether or not he is to continue co-operation with the Professional Team and to proceed to set out and secure the carrying out and completion of the Project in accordance with Article 1. If the written notice requires the Management Contractor so to proceed the Employer shall initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign and date the Appendix Part 2.

[...]agement [...]ractor not to [...]eed – deemed [...]mination of [...]agement [...]ractor's [...]oyment

2·2 If the Employer states in the written notice given under clause 2·1 that the Management Contractor is not to proceed or if the Employer fails to notify the Management Contractor in accordance with the provisions of clause 2·1, the employment of the Management Contractor shall be deemed to have been determined and the Employer, within one month (or such other period as may be stated in the Appendix) calculated from the latest date when written notice by the Employer under clause 2·1 to proceed might have been given, shall pay to the Management Contractor the Pre-Construction Period Management Fee less any amount paid under an Interim Certificate issued in accordance with clause 4·2·1. Such payment shall be reduced to take into account the extent to which the reason why the Employer did not require the Management Contractor to proceed as referred to in clause 2·1 was because of some default, whether by act or omission, of the Management Contractor, his servants or agents, in discharging his obligations in the period prior to the date when the Employer was required to issue the notice referred to in clause 2·1.

[...]ession of [...]site

2·3 ·1 If the Employer gives the notice to proceed under clause 2·1, then the Employer shall give possession of the site to the Management Contractor on the Date of Possession whereupon the Management Contractor shall secure the commencement of the Project and shall ensure the regular and diligent progress of the Project and its completion on or before the Completion Date.

[...]ment of [...]ession

·2 Where clause 2·3·2 is stated in the Appendix to apply the Employer may defer the giving of possession under clause 2·3·1 for a period not exceeding 6 weeks or such lesser period stated in the Appendix calculated from the Date of Possession.

[...]ession by [...]agement [...]ractor

·3 For the purposes of the insurance of the Project, the Management Contractor shall retain possession of the site and the Project up to and including the date of issue of the certificate of Practical Completion and, subject to clauses 2·3·4 and 2·8, the Employer shall not be entitled to take possession of any part or parts of the site or Project until that date.

[...] or [...]upation [...]Employer

·4 The Employer may, with the consent in writing of the Management Contractor, use or occupy the site or the Project or any part or parts thereof whether for the purposes of storage of his goods or otherwise before the date of issue of the certificate of Practical Completion by the Architect/the Contract Administrator. Before the Management Contractor shall give his consent to such use or occupation the Management Contractor shall notify the insurers under clause 6·4·1·1 or 6·4·3·1 whichever may be applicable and obtain confirmation that such use or occupation will not prejudice the insurance. Subject to such confirmation the consent of the Management Contractor shall not be unreasonably withheld.

[...]ns – [...]ional [...]ium

·5 Where the insurers in giving the confirmation referred to in clause 2·3·4 have made it a condition of such confirmation that an additional premium is required the Management Contractor shall notify the Employer of the amount of the additional premium. If the Employer continues to require use or occupation under clause 2·3·4 the Management Contractor shall pay the additional premium required and shall provide the Employer, if so requested, with the receipt therefor.

[...] Project Completion

2·4 When in the opinion of the Architect/the Contract Administrator [illegible] of the Project is achieved he shall forthwith issue a certificate to that effect and Practical Completion of the Project shall be deemed for all the purposes of this Contract to have taken place on the day named in such certificate.

Schedule of defects – securing the making good of defects

2·5 Without prejudice to the operation of clause 3·12 any defects, shrinkages or other faults which shall appear within the Defects Liability Period stated in the Appendix and which are due to materials, goods or workmanship not in accordance with this Contract or to frost occurring before Practical Completion of the Project shall be specified by the Architect/the Contract Administrator in a schedule of defects which he shall deliver to the Management Contractor not later than 14 days after the expiration of the Defects Liability Period. Within a reasonable time after receipt of such schedule the Management Contractor shall secure the making good of the defects, shrinkages or other faults therein specified but subject to clause 3·21 at no cost to the Employer unless the Architect/the Contract Administrator shall otherwise instruct and if the Architect/the Contractor Administrator does so otherwise instruct then an appropriate deduction in respect of any such defects, shrinkages or other faults not made good shall be made to the Prime Cost.

Certificate of Completion of Making Good Defects

2·6 When in the opinion of the Architect/the Contract Administrator any defects, shrinkages or other faults which he may have required to be made good under clause 2·5 shall have been made good he shall issue a certificate to that effect, and completion of making good defects shall be deemed for all the purposes of this Contract to have taken place on the day named in such certificate (the "Certificate of Completion of Making Good Defects").

Frost

2·7 In no case shall the Management Contractor be required at no cost to the Employer to secure the making good of any damage by frost which may appear after Practical Completion, unless the Architect/the Contract Administrator shall certify that such damage is due to injury which took place before Practical Completion.

[e] Partial possession by Employer

Employer's wish – Management Contractor's consent

2·8 If at any time or times before the date of issue by the Architect/the Contract Administrator of the certificate of Practical Completion the Employer wishes to take possession of any part or parts of the Project and the consent of the Management Contractor (which consent shall not be unreasonably withheld) has been obtained, then notwithstanding anything expressed or implied elsewhere in this Contract, the Employer may take possession thereof. The Architect/the Contract Administrator shall thereupon issue to the Management Contractor on behalf of the Employer a written statement identifying the part or parts of the Project taken into possession and giving the date when the Employer took possession (in clauses 2·8, 6·3, 6·5·2 and 6·9 referred to as "the relevant part" and "the relevant date" respectively).

Practical Completion – relevant part

·1 For the purposes of clauses 2·5, 2·6 and 4·7 Practical Completion of the relevant part shall be deemed to have occurred and the Defects Liability Period in respect of the relevant part shall be deemed to have commenced on the relevant date.

Defects etc – relevant part

·2 When in the opinion of the Architect/the Contract Administrator any defects, shrinkages or other faults in the relevant part which he may have required to be made good under clause 2·5 shall have been made good he shall issue a certificate to that effect.

Insurance – relevant part

·3 As from the relevant date the insurance taken out under clause 6·4 shall terminate in respect of the relevant part but not further or otherwise, and where clause 6·5 applies the obligation of the Employer to insure under clause 6·5·2 shall from the relevant date include the relevant part.

Liquidated damages – relevant part

·4 In lieu of any sum to be paid or allowed by the Management Contractor under clauses 2·9 to 2·11 in respect of any period during which the Project may remain incomplete occurring after the relevant date there shall be paid or allowed such sum as bears the same ratio to the sum which would be paid or allowed apart from the provisions of clause 2·8 as the Contract Cost Plan Total less the amount contained therein in respect of the relevant part bears to the Contract Cost Plan Total.

Footnotes: [e] **Phased Completion:** Supplements are issued for use with the Management and Works Contracts.

Damages for non-completion (2·9 to 2·11)

[...]ure to secure [...]ical completion [...]roject – [...]itect [...]inistrator's [...]ficate

2·9 If the Management Contractor fails to secure the completion of the Project by the Completion Date then the Architect/the Contract Administrator shall issue a certificate to that effect. In the event of an extension of time being made after the issue of such a certificate the Architect/the Contract Administrator shall issue a written cancellation of that certificate and shall issue such further certificate under clause 2·9 as may be necessary.

[...]idated and [...]rtained [...]ages

2·10 Subject to the issue of a certificate under clause 2·9 and to clause 3·21 the Management Contractor shall, as the Employer may require in writing not later than the date of the Final Certificate, pay or allow to the Employer the whole or such part as may be specified in writing by the Employer of a sum calculated at the rate stated in the Appendix as liquidated and ascertained damages for the period between the Completion Date and the date of Practical Completion of the Project, and the Employer may deduct the same from any monies due or to become due to the Management Contractor under this Contract (including any balance stated as due to the Management Contractor in the Final Certificate) or the Employer may recover the same from the Management Contractor as a debt.

[...]use 2·9 [...]ficate – [...]cellation

2·11 If after the operation of clause 2·10 the relevant certificate under clause 2·9 is cancelled the Employer shall pay or repay to the Management Contractor any amounts recovered, allowed or paid under clause 2·10 but taking into account the effect of a further certificate, if any, issued under clause 2·9.

Extension of time (2·12 to 2·14)

[...]ation of [...]ed [...]pletion Date

2·12 ·1 If and whenever it becomes reasonably apparent that the Completion Date is not likely to be or has not been achieved, the Management Contractor shall forthwith advise the Architect/the Contract Administrator of the cause of the delay and if in the opinion of the Architect/the Contract Administrator the completion of the Project is likely to be or has been delayed beyond the Completion Date by any of the Project Extension Items in clause 2·13 then the Architect/the Contract Administrator shall as soon as he is able to assess the length of the delay beyond the Completion Date give in writing an extension of time by fixing such later date as the Completion Date which he considers to be fair and reasonable provided that no extension shall be made in the case of delay which the Management Contractor has not used his best endeavours to avoid or reduce. If, in the opinion of the Architect/the Contract Administrator, upon receipt of such advice from the Management Contractor, it is not fair and reasonable to fix a later date as a new Completion Date he shall so notify the Management Contractor.

·2 After the first occasion on which the Architect/the Contract Administrator fixed a new Completion Date the Architect/the Contract Administrator may in writing fix a Completion Date earlier than that previously fixed under clause 2·12·1 if in his opinion the fixing of such earlier Completion Date is fair and reasonable having regard to the omission of any work or obligations instructed under clause 3·4 after the last occasion on which the Architect/the Contract Administrator fixed a new Completion Date.

[...]ect [...]ension Items

2·13 The Project Extension Items referred to in clause 2·12·1 are:

·1 any cause which impedes the proper discharge by the Management Contractor of his obligations under this Contract including

any default, whether by act or omission, of the Employer or any persons for whom the Employer is responsible, in regard to the Project or

the Management Contractor not having received in due time necessary specifications or bills of quantities for Works Contracts or instructions, drawings, details or levels from the Professional Team for which he specifically applied in writing provided that such application was made on a date which having regard to the Completion Date was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same;

where clause 2·3·2 is stated in the Appendix to apply, the deferment of the Employer giving the possession of the site under clause 2·3·1;

2·13 *continued*

·2 any Relevant Event, except the Relevant Event referred to in clause 2·10·7·1 of the Works Contract Conditions, which entitles any Works Contractor to an extension of time under clause 2·3 and/or clause 2·7 of the Works Contract Conditions for completion of his Works.

Provided that no Project Extension Item shall be considered to the extent that it was caused or contributed to by any default, whether by act or omission, of the Management Contractor, his servants or agents or of any Works Contractor, his servants or agents or sub-contractors.

Extension of period or periods for completion of Works Contracts

2·14 The Management Contractor shall in accordance with clause 2·3 of the Works Contract Conditions notify the Architect/the Contract Administrator of any proposed decision on extensions of the period or periods for completion of a Works Contract in sufficient time so that the Architect/the Contract Administrator can express in writing to the Management Contractor any dissent from the proposed decision before the Management Contractor is required to notify the Works Contractor of his decision in accordance with the provisions of clauses 2·3 and 2·4 of the Works Contract Conditions. If the Architect/the Contract Administrator wishes to dissent from the proposed decision of the Management Contractor, he shall so notify the Management Contractor in writing before the Management Contractor is required under the aforesaid clauses of the Works Contract Conditions to notify the Works Contractor of his decision.

SECTION 3: Control of the Project

Management Contractor's staff, operatives and documentation (3 1 and 3 2)

Management personnel of Management Contractor – consent of Architect Contract Administrator

3·1 The Management Contractor shall employ upon the Project and working on the site the management personnel as listed in an attachment to the Second Schedule The consent of the Architect the Contract Administrator shall be obtained for the replacement, addition or deletion of any such management personnel but such consent shall not be unreasonably withheld

Access to Management Contractor's documentation

3·2 To the extent necessary for the proper execution of the Project or the ascertainment of any payment due to the Management Contractor the Quantity Surveyor and the Architect/the Contract Administrator shall be afforded access to all documentation of the Management Contractor relating to the Project

Instructions (3 3 to 3 6)

Architect's Contract Administrator's instructions

3·3 1 The Architect the Contract Administrator shall issue to the Management Contractor such instructions as are reasonably necessary to enable the Management Contractor properly to discharge his obligations All such instructions shall be issued in writing

2 If the Architect the Contract Administrator purports to issue an instruction otherwise than in writing it may be confirmed in writing by the Architect/the Contract Administrator to the Management Contractor or by the Management Contractor to the Architect/the Contract Administrator within 7 days of the purported issue If not so confirmed it shall be of no effect

3 If under clause 3 7 of the Works Contract Conditions a Works Contractor requires the Management Contractor to request the Architect the Contract Administrator to specify in writing the provision of this Contract which empowers the issue of any instruction issued by the Management Contractor to a Works Contractor, the Management Contractor shall so request the Architect/the Contract Administrator and the Architect/the Contract Administrator shall comply with any such request and the Management Contractor shall deliver to the Works Contractor a copy of the answer to that request

Project Changes – Works Contract Variations – provisional sums in Works Contracts

3·4 Without prejudice to the generality of clause 3 3 1 the Architect/the Contract Administrator may issue to the Management Contractor Instructions which may require Project Changes or Works Contract Variations, and shall issue Instructions in regard to the expenditure of provisional sums in Works Contracts

Postponement

3·5 The Architect the Contract Administrator may issue Instructions to the Management Contractor in regard to the postponement of any work to be executed under the provisions of this Contract.

Acceleration – alteration of sequence or timing

3·6 1 Clause 3 6 only applies where so stated in the Appendix.

2 Where the Employer desires

either

a Completion Date earlier than the Completion Date current at the date of a Preliminary Instruction under clause 3 6 3.

or

the cancellation of, or a reduction in the length of, any extension of time being fixed under clause 2 12 so that either the Completion Date current at the date of the Preliminary Instruction under clause 3 6 3 is not extended or is not extended by the length of the extension of time that would otherwise have been given under clause 2 12

the Employer may cause the Architect the Contract Administrator to issue a Preliminary Instruction under clause 3 6 3

3·6 *continued*

3 If the Employer causes the Architect the Contract Administrator to issue a Prelim Instruction to the Management Contractor to accelerate the carrying out or to alte sequence or timing of, any work to be executed under the provisions of this Contra Architect the Contract Administrator shall in such instruction set out the exact nat the desire of the Employer in regard to the Completion Date as referred to in clause for which the Preliminary Instruction has been issued

4 If the Management Contractor, or through him any Works Contractor makes a reaso objection to compliance with such Instruction the Preliminary Instruction shall eit withdrawn or so varied as to meet any such objection and then re-issued by the Arc the Contract Administrator

5 As soon as reasonably practicable after receipt of the Preliminary Instruction (o receipt of a Preliminary Instruction re-issued under clause 3 6 4) the Manag Contractor shall inform the Architect the Contract Administrator in writing

1 in respect of each Works Contractor affected by the proposed Instruction

either

the lump sum reasonably required by such Works Contractor (in response Management Contractor's inquiry made under clause 3 4 6 1 of the Contract Conditions) to be added to his Works Contract Sum or taken into ac in the computation of the Ascertained Final Works Contract Sum as a re compliance with the Instruction when issued by the Management Contractor the Works Contract

or

that it is not reasonably practicable to state such a lump sum and that the the Employer of compliance by such Works Contractor will therefore have ascertained in accordance with all the relevant Works Contract Conditions

and

2 either

the earlier Completion Date which can become the Completion Date for purposes of this Contract

or

the extent to which an extension of time that would otherwise be fixed Architect/the Contract Administrator under clause 2 12 can be avoided or r and the Completion Date which as a result will remain or become the Con Date for all the purposes of this Contract

6 If on receipt of the information given to the Architect the Contract Administrato clause 3 6 5 the Employer wishes to pay the amounts referred to in clause 3 6 to accept the Completion Date stated by the Management Contractor pursuant to 3 6 5 2 the Employer shall cause the Architect/the Contract Administrator to is Instruction

confirming the details of the acceleration or alteration of sequence o required including the change or changes to any Works Contract period or for completion of the Works Contract Works stated by Works Contra response to the Management Contractor under clause 3 4 6 2 of the Contract Conditions.

and

fixing the Completion Date

3·7 The Architect/the Contract Administrator shall [illegible] the execution of the Project and shall provide the Management Contractor by way of accurately dimensioned drawings with such information as shall enable the Management Contractor to set out the Project. The Management Contractor shall be responsible for setting out, and shall, at no cost to the Employer, amend any errors arising from inaccurate setting out.

Materials, goods and workmanship (3·8 to 3·12)

Materials goods and workmanship – standards

3·8 1 All materials and goods shall so far as procurable be of the respective kinds and standards described in the Project Specification, or as may be required in any specification or bills of quantities in any Works Contract provided that materials and goods shall be to the reasonable satisfaction of the Architect/the Contract Administrator where and to the extent that this is required in the Project Specification or as referred to in clause 1 5 3.

2 All workmanship shall be of the standards described in the Project Specification, or as may be required in any specification or bills of quantities in any Works Contract, or, where no such standards are described or required, shall be of a standard appropriate to the Project provided that workmanship shall be to the reasonable satisfaction of the Architect/the Contract Administrator where and to the extent that this is required in the Project Specification or as referred to in clause 1 5 3.

Provision of vouchers

3·9 The Management Contractor shall upon the request of the Architect/the Contract Administrator secure the provision of vouchers to prove that the materials and goods comply with clause 3 8 1.

Inspection – tests

3·10 The Architect/the Contract Administrator may issue Instructions requiring the Management Contractor to secure the opening up for inspection of any work covered up or secure the carrying out of any test of any materials or goods (whether or not already incorporated in the Project) or of any executed work, and such opening up or testing together with any making good in consequence thereof shall be at no cost to the Employer if the inspection or test shows that the work, materials or goods are not in accordance with this Contract.

Removal from the site – work etc. not in accordance with clause 3 8

3·11 The Architect/the Contract Administrator may issue Instructions in regard to the removal from the site of any work, materials or goods which are not in accordance with the provisions of clause 3 8. The replacement of such work, materials or goods and their removal from the site shall, subject to clause 3 21, be at no cost to the Employer.

Instructions on defects etc.

3·12 The Architect/the Contract Administrator may whenever he considers it necessary to do so, issue Instructions requiring any defect, shrinkage or other fault which shall at any time appear or be discovered and which is due to materials, goods or workmanship not in accordance with this Contract or to frost occurring before Practical Completion of the Project to be made good and the Management Contractor shall within a reasonable time after receipt of such Instructions comply or secure compliance with the same but, subject to clause 3 21, at no cost to the Employer.

Manager on site (3·13 and 3·14)

Manager – Instructions by Architect/Contract Administrator

3·13 The Management Contractor shall constantly keep upon the site a competent Manager who shall be approved by the Architect/the Contract Administrator in the Pre-Construction Period and who is named in the Appendix and who shall not be changed without the prior approval of the Architect/the Contract Administrator which approval shall not be unreasonably withheld. Any Instructions given to the Manager (or to his successor duly appointed) shall be deemed to have been given to the Management Contractor.

Removal of Manager from Project

3·14 The Architect/the Contract Administrator may (but not unreasonably or vexatiously) issue Instructions ordering the removal from the Project of the Manager and his replacement by a suitable person proposed by the Management Contractor and approved by the Architect/the Contract Administrator which approval shall not be unreasonably withheld.

Unfixed materials or goods – on site

3·15 Unfixed materials and goods delivered to, placed on or adjacent to the Project and intended therefor shall not be removed except for use upon the Project unless the Architect/the Contract Administrator has consented in writing to such removal which consent shall not be unreasonably withheld. Where the value of any such materials or goods has been included in any Interim Certificate under which the amount properly due to the Management Contractor has been paid or discharged by the Employer, such materials and goods shall become the property of the Employer but (subject to clause 6 4) the Management Contractor shall remain responsible for loss or damage to the same.

Unfixed materials or goods – off-site

3·16 Where the value of any materials or goods for a Works Contract and stored off-site has in accordance with the Second Schedule, Part 2 and clause 4 19 3 of the Works Contract Conditions been included in the amount directed in an Interim Certificate by the Architect/the Contract Administrator under clause 8 3 2 as an amount included therein in respect of a Works Contractor and the Employer has paid or discharged the amount properly due to the Management Contractor under the Interim Certificate such materials and goods shall become the property of the Employer; and thereafter the Management Contractor shall not, except for use upon the Project, remove or cause or permit the same to be moved or removed from the premises where they are, but the Management Contactor shall nevertheless be responsible for any loss thereof or damage thereto and for the cost of storage, handling and insurance of the same until such time as they *are delivered to and placed on or adjacent to the Project* intended therefor whereupon the provisions of clause 3 15 (except the words 'Where the value ... to the words 'the property of the Employer but') shall apply thereto.

Access for the Professional Team to the Project

3·17 The Professional Team shall at all reasonable times have access to the site of the Project and to the workshops or other places where work is being prepared for the Project but subject to such reasonable restrictions of the Management Contractor or any Works Contractor as are necessary to protect any proprietary right of the Management Contractor or any Works Contractor in such work.

Clerk of works

3·18 The Employer shall be entitled to appoint a clerk of works whose duty shall be to act solely as inspector on behalf of the Employer under the directions of the Architect/the Contract Administrator and the Management Contractor shall afford every reasonable facility for the performamce of that duty.

Assignment (3·19 and 3·20)

Assignment of Contract

3·19 Neither the Employer nor the Management Contractor shall, without the written consent of the other, assign this Contract.

Assignment by Employer – right to bring proceedings

3·20 Where clause 3 20 is stated in the Appendix to apply then, in the event of a transfer by the Employer of his freehold or leasehold interest in, or of a grant by the Employer of a leasehold interest in, the whole of the premises comprising the Project, the Employer may at any time after Practical Completion of the Project assign to any such transferee or lessee the right to bring proceedings (whether by arbitration or by litigation) to enforce any of the terms of this Contract made for the benefit of the Employer hereunder. The assignee shall be estopped from disputing any enforceable agreements reached between the Employer and the Management Contractor and which arise out of and relate to this Contract (whether or not they are or appear to be a derogation from the rights assigned) and made prior to the date of any assignment.

Breach of Works Contract by Works Contractor – Management Contractor's and Employer's obligations

3·21 Notwithstanding anything contained elsewhere in this Contract the following provisions shall apply in respect of any breach of, or non-compliance with, a Works Contract by a Works Contractor (which shall be deemed to include a determination of the employment of a Works Contractor under clauses 9 1 to 9 5 of the Works Contract Conditions and any engagement, as a result of such breach or non-compliance, of other persons to carry out part or the whole of the Works Contract Works in accordance with clause 7 4 1 of the Works Contract Conditions):

3 21 *continued*

1 The Management Contractor shall in consultation with the Architect/the Contract Administrator and the Employer take all necessary steps

1 to operate the terms of the Works Contract for dealing with such breach or non-compliance, including enforcement through arbitration or litigation if necessary, to obtain any amount due to the Management Contractor including therein any amount for which the Management Contarctor is liable to the Employer under clause 1 7, as a result of the breach or non-compliance by the Works Contractor; and

2 to secure the satisfactory completion of the Project including the engagement for that purpose of a further Works Contractor if such engagement is

in accordance with the terms of the Works Contract with the Works Contractor who has failed to comply with the Works Contract or is in breach or

is necessary because the employment of the Works Contractor under that Works Contract has been determined because of a breach or non-compliance, and

3 to meet any claims properly made under the Works Contract Conditions, by Works Contractors, other than the Works Contractor who is in breach or who has failed to comply with the Works Contract, in respect of the consequences to them of such breach or non-compliance.

2 The Employer shall

·1 pay to the Management Contractor in accordance with Section 4 and the Second Schedule all amounts properly incurred by the Management Contractor in fulfilling the obligations set out in clauses 3 21 1·1 and 3 21 1 2 but subject to the right of recovery by the Employer referred to in clause 3 21 2 3, and

2 keep an account of any liquidated and ascertained damages due, but not deducted or recovered under clauses 2 10 and 2 11 because the Completion Date has been exceeded by reason of the breach or non-compliance by a Works Contractor but shall not, except to the extent provided in clause 3 21·2 3, recover such damages from the Management Contractor.

3 be entitled to recover from the Management Contractor all amounts paid or credited to the Management Contractor under clause 3 21 2 1 and where relevant the amount of liquidated and ascertained damages referred to in clause 3 21 2 2 but only to the extent that such amounts have been recovered by the Management Contractor from the Works Contractor who is in breach or who has failed to comply with the Works Contract.

3 In respect of the claims properly made by Works Contractors as referred to in clause 3 21 1 3 the Management Contractor shall be entitled to deduct from amounts in respect of the Works Contractor who is in breach or who has failed to comply with the Works Contract and which are directed under clause 8 3 2 the amount of such claims which he has paid or is liable to pay to such Works Contractors together with any costs that he has incurred due to the breach or non-compliance. To the extent that the Management Contractor is not reimbursed by such deduction he shall seek to recover any shortfall in that reimbursement from the Works Contractor who is in breach or who has failed to comply with the Works Contract, through arbitration or litigation if necessary. If, despite compliance by the Management Contractor with the terms of clause 3·21·3, the Management Contractor is not fully reimbursed then the Employer shall pay to the Management Contractor the amount of that shortfall in reimbursement.

Alleged breach by Management Contractor of Works Contractor

3·22 If a Works Contractor alleges a breach of the Works Contract by the Management Contractor and as a result makes a claim against the Management Contractor then

1 the Management Contractor shall immediately so inform the Architect/the Contract Administrator;

3 22 *continued*

2 subject to any Instructions the Management Contractor shall take all such action as may be necessary, including, on legal advice (unless the Employer decides to dispense with the obtaining of such advice) either settling the claim or defending the claim in arbitration or litigation and shall pay to the Works Contractor the amount of any settlement or judgment including any costs agreed to be paid by the Management Contractor or awarded against him;

3 the Employer shall reimburse the Management Contractor the amounts incurred by the Management Contractor in connection with settling or defending the claim as referred to in clause 3 22 2 but only to the extent, and not further or otherwise, that the obligation to pay such amounts has been incurred other than by reason of any breach of contract or negligence of the Management Contractor in discharging his obligations under this Contract. This limitation on reimbursement to the Management Contractor shall not, however, apply to breaches of contract to which clause 3 21 applies which shall be governed by that clause.

Works by Employer or persons employed or engaged by Employer (3 23 to 3·25)

Information in Contract Documents

3·23 Where the Contract Documents, in regard to any work not forming part of this Contract which is to be carried out by the Employer himself or by persons employed or otherwise engaged by him, provide such information as is necessary to enable the Management Contractor to secure the carrying out and completion of the Project in accordance with these Conditions, the Management Contractor shall permit the execution of such work.

Information not in Contract Documents

3·24 Where the Contract Documents do not provide the information referred to in clause 3 23 and the Employer requires the execution of work not forming part of this Contract by the Employer himself or by persons employed or otherwise engaged by the Employer, then the Employer may, with the consent of the Management Contractor (which consent shall not be unreasonably withheld), arrange for the execution of such work.

Responsibility of Employer

3 25 Every person employed or otherwise engaged by the Employer as referred to in clauses 3 23 and 3 24 shall for the purpose of clauses 6 7 and 6 8 be deemed to be a person for whom the Employer is responsible and not to be a Works Contractor.

Antiquities (3 26 and 3·27)

Effect of find of antiquities

3·26 All fossils, antiquities and other objects of interest or value which may be found on the site or in excavating the same during the progress of the Project shall become the property of the Employer and upon discovery of such an object the Management Contractor shall forthwith

1 use his best endeavours not to disturb the object and shall cease work if and insofar as the continuance of work would endanger the object or prevent or impede its excavation or its removal;

2 take all steps which may be necessary to preserve the object in the exact position and condition in which it was found, and

3 inform the Architect/the Contract Administrator or the clerk of works of the discovery and precise location of the object.

Instructions on antiquities found

3·27 The Architect/the Contract Administrator shall issue Instructions in regard to what is to be done concerning an object reported by the Management Contractor under clause 3 26 and (without prejudice to the generality of his power) such Instructions may require the Management Contractor to permit the examination, excavation or removal of the object by a third party. Any such third party shall for the purposes of clauses 6 7 and 6 8 be deemed to be a person for whom the Management Contractor is not responsible.

Fair Wages

3 28 Clause 3 28 only applies where so stated in the Appendix and the Employer is a local authority.

1 1 The Management Contractor shall pay rates of wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where the work is carried out by machinery of negotiation or arbitration to which the parties are organisations of employers and trade unions representative respectively of substantial proportions of the employers and workers engaged in the trade or industry in the district

·2 in the absence of any rates of wages, hours or conditions of labour ... the Management Contractor shall pay rates of wages and observe hours and conditions of labour which are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Management Contractor is engaged are similar.

·2 The Management Contractor shall in respect of all persons employed by him (whether in carrying out this Contract or otherwise) in every factory, workshop or other place occupied or used by him for the carrying out of this Contract (including the Project) comply with the general conditions required by clause 3·28. The Management Contractor hereby warrants that to the best of his knowledge and belief he has complied with the general conditions required by clause 3·28 for at least 3 months prior to the date of his tender for this Contract.

·3 The Management Contractor shall recognise the freedom of his workpeople to be members of trade unions.

·4 The Management Contractor shall at all times during the continuance of this Contract display, for the information of his workpeople, in every factory, workshop or place occupied or used by him for the carrying out of this Contract (including the Project) a copy of clause 3·28. Where rates of wages, hours or conditions of work have been established either by negotiation or arbitration as described in clause 3·28·1·1 or by any agreement commonly recognised by employers and workers in the district a copy of the award, agreement or other document specifying or recording such rates, hours or conditions shall also be exhibited by the Management Contractor or made available by him for inspection in any such place as aforesaid.

·5 The Management Contractor shall be responsible for the observance of clause 3·28 by Works Contractors employed in the carrying out of this Contract, and shall if required notify the Employer of the names and addresses of all such Works Contractors.

·6 The Management Contractor shall keep proper wages books and time sheets showing the wages paid to and the time worked by the workpeople in his employ in and about the carrying out of this Contract, and such wages books and time sheets shall be produced whenever required for the inspection of any officer authorised by the Employer.

·7 If the Employer shall have reasonable ground for believing that the requirements of any of the preceding provisions of clause 3·28 are not being observed, he or the Architect/the Contract Administrator on his behalf shall be entitled to require proof of the rates of wages paid and hours and conditions observed by the Management Contractor and Works Contractors in carrying out the Project.

Payment (4·1 to 4·12)

Payment by Employer — 4·1 The Employer shall pay the Management Contractor in accordance with the provisions of clauses 4·1 to 4·12

the Prime Cost of the Project ascertained in accordance with the Second Schedule, an[d]

the Management Fee.

Issue of Interim Certificates – timings — 4·2 The Architect/the Contract Administrator shall issue Interim Certificates stating the amount ... to the Management Contractor from the Employer at the following times or periods:

·1 during the Pre-Construction Period: at the period stated in the Appendix under reference to clause 4·2·1;

·2 from the Date of Possession up to and including the end of the period during which ... certificate of Practical Completion is issued: at the period of interim certificates stat[ed in] the Appendix under the reference to clause 4·2·2;

·3 after the end of the period of interim certificates during which the certificate of Prac[tical] Completion is issued: as and when further amounts are ascertained as payable t[o the] Management Contractor by the Employer provided always that the Architect/the Con[tract] Administrator shall not be required to issue an Interim Certificate within one cale[ndar] month of having issued a previous Interim Certificate;

·4 at the time referred to in clause 4·11 (final amounts – Works Contractors).

Payment of amounts due in Interim Certificates — 4·3 ·1 The Management Contractor shall be entitled to payment of the amounts stated as ... in Interim Certificates within 14 days from the date of issue of each Interim Certificate ...

·2 Notwithstanding the fiduciary interest of the Employer in the Retention as stated in c[lause] 4·8·1 the Employer is entitled to exercise any right under this Contract of deductio[n] ... monies due or to become due to the Management Contractor against any amount s... under an Interim Certificate whether or not Retention is included in that Interim Certi[ficate] ...

·3 Where the Employer exercises any right under this Contract of deduction from m... due or to become due to the Management Contractor he shall inform the Manag[ement] Contractor in writing of the reasons for that deduction.

Ascertainment of amounts due in Interim Certificates — 4·4 Interim valuations shall be made by the Quantity Surveyor for the purpose of ascertain[ing the] amounts to be stated as due in Interim Certificates.

– during the Pre-Construction Period — 4·5 The amount to be stated as due in an Interim Certificate to which clause 4·2·1 refers sha[ll be the] appropriate instalment of the Pre-Construction Period Management Fee stated in, or calc[ulated] by reference to the schedule attached to, the Appendix.

– after the Pre-Construction Period — 4·6 The amount to be stated as due in an Interim Certificate to which clauses 4·2·2, 4·2·3 an[d 4·2·4] refer shall be, as related to a date not more than 7 days before the date of the Interim Cer[tificate,] the sum of the following:

·1 the amounts due and payable under the respective Works Contracts ascerta[ined in] accordance with Part 2 of the Second Schedule, after the deduction of any re[tention] deductible in accordance with the terms of the Works Contract,

Footnotes — [1] This entitlement is subject to the various rights of deduction given to the Employer in the C[onditions] including any obligation to deduct under clauses 5·9 to 5·17 and to the obligations of the parties ... VAT Agreement.

4·6 continued

·2 the amounts for site staff, general facilities etc, site facilities, services and materials properly provided by the Management Contractor ascertained in accordance with Parts 1, 3A, 3B, 4A, 4B and 4C of the Second Schedule which amounts shall be subject to Retention,

together with

·3 the Pre-Construction Period Management Fee,

·4 an instalment of the Construction Period Management Fee adjusted, where appropriate, in accordance with clause 4·10·2, being the ratio that the Construction Period Management Fee bears to the Contract Cost Plan Total applied to the sum of the amounts referred to in clauses 4·6·1 and 4·6·2, subject to a maximum of 97% of the amount of the Construction Period Management Fee, adjusted, where appropriate, in accordance with clause 4·10·2, and

·5 any expenditure incurred by the Management Contractor for which he is entitled to reimbursement by the Employer in accordance with clauses 3·21 and 3·22 and any other costs incurred by the Management Contractor which are not included in clauses 4·6·1 to 4·6·4 inclusive and which are payable by the Employer to the Management Contractor in accordance with the Conditions

less the sum of the following:

·6 any payments to or credits received by the Management Contractor for materials etc. which have arisen from the carrying out of the Project,

·7 any payments to or credits received by the Management Contractor which the Employer is entitled to recover in accordance with clause 3·21·2·3 or any other clause in the Conditions, and

·8 the sum of the amounts stated as due in all the Interim Certificates previously issued under clauses 4·2·1, 4·2·2 and 4·2·3.

Retention – ... — 4·7 The Retention which the Employer may deduct and retain as referred to in clause 4·6·2 shall be:

·1 3 per cent of any amount as relates to work which has not reached Practical Completion (as referred to in clauses 2·4 and 2·8·1)

·2 1·5 per cent of any amount as relates to work which has reached Practical Completion (as referred to in clauses 2·4 and 2·8·1) but in respect of which a Certificate of Completion of Making Good Defects under clause 2·6 or a certificate under clause 2·8·2 has not been issued.

Retention – rules — 4·8 The Retention including that held in respect of all Works Contracts shall be subject to the following rules:

·1 the Employer's interest in the Retention is fiduciary as trustee for the Management Contractor and for any Works Contractor (but without obligation to invest);

·2 at the date of each Interim Certificate the Architect/the Contract Administrator or, if so instructed by the Architect/the Contract Administrator, the Quantity Surveyor shall prepare a statement setting out the total amount of Retention held at that date in respect of the Management Contractor and the total amount held in respect of each Works Contractor; and such statement shall be issued to the Management Contractor and by the Management Contractor to each Works Contractor named in that statement.

4·8 continued

·3 except where the Employer is a local authority the Employer shall, if the Mana[gement] Contractor or, through the Management Contractor, any Works Contractor so requ[ests,] ... the date of payment of each Interim Certificate place the Retention held there... separate banking account (so designated as to identify the amount of Retention ... the Employer on trust as provided in clause 4·8·1) and certify to the Arch[itect/the] Contract Administrator with a copy to the Management Contractor that such amo[unt has] been so placed. The Management Contractor shall similarly inform each ... Contractor in respect of whom the Employer is holding Retention. The Employer ... entitled to the full beneficial interest in any interest accruing in the separate ... account and shall be under no duty to account for any such interest to the Mana[gement] Contractor or to any Works Contractor;

·4 if the Employer exercises the right to deduct referred to in clause 4·3·3 aga[inst] Retention he shall include, in the written information to the Management Contrac[tor] under clause 4·3·3, details of any deduction from either the Retention held in re... the Management Contractor or the Retention held for any Works Contractor (as ... the statement issued under clause 4·8·2).

Final Certificate – ascertainment of Prime Cost — 4·9 ·1 Not later than 6 months after Practical Completion of the Project the Man[agement] Contractor shall provide the Quantity Surveyor, unless previously provided, ... documents necessary for the purposes of the ascertainment of the Prime Cost ... all documents relating to the accounts of Works Contractors.

·2 Not later than 3 months after receipt by the Quantity Surveyor from the Man[agement] Contractor of the documents required under clause 4·9·1, the Quantity Surve[yor shall] deliver to the Architect/the Contract Administrator a statement of the Prime Cost ... Management Fee (including any adjustment of the Construction Period Manage[ment Fee] under clause 4·10·3) and the Architect/the Contract Administrator shall send ... the statement to the Management Contractor. If the statement refers to any disa... of any item of cost put forward by the Management Contractor part of the Pr... there shall be included in the statement the reasons for such disallowance.

Any adjustment of Construction Period Management Fee — 4·10 ·1 No adjustment of the Construction Period Management Fee shall be made ... accordance with clause 4·10·2 and 4·10·3.

·2 If, prior to the issue of the Final Certificate, the Prime Cost exceeds the Con[tract Cost] Plan Total by more than 5% (or such other percentage as is stated in the App[endix)] Construction Period Management Fee shall be adjusted in accordance with ... set out in clause 4·10·4.

·3 If the Prime Cost exceeds or is less than the Contract Cost Plan Total by mor[e than ...] (or such other percentage as is stated in the Appendix) the Construct[ion Period] Management Fee shall be adjusted in accordance with the formula set out ... 4·10·4.

·4 The formula referred to in clause 4·10·2 or clause 4·10·3 is:

$$ACPMF = CPMF \times \frac{100 \pm (D - T)}{100}$$

where:

ACPMF	is the adjusted Construction Period Management Fee;
CPMF	is the Construction Period Management Fee as stated in the Ap[pendix;]
D	is the increase or decrease of the total Prime Cost when compa[red with the] Contract Cost Plan Total expressed as a percentage of the C[ontract Cost] Plan Total;
T	is 5 or such other number as is stated in the Appendix under t[he reference] to clause 4·10·2 and 4·10·3,
±	shall be + (plus) if the total Prime Cost exceeds the Contract Co[st Plan Total] or – (minus) if the Prime Cost is less than the Contract Cost Pl[an Total]

days before the date of issue of the Final Certificate referred to in clause 4·12 and notwithstanding that a period of one month may not have elapsed since the issue of a previous Interim Certificate, the Architect/the Contract Administrator shall issue an Interim Certificate which shall include the amounts in respect of Works Contractors payable to the Management Contractor ascertained in accordance with Part 2 of the Second Schedule.

Certificate **4·12** ·1 The Architect/the Contract Administrator shall issue the Final Certificate not later than 2 months from whichever of the following events occurs the latest:

the end of the Defects Liability Period,

the issue of the Certificate of Completion of Making Good Defects under clause 2·8;

the delivery by the Quantity Surveyor to the Architect/the Contract Administrator of the statement referred to in clause 4·9·2.

·2 The Final Certificate shall state:

the sum of the amounts already stated as due in Interim Certificates, and

the sum of the Prime Cost and the Management Fee as set out in the statement to which clause 4·9·2 refers

and the difference (if any) between the two sums shall (without prejudice to the rights of the Management Contractor in respect of any Interim Certificates which have not been paid by the Employer) be expressed in the said Certificate as a balance due to the Management Contractor from the Employer or to the Employer from the Management Contractor as the case may be. Subject to any deductions authorised by these Conditions the said balance shall, as from the 28th day after the date of the said Final Certificate, be a debt payable as the case may be by the Employer to the Management Contractor or by the Management Contractor to the Employer.

Statutory Requirements (5·1 to 5·5)

Compliance with Statutory Requirements **5·1** Subject to clause 5·5 the Management Contractor shall secure compliance with, and give all notices required by, any Act of Parliament, any instrument, rule or order made under any Act of Parliament or any regulation or byelaw of any local authority or of any statutory undertaker which has any jurisdiction with regard to the Project or with whose systems the same are or will be connected (all requirements to be so complied with being referred to in the Conditions as "the Statutory Requirements").

Divergence – Statutory Requirements and documents referred to in clauses 1·9 and 1·10 **5·2** If the Management Contractor shall find any divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1·9 and 1·10 or between the Statutory Requirements and any instruction he shall immediately give to the Architect/the Contract Administrator a written notice specifying the divergence.

Divergence – Instructions **5·3** If the Management Contractor gives notice under clause 5·2 or if the Architect/the Contract Administrator shall otherwise discover or receive notice of a divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1·9 and 1·10 or between the Statutory Requirements and any instruction the Architect/the Contract Administrator shall within 7 days of the discovery or receipt of a notice issue instructions in relation to the divergence. If and insofar as the instructions require the Project to be changed or any Works Contract to be varied they shall be treated as if they were instructions issued in accordance with clause 3·4.

Emergency – compliance with Statutory Requirements **5·4** ·1 If, in any emergency, compliance with clause 5·1 requires the Management Contractor to secure the supply of materials or the execution of work before receiving instructions under clause 5·3 the Management Contractor shall secure the supply of such limited materials or the execution of such limited work as are reasonably necessary to secure immediate compliance with the Statutory Requirements.

·2 The Management Contractor shall forthwith inform the Architect/the Contract Administrator of the emergency and of the steps that he is taking under clause 5·4·1.

·3 The securing of the supply of materials or the execution of work under clause 5·4·1 shall be treated as having been so secured pursuant to an instruction requiring a Works Contract Variation under clause 3·4, provided that the emergency arose because of a divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1·9 and 1·10 or between the Statutory Requirements and any instruction requiring a Works Contract Variation issued in accordance with clause 3·4 and the Management Contractor has complied with clause 5·4·2.

Project – non-compliance with Statutory Requirements – position of Management Contractor **5·5** Provided that the Management Contractor complies with clause 5·2 the Management Contractor shall not be liable to the Employer under this Contract if the Project does not comply with the Statutory Requirements where and to the extent that such non-compliance of the Project results from the Management Contractor having secured the carrying out of work or having provided or secured site facilities and services in accordance with the documents referred to in clauses 1·9 and 1·10 or with any instruction issued in accordance with clause 3·4.

Value Added Tax – supplemental provisions (5·6 to 5·8)

Definitions – VAT Agreement **5·6** In clauses 5·6 to 5·8 and in the supplemental provisions pursuant hereto (hereinafter called the "VAT Agreement"), "tax" means the value added tax introduced by the Finance Act 1972 which is under the care and management of the Commissioners of Customs and Excise (hereinafter and in the VAT Agreement called "the Commissioners").

Prime Cost – Management Fee – exclusive of VAT **5·7** Any reference in the Conditions to the "Prime Cost" or the "Management Fee" shall be regarded as such cost or Fee exclusive of any tax and recovery by the Management Contractor from the Employer of tax properly chargeable by the Commissioners on the Management Contractor under or by virtue of the Finance Act 1972 or any amendment thereof on the supply of goods and services under this Contract shall be under the provisions of this clause and of the VAT Agreement.

...ble ...ption VAT **5·8** To the extent that after the date of this Contract the supply of goods and services to the Employer becomes exempt from the tax there shall be paid to the Management Contractor an amount equal to the loss of credit (input tax) on the supply to the Management Contractor of goods and services which contribute exclusively to the Project.

Finance (No.2) Act 1975 – statutory tax deduction scheme (5·9 to 5·17)

...tions **5·9** In this Condition 'the Act' means the Finance Act (No 2) Act 1975, 'the Regulations' means the Income Tax (Sub-Contractors in the Construction Industry) Regulations 1975 S.I. No.1960 or any amendment or re-enactment thereof; 'contractor' means a person who is a contractor for the purposes of the Act and the Regulations; 'evidence' means such evidence as is required by the Regulations to be produced to a 'contractor' for the verification of a 'sub-contractor's' tax certificate; 'statutory deduction' means the deduction referred to in S.69(4) of the Act or such other deduction as may be in force at the relevant time; 'sub-contractor' means a person who is a sub-contractor for the purposes of the Act and the Regulations; 'tax certificate' is a certificate issuable under S.70 of the Act.

...he Employer ...ntractor **5·10** ·1 Clauses 5·10 to 5·17 shall not apply if, in the Appendix, the Employer is stated not to be a 'contractor'.

·2 If in the Appendix the words "is a 'contractor'" are deleted, nevertheless if, at any time up to the issue and payment of the Final Certificate, the Employer becomes such a 'contractor', the Employer shall so inform the Contractor and the provisions of clauses 5·10 to 5·17 shall immediately thereupon become operative.

...tion of ...tor – tax ...cate **5·11** ·1 Not later than 21 days before the first payment under this Contract is due to the Management Contractor or after clause 5·10·2 has become operative the Management Contractor shall:

either

·1 provide the Employer with the evidence that the Management Contractor is entitled to be paid without the statutory deduction;

or

·2 inform the Employer in writing, and send a duplicate copy to the Architect/the Contract Administrator, that he is not entitled to be paid without the statutory deduction.

·2 If the Employer is not satisfied with the validity of the evidence submitted in accordance with clause 5·11·1·1, he shall within 14 days of the Management Contractor submitting such evidence notify the Management Contractor in writing that he intends to make the statutory deduction from payments due under this Contract to the Management Contractor who is a 'sub-contractor' and give his reasons for that decision. The Employer shall at the same time comply with clause 5·14·1.

...itled ...gement ...ctor ...s tax ...cate **5·12** ·1 Where clause 5·11·1·2 applies, the Management Contractor shall immediately inform the Employer if he obtains a tax certificate and thereupon clause 5·11·1·1 shall apply.

...y of tax ...cate ·2 If the period for which the tax certificate has been issued to the Management Contractor expires before the final payment is made to the Management Contractor under this Contract the Management Contractor shall not later than 28 days before the date of expiry:

either

·1 provide the Employer with evidence that the Management Contractor from the said date of expiry is entitled to be paid for a further period without the statutory deduction in which case the provisions of clause 5·11·2 shall apply if the Employer is not satisfied with the evidence;

or

...yer in writing that he will not be entitled to be paid without the ...n after the said date of expiry.

5·12 continued

Cancellation of tax certificate ·3 The Management Contractor shall immediately inform the Employer in writing if his current tax certificate is cancelled and give the date of such cancellation.

Vouchers **5·13** The Employer shall, as a 'contractor' in accordance with the Regulations, send promptly to the Inland Revenue any voucher which, in compliance with the Management Contractor's obligations as a 'sub-contractor' under the Regulations, the Management Contractor gives to the Employer.

Statutory deduction – direct cost of materials **5·14** ·1 If at any time the Employer is of the opinion (whether because of the information given under clause 5·11·1·2 or of the expiry or cancellation of the Management Contractor's tax certificate or otherwise) that he will be required by the Act to make a statutory deduction from any payment due to be made the Employer shall immediately so notify the Management Contractor in writing and require the Management Contractor to state not later than 7 days before each future payment becomes due (or within 10 days of such notification if that is later) the amount to be included in such payment which represents the direct cost to the Management Contractor and any other person of materials used or to be used in carrying out the Project.

·2 Where the Management Contractor complies with clause 5·14·1 he shall indemnify the Employer against loss or expense caused to the Employer by any incorrect statement of the amount of direct cost referred to in clause 5·14·1.

·3 Where the Management Contractor does not comply with clause 5·14·1 the Employer shall be entitled to make a fair estimate of the amount of direct cost referred to in clause 5·14·1.

Correction of errors **5·15** Where any error or omission has occurred in calculating or making the statutory deduction the Employer shall correct that error or omission by repayment to, or by deduction from payments to, the Management Contractor as the case may be subject only to any statutory obligation on the Employer not to make such correction.

Relation to other clauses **5·16** If compliance with clauses 5·9 to 5·17 involves the Employer or the Management Contractor in not complying with any other of the Conditions, then the provisions of clauses 5·9 to 5·17 shall prevail.

Application of arbitration agreement **5·17** The provisions of section 9 shall apply to any dispute or difference between the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor as to the operation of clauses 5·9 to 5·17 except where the Act or the Regulations or any other Act of Parliament or statutory instrument, rule or order made under an Act of Parliament provide for some other method of resolving such dispute or difference.

Insurance of the Project – Definitions – Benefit to Works Contractors (6·1 to 6·3)

surance of the ject – insurance existing structures

6·1 [g] Clause 6 4 applies whether or not clause 6 5 (existing structures – insurance) applies.

finitions

6·2 In clause 6·4 and, so far as relevant, in other clauses of the Conditions the following phrases shall have the meanings given below

[h] All Risks Insurance: Insurance which provides cover against any physical loss or damage to work executed and Site Materials but excluding the cost necessary to repair, replace or rectify

·1 property which is defective due to

·1 wear and tear,

2 obsolescence,

3 deterioration, rust or mildew;

[i] 2 any work executed or any Site Materials lost or damaged as a result of its own defect in design, plan, specification, material or workmanship or any other work executed which is lost or damaged in consequence thereof where such work relied for its support or stability on such work which was defective;

·3 loss or damage caused by or arising from

·1 any consequence of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection, military or usurped power, confiscation, commandeering, nationalisation or requisition or loss or destruction of or damage to any property by or under the order of any government de jure or de facto or public, municipal or local authority;

·2 disappearance or shortage if such disappearance or shortage is only revealed when an inventory is made or is not traceable to an identifiable event;

·3 an Excepted Risk (as defined in clause 1 3);

and if the Contract is carried out in Northern Ireland

·4 civil commotion;

5 any unlawful, wanton or malicious act committed maliciously by a person or persons acting on behalf of or in connection with an unlawful association; 'unlawful association' shall mean any organisation which is engaged in terrorism and includes an organisation which at any relevant time is a prescribed organisation within the meaning of the Northern Ireland (Emergency Provisions) Act 1973; 'terrorism' means the use of violence for political ends and includes any use of violence for the purpose of putting the public or any section of the public in fear.

Site Materials: all unfixed materials and goods delivered to, placed on or adjacent to the Project and intended for incorporation therein.

nefit of Joint mes Policies – ecified Perils – orks Contractors

6·3 The Management Contractor in respect of the Joint Names Policy referred to in clause 6·4·1·1 or clause 6 4 3·1 or, where clause 6 5 is applicable, clause 6 5 3 shall, and the Employer, where clause 6·5 is applicable, in respect of the Joint Names Policy referred to in clause 6 5 2

tnotes see page 39

provides for recognition of each Works Contractor as an insured under the relevant Joint Names Policy;

or

includes a waiver by the relevant insurers of any right of subrogation which they may have against any such Works Contractor

in respect of loss or damage by the Specified Perils to the Project and Site Materials and, where clause 6 5 applies, in respect of loss or damage by the Specified Perils to the existing structures (which shall include from the relevant date any relevant part to which clause 2 8 refers) together with the contents thereof owned by the Employer or for which he is responsible, and that this recognition or waiver shall continue up to and including the date of issue of the certificate of practical completion of the relevant Works (as referred to in clause 2 14 of the Works Contract Conditions) or, where the Project does not comprise alterations of or extensions to existing structures, the date of determination of the employment of the Management Contractor (whether or not the validity of that determination is contested) under clauses 7 1 to 7 13, or, where the Project comprises alterations of or extensions to existing structures, under clause 6 4 8 or clauses 7 1 to 7 13, whichever is the earlier.

[g] All Risks Insurance of the Project – Management Contractor to take out and maintain Joint Names Policy

Joint Names Policy for All Risks Insurance – excesses

6·4 ·1 ·1 The Management Contractor shall, prior to the commencement of any work on site for the Project, take out a Joint Names Policy for All Risks Insurance cover no less than that defined in clause 6 2 [h][k 1] (or for such other definition of cover as the Employer may instruct) for the full reinstatement value of the Project (plus the percentage, if any, to cover professional fees stated in the Appendix) and shall (subject to clause 2 8 3) maintain such Joint Names Policy up to and including the date of issue of the certificate of Practical Completion or, where the Project does not comprise alterations of extensions to existing structures up to and including the date of determination of the employment of the Management Contractor (whether or not the validity of that determination is contested) under clauses 7 1 to 7 13 or where the Project comprises alterations of or extensions to existing structures, under clause 6 4 8 or clauses 7 1 to 7 13, whichever is the earlier

2 The Management Contractor shall, before taking out the Joint Names Policy, notify the Architect who shall thereupon notify the Employer of the amount of any excess (uninsured amounts) in respect of each insurance risk stated in the Policy. Subject to any alteration to such amounts of excess which the Employer may require and the insurers agree, the amounts of any excess in respect of each insurance risk insured under the Joint Names Policy shall be set out in the Appendix Part 2

Premium receipts and Policy, endorsements

2 The Management Contractor shall send to the Architect/the Contract Administrator for deposit with the Employer the Joint Names Policy referred to in clause 6 4 1 1 and the premium receipt therefor and also any relevant endorsement or endorsements thereof as may be required to comply with the obligation to maintain that Policy set out in clause 6 4·1 1 and the premium receipts therefor.

Use of annual policy maintained by the Management Contractor – alternative to use of clause 6·4·1 – excesses

·3 ·1 If the Management Contractor independently of his obligations under this Contract maintains a policy of insurance which provides (inter alia) All Risks Insurance for cover no less than that defined in clause 6 2 [h][k·1] (or for such other definition of cover as the Employer may instruct) for the full reinstatement value of the Project (plus the percentage, if any, to cover professional fees stated in the Appendix) and the Employer has given to the Management Contractor his written acceptance of the amount of any excess in respect of each insurance risk stated in the policy (which amounts shall be set out in the Appendix Part 2) then the maintenance by the Management Contractor of such policy shall, if the policy is a Joint Names Policy in respect of the aforesaid Project, be a discharge of the Management Contractor's obligation to take out and maintain a Joint Names Policy under clause 6 4·1·1.

Footnotes see page 39

6·4 continued

2 If and so long as the Contractor is able to send to the Architect/the Contract Administrator for inspection by the Employer as and when he is reasonably required to do so by the Employer documentary evidence that such a policy is being maintained then the Management Contractor shall be discharged from his obligation under clause 6 4 2 to deposit the policy and the premium receipt with the Employer but on any occasion the Employer may (but not unreasonably or vexatiously) require to have sent to the Architect/the Contract Administrator for inspection by the Employer the policy to which clause 6 4·3 1 refers and the premium receipts therefor.

3 The annual renewal date, as supplied by the Management Contractor, of the insurance referred to in clause 6 4 3 1 is stated in the Appendix.

s or damage – urance claims – nagement ntractor's igations – yment by ployer

·4 If any loss or damage affecting work executed or any part thereof or any Site Materials is occasioned by any one or more of the risks covered by the Joint Names Policy referred to in clause 6 4 1 1 or clause 6 4 3 1 then, upon discovering the said loss or damage, the Management Contractor shall forthwith give notice in writing both to the Architect/the Contract Administrator and to the Employer of the extent, nature and location thereof; and the provisions of clause 6 4 5 to clause 6 4 9 shall apply.

5 The occurrence of such loss or damage referred to in clause 6 4 4 shall be disregarded in computing any amounts payable to the Management Contractor, whether or not in respect of work executed by a Works Contractor, under or by virtue of this Contract.

6 After any inspection required by the insurers in respect of a claim under the Joint Names Policy referred to in clause 6 4 1 1 or clause 6 4 3 1 has been completed the Management Contractor with due diligence, shall subject to clause 6 4 8 where applicable, secure the restoration of work damaged, the replacement or repair of any Site Materials which have been lost or damaged, the removal and disposal of any debris and proceed with securing the carrying out and completion of the Project.

·7 The Management Contractor, for himself and for all Works Contractors who are, pursuant to clause 6 3, recognised as an insured under the Joint Names Policy referred to in clause 6 4 1 1 or clause 6 4 3 1, shall authorise the insurers to pay all monies from such insurance in respect of the loss or damage referred to in clause 6 4 4 to the Employer.

8 Clause 6 4 8 applies only where the Project comprises alterations of or extensions to existing structures.

1 If it is just and equitable so to do the employment of the Management Contractor under this Contract may, within 28 days of the occurrence of the loss or damage referred to in clause 6 4 4, be determined at the option of either party by notice by registered post or recorded delivery from either party to the other. Within 7 days by receiving such a notice (but not thereafter) either party may give to the other a written request to concur in the appointment of an Arbitrator under section 9 in order that it may be determined whether such determination will be just and equitable;

2 upon the giving or receiving by the Employer of such a notice of determination or, where a reference to arbitration is made as aforesaid, upon the Arbitrator upholding the notice of determination, the provisions of clause 7 6 2 except clause 7 6 2 5 shall apply.

·9 ·1 Where the restoration, replacement or repair of the loss or damage and (when required) the removal and disposal of debris is carried out by a Works Contractor or Works Contractors already engaged upon the Project such restoration replacement or repair and, when required, the removal and disposal of debris shall be treated as if they were the subject of a Works Contract Variation required by an Instruction under clause 3 4.

2 Where clause 6 4·9 1 is not applicable the Management Contractor shall secure the restoration, replacement or repair of the loss or damage and, when required, the removal and disposal of debris, by a Works Contractor who shall be appointed in accordance with an Instruction under clause 8·1 and treated in all respects as a Works Contractor.

see page 39

Specified Perils – Insurance of existing structures and contents – Employer to take out and maintain Joint Names Policy

6·5 1 Clauses 6 5 2 and 6 5 3 apply only where the Project comprises alterations of or extensions to existing structures.

2 The Employer shall, prior to the commencement of any work on site for the Project take out a Joint Names Policy in respect of the existing structures (which shall include from the relevant date any relevant part to which clause 2 8 refers) together with the contents thereof owned by the Employer or for which he is responsible, for the full cost of reinstatement, repair or replacement of loss or damage due to one or more of the Specified Perils [k·2] and maintain such insurance up to and including the date of issue of the certificate of Practical Completion or up to and including the date of determination of the employment of the Management Contractor under clause 6 4 8 or clauses 7 1 to 7 4 or clauses 7 5 and 7 6 or clauses 7 7 to 7 9 or clauses 7 10 to 7 13 (whether or not the validity of that determination is contested) whichever is the earlier. The Management Contractor, for himself and for all Works Contractors who are, pursuant to clause 6 3, recognised as an insured under the Joint Names Policy referred to in clause 6 5 2 shall authorise the insurers to pay all monies from such insurance in respect of loss or damage to the Employer.

3 The Employer shall, as and when reasonably required to do so by the Management Contractor, produce documentary evidence and receipts showing that the Joint Names Policy required under clause 6 5, has been taken out and is being maintained. If the Employer defaults in taking out or in maintaining the Joint Names Policy required under clause 6 5 2 the Management Contactor may himself take out and maintain a Joint Names Policy against any risk in respect of which the default shall have occurred and for that purpose shall have such right of entry and inspection as may be required to make a survey and inventory of the existing structures and the relevant contents.

Footnotes:

[g] Clause 6 4 is applicable to Projects whether they consist of the erection of new buildings or comprise alterations of or extension to existing structures. For either kind of Project the Management Contractor takes out a Joint Names Policy for All Risks Insurance for the Project as defined in clause 6 2 (or for such other definition as the Employer may instruct), and for Projects which comprise alterations of or extensions to existing structures the Employer takes out a Joint Names Policy to insure the existing structures and their contents owned by the Employer or for which the Employer is responsible against loss or damage thereto by the Specified Perils clause 6 5. The premium paid by the Management Contractor for the Joint Names Policy for All Risks Insurance for the Project is treated as Prime Cost and reimbursed by the Employer (see Second Schedule Part 3B paragraph 11)

[h] The definition of 'All Risk Insurance' in clause 6 2 defines the risks for which insurance is required (subject to the right of the Employer in clause 6 4 1 1 or 6 4 3 1 to instruct that a different definition of cover is adopted). Policies issued by insurers are not standardised and there will be some variation in the way insurance for those risks is expressed. See also Practice Note 22 and Guide Part A

[i] In any policy for 'All Risks Insurance' taken out under clause 6 4 cover should not be reduced by the terms of any exclusion written in the policy beyond the terms of clause 6 2 paragraph 2; thus an exclusion in terms 'This Policy excludes all loss of or damage to the property insured due to defective design, plan, specification, materials or workmanship' would not be in accordance with the terms of that clause and of the definition of 'All Risks Insurance'. Cover which goes beyond the terms of the exclusion in paragraph 2 may be available though not standard in all policies taken out to meet the obligation in clause 6 4 and leading insurers who underwrite All Risks cover for building work have confirmed that where such improved cover is being given it will not be withdrawn as a consequence of the publication of the terms of the definition in clause 6 2 of 'All Risks Insurance'.

[k·1] In some cases it may not be possible for insurance to be taken out against certain of the risks covered by the definition of "All Risks Insurance". This matter should be arranged between the parties prior to the Architect/the Contract Administrator notifying the Employer under clause 2 1 when it would be practicable to commence the construction of the Project and either the definition of "All Risks Insurance" given in clause 6 2 amended or the risks actually covered should replace the definition; in the latter case clause 6 4 and other relevant clauses in which the definition "All Risks Insurance" is used should be amended to include the words used to replace this definition.

[k 2] In some cases it may not be possible for insurance to be taken out against certain of the Specified Perils. This matter should be arranged between the parties prior to the Architect/the Contract Administrator notifying the Employer under clause 2 1 when it would be practicable to commence the construction of the Project and either the definition of Specified Perils for the purpose of clause 6 5 amended or the risks actually covered should replace the definition; in the latter case clause 6 5 and other relevant clauses in which the definition 'Specified Perils' is used should be amended to include the words used to replace the definition

Insurance for Employer's loss of liquidated damages – clause 2·13·2 and Works Contract Conditions clause 2·10·3

6·6 ·1 Where it is stated in the Appendix that the insurance to which clause 6·6 refers may be required by the Employer then, not later than the date of the written notice of the Employer under clause 2·1 to the Management Contractor to proceed, the Architect/the Contract Administrator shall either inform the Management Contractor that no such insurance is required or shall instruct the Management Contractor to obtain a quotation for such insurance. This quotation shall be for an insurance on an agreed value basis [l] to be taken out and maintained by the Management Contractor until the date of Practical Completion and which will provide for payment to the Employer of a sum calculated by reference to clause 6·6·3 in the event of loss or damage to the Project, work executed, Site Materials, temporary buildings, plant and equipment for use in connection with and on or adjacent to the Project by any one or more of the Specified Perils and which loss or damage results in the Architect/the Contract Administrator giving an extension of time under clause 2·13·2 in respect of the Relevant Event referred to in clause 2·10·3 of the Works Contract Conditions and clause 2·13·2. The Architect/the Contract Administrator shall obtain from the Employer any further information which the Management Contractor reasonably requires to obtain such quotation. The Management Contractor shall send to the Architect/the Contract Administrator as soon as practicable the quotation which he has obtained and the Architect/the Contract Administrator shall thereafter instruct the Management Contractor whether or not the Employer wishes the Management Contractor to accept that quotation and such instruction shall not be unreasonably withheld or delayed. If the Management Contractor is instructed to accept the quotation the Management Contractor shall forthwith take out and maintain the relevant policy and send it to the Architect/the Contract Administrator for deposit with the Employer, together with the premium receipt therefor and also any relevant endorsement or endorsements thereof and the premium receipts therefor.

·2 The sum insured by the relevant policy shall be a sum calculated at the rate stated in the Appendix as liquidated and ascertained damages for the period of time stated in the Appendix.

·3 Payment in respect of this insurance shall be calculated at the rate referred to in clause 6·6·2 (or any revised rate produced by the application of clause 2·8·4) for the period of any extension of time finally given by the Architect/the Contract Administrator as referred to in clause 6·6·1 or for the period of time stated in the Appendix, whichever is the less.

·4 If the Management Contractor defaults in taking out or in maintaining the insurance referred to in clause 6·6·1 the Employer may himself insure against any risk in respect of which the default shall have occurred.

Injury to persons and property and Indemnity to Employer (6·7 to 6·9)

...ity of ...gement ...ctor – ...nal injury or ...h – indemnity ...ployer

6·7 The Management Contractor shall be liable for, and shall indemnify the Employer against, any expense, liability, loss, claim or proceedings whatsoever arising under any statute or at common law in respect of personal injury to or the death of any person whomsoever arising out of or in the course of or caused by the carrying out of the Project, except to the extent that the same is due to any act or neglect of the Employer or of any person for whom the Employer is responsible including the persons employed or otherwise engaged by the Employer to whom clauses 3·23 to 3·25 refer.

...ity of ...gement ...ctor – injury ...mage to ...rty – ...nity to ...oyer

6·8 The Management Contractor shall, subject to clause 6·9 and, where applicable, clause 6·5, be liable for, and shall indemnify the Employer against, any expense, liability, loss, claim or proceedings in respect of any injury or damage whatsoever to any property real or personal in so far as such injury or damage arises out of or in the course of or by reason of the carrying out of the Project, and to the extent that the same is due to any negligence, breach of statutory duty, omission or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents, or of any other person who may properly be on the site upon or in connection with the Project or any part thereof, his servants or agents, other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory rights or obligations.

...tes [l] The reference to an agreed value is intended to avoid any dispute over the amount of payment due under the insurance once the policy is issued. Insurers on receiving a proposal for the insurance to which clause 6·6 refers will normally reserve the right to be satisfied that the sum referred to in clause 6·6·2 is not more than a genuine pre-estimate of the damages which the Employer considers, at the time he enters into the Management Contract, he will suffer as a result of any delay.

Injury or damage to property – exclusion of the Project and Site Materials

6·9 ·1 Subject to clause 6·9·2 the reference in clause 6·8 to "property real or personal" does not include the Project, work executed and/or Site Materials up to and including the date of issue of the certificate of Practical Completion or up to and including the date of determination of the employment of the Management Contractor (whether or not the validity of the determination is disputed) under clauses 7·1 to 7·13 or, where clause 6·4·8 applies, under clause 6·4·8 or clauses 7·1 to 7·13, whichever is the earlier.

·2 If clause 2·8 has been operated then, in respect of the relevant part and as from the relevant date, such relevant part shall not be regarded as "the Project" or "work executed" for the purpose of clause 6·9·1.

Insurance against injury to persons or property (6·10 to 6·12)

Management Contractor's and Works Contractors' insurance – personal injury or damage to property

6·10 ·1 ·1 Without prejudice to his obligation to indemnify the Employer under clauses 6·7 and 6·8 the Management Contractor shall take out and maintain and shall cause any Works Contractor to take out and maintain insurance which shall comply with clause 6·10·1·2 in respect of claims arising out of his liability referred to in clauses 6·7 and 6·8.

·2 The insurance in respect of claims for personal injury to, or the death of any person under a contract of service or apprenticeship with the Management Contractor or a Works Contractor as the case may be, and arising out of and in the course of such person's employment, shall comply with the Employer's Liability (Compulsory Insurance) Act 1969 and any statutory orders made thereunder or any amendment or re-enactment thereof. For all other claims to which clause 6·10·1·1 applies the insurance cover to be taken out and maintained by the Management Contractor and by each Works Contractor shall be not less than the relevant sums stated in the Appendix for any one occurrence or series of occurrences arising out of one event. [m]

·2 As and when he is reasonably required to do so by the Employer the Management Contractor shall send and shall cause any Works Contractor to send to the Architect/the Contract Administrator for inspection by the Employer documentary evidence that the insurances required by clause 6·10·1·1 have been taken out and are being maintained, but at any time the Employer may (but not unreasonably or vexatiously) require to have sent to the Architect/the Contract Administrator for inspection by the Employer the relevant policy or policies and premium receipts therefor.

·3 If the Management Contractor defaults in taking out or in maintaining, or in causing any Works Contractor to take out and maintain, insurance as provided in clause 6·10·1·1 the Employer may himself insure against any liability or expense which he may incur arising out of such default and a sum or sums equivalent to the amount paid or payable by him in respect of premiums therefor may be deducted by him from any monies due or to become due to the Management Contractor under this Contract or such amount may be recoverable by the Employer from the Management Contractor as a debt.

Insurance – liability etc. of Employer

6·11 ·1 Where it is stated in the Appendix that the insurance to which clause 6·11·1 refers may be required by the Employer the Management Contractor shall, if so instructed by the Architect/the Contract Administrator, take out and maintain a Joint Names Policy for such amount of indemnity as is stated in the Appendix in respect of any expense, liability, loss, claim or proceedings which the Employer may incur or sustain by reason of injury or damage to any property other than the Project and Site Materials caused by collapse, subsidence, heave, vibration, weakening or removal of support or lowering of ground water arising out of or in the course of or by reason of the carrying out of the Project excepting injury or damage:

·1 for which the Management Contractor is liable under clause 6·8;

·2 attributable to errors or omissions in the designing of the Project;

·3 which can reasonably be foreseen to be inevitable having regard to the nature of the work to be executed or the manner of its execution;

Footnotes [m] The Management Contractor or any Works Contractor may if they so wish, insure for a sum greater than that stated in the Appendix.

...1 continued

·4 which it is the responsibility of the Employer to insure under clause 6·5·2 (if applicable);

·5 arising from war risks or the Excepted Risks.

·2 Any such insurance as is referred to in clause 6·11·1 shall be placed with insurers to be approved by the Employer, and the Management Contractor shall send to the Architect/the Contract Administrator for deposit with the Employer the policy or policies and the premium receipts therefor.

·3 If the Management Contractor defaults in taking out or in maintaining the Joint Names Policy as provided in clause 6·11·1 the Employer may himself insure against any risk in respect of which the default shall have occurred.

...ted Risks

6·12 Notwithstanding the provisions of clauses 6·7, 6·8 and 6·10·1, the Contractor shall not be liable either to indemnify the Employer or to insure against any personal injury to or the death of any person or any damage, loss or injury caused to the Project or Site Materials, work executed, the site, or any property, by the effect of an Excepted Risk.

War Damage (6·13 to 6·15)

...t of ...damage

6·13 In the event of the Project or any part thereof or any unfixed materials or goods intended for, delivered to and placed on or adjacent to the Project sustaining war damage as defined in clause 6·15 then notwithstanding anything expressed or implied elsewhere in this Contract:

·1 the occurrence of such war damage shall be disregarded in computing any amounts payable to the Management Contractor under or by virtue of this Contract;

·2 the Architect/the Contract Administrator may issue instructions requiring the Management Contractor to secure the removal and/or disposal of any debris and/or damaged work and/or to execute such protective work as shall be specified;

·3 the Management Contractor shall secure the reinstatement or making good of such war damage and shall proceed to secure the carrying out and completion of the Project, and the Architect/the Contract Administrator shall in writing fix such later Completion Date as, in his opinion, is fair and reasonable;

·4 the removal and disposal of debris or damaged work, the execution of protective works and the reinstatement and making good of such war damage shall be treated as if it were a Project Change and as Works Contract Variations issued under clause 3·4 and/or an addition to items of work to be carried out by Works Contractors as referred to in clause 8·1.

...pensation ...ar damage

6·14 The Employer shall be entitled to any compensation which may at any time become payable out of monies provided by Parliament in respect of war damage sustained by the Project or any part thereof or any unfixed materials or goods intended for the Project which shall at any time have become the property of the Employer.

...ition of ...damage

6·15 The expression 'war damage' as used in clauses 6·13 and 6·14 means war damage as defined by S.2 of the War Damage Act 1943 or any amendment or re-enactment thereof.

SECTION 7: Determination

Default by Management Contractor – Determination by Employer (7·1 to 7·4)

Default by Management Contractor

7·1 Without prejudice to any other rights which the Employer may possess, if the Management Contractor shall make default in any one or more of the following respects, that is to say

·1 if without reasonable cause he wholly suspends or fails to proceed regularly and diligently with the carrying out of his obligations referred to in Article 1 before the completion of the Project; or

·2 if he refuses or neglects to comply with a written notice from the Architect/the Contract Administrator requiring him to remove or secure the removal of defective work or improper materials or goods and by such refusal or neglect the Project is materially affected; or

·3 if he fails to comply with the provisions of either clause 3·19 or, if applicable, clause 3·28

then the Architect/the Contract Administrator may give to him a notice by registered post or recorded delivery specifying the default. If the Management Contractor either shall continue such default for 14 days after receipt of such notice or shall at any time thereafter repeat such default (whether previously repeated or not) then the Employer may within 10 days after such continuance or repetition by notice by registered post or recorded delivery forthwith determine the employment of the Management Contractor under this Contract, provided that such notice shall not be given unreasonably or vexatiously.

[n] Management Contractor becoming insolvent

7·2 In the event of the Management Contractor making a composition or arrangement with his creditors or having a proposal in respect of his company for a voluntary arrangement for a composition of debts or scheme of arrangement approved in accordance with the Insolvency Act 1986 or having an application made under the Insolvency Act 1986 in respect of his company to the court for the appointment of an administrator, or having a winding up order made or (except for the purposes of amalgamation or reconstruction) a resolution for voluntary winding up passed or having a provisional liquidator, receiver or receiver and manager of his business or undertaking duly appointed, or having an administrative receiver, as defined in the Insolvency Act, 1986, appointed or having possession taken, by or on behalf of the holders of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge, the employment of the Management Contractor under this Contract shall be forthwith automatically determined but the said employment may be reinstated and continued if the Employer and the Management Contactor, his liquidator, provisional liquidator, administrator, receiver or receiver and manager or administrative receiver as the case may be shall so agree.

Corruption

7·3 The Employer shall be entitled to determine the employment of the Management Contractor under this or any other contract, if the Management Contractor shall have offered or given or agreed to give to any person any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of this or any other contract with the Employer, or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract with the Employer, or if the like acts shall have been done by any person employed by the Management Contractor or acting on his behalf (whether with or without the knowledge of the Management Contractor), or if in relation to this or any other contract with the Employer the Management Contractor or any person employed by him or acting on his behalf shall have committed any offence under the Prevention of Corruption Acts, 1889 to 1916, or where the Employer is a local authority shall have given any fee or reward the receipt of which is an offence under sub-section (2) of section 117 of the Local Government Act 1972 or any re-enactment thereof.

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7·4 In the event of the employment of the Management Contractor under this Contract being determined under clause 7·1, 7·2 or 7·3 and so long as it has not been reinstated and continued then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6·7 and 6·8 which may accrue either before the Management Contractor or any Works Contractor shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and duties of the Employer and the Management Contractor:

·1 the Employer may employ and pay other persons to carry out and complete the Management Contractor's obligations under this Contract and he or they may enter upon the site of the Project and use all temporary buildings, plant, tools, equipment, goods and materials intended for, delivered to and placed on or adjacent to the Project, and may purchase all materials and goods necessary for the carrying out and completion of the Project;

·2 ·1 except where the determination occurs by reason of the Management Contractor having a winding up order made or (other than for the purpose of amalgamation or reconstruction) a resolution for voluntary winding up passed, the Management Contractor shall if so required by the Employer or by the Architect/the Contract Administrator on behalf of the Employer within 14 days of the date of determination, assign to the Employer without payment the benefit of any agreement for the supply of materials or goods and/or the execution of any work for the purposes of this Contract to the extent that the same is assignable, but on the terms that a supplier or Works Contractor shall be entitled to make any reasonable objection to any further assignment thereof by the Employer;

·2 subject to the exception to the operation of clause 7·4·2·1, the Employer may pay any supplier or Works Contractor for any materials or goods delivered or works executed for the purposes of this Contract (whether before or after the date of determination) in so far as the price thereof has not already been paid by the Management Contractor; payments made under clause 7·4·2·2 may be deducted from any sum due or to become due to the Management Contractor or shall be recoverable by the Employer from the Management Contractor as a debt.

·3 the Management Contractor shall, as and when required in writing by the Architect/the Contract Administrator so to do (but not before), remove from the site any temporary buildings, plant, tools, equipment, goods and materials belonging to, hired or leased by him. If within a reasonable time after any such requirement has been made the Management Contractor has not complied therewith, then the Employer may (but without being responsible for any loss or damage) remove and sell any such property of the Management Contractor, holding the proceeds less all costs incurred to the credit of the Management Contractor;

·4 the Management Contractor shall allow or pay to the Employer in the manner hereinafter appearing the amount of any direct loss and/or damage caused to the Employer by the determination. Until after completion of the Project under clause 7·4·1 the Employer shall not be bound by any provision of the Contract to make any further payment to the Management Contractor, but upon such completion and the verification within a reasonable time of the accounts therefor the Architect/the Contract Administrator shall certify the amount of expenses properly incurred by the Employer and the amount of any direct loss and/or damage caused to the Employer by the determination and, if such amounts when added to the monies paid to the Management Contractor before the date of determination exceed the total amount which would have been payable on due completion in accordance with this Contract, the difference shall be recoverable by the Employer from the Management Contractor as a debt; and if the said amounts when added to the said monies be less than the said total amount, the difference shall be recoverable by the Management Contractor from the Employer as a debt.

Default of Employer – suspension of Project – determination by Management Contractor (7·5 and 7·6)

Acts etc. giving ground for determination of employment by Management Contractor

7·5 Without prejudice to any other rights and remedies which the Management Contractor may possess, if any of the matters referred to in clauses 7·5·1 to 7·5·4 occur then the Management Contractor may thereupon by notice by registered post or recorded delivery to the Employer or the Architect/the Contract Administrator forthwith determine the employment of the Management Contractor under this Contract, provided that such notice shall not be given unreasonably or vexatiously:

·1 the Employer does not pay the amount properly due to the Management Contractor on any certificate (otherwise than as a result of the operation of the VAT Agreement) within 14 days from the issue of that certificate and continues such default for 7 days after receipt by registered post or recorded delivery of a notice from the Management Contractor stating that notice of determination under clause 7·5 will be served if payment is not made within 7 days from receipt thereof; or

·2 the Employer interferes with or obstructs the issue of any certificate due under this Contract; or

·3 the carrying out of the whole or substantially the whole of the uncompleted Project (other than the execution of work required under clause 2·5) is suspended for a continuous period of the length named in the Appendix by reason of:

·1 Instructions issued under clauses 3·4 or 3·5, unless caused by reason of some negligence or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory obligations; or

·2 the Management Contractor not having received in due time necessary specifications or bills of quantities for Works Contracts, Instructions, drawings, details or levels from the Architect/the Contract Administrator for which he specifically applied in writing provided that such application was made on a date which having regard to the Completion Date was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same; or

·3 delay in the execution of work not forming part of this Contract by the Employer himself or by persons employed or otherwise engaged by the Employer as referred to in clauses 3·23 and 3·24 or the failure to execute such work or delay in the supply by the Employer of materials and goods which the Employer has agreed to provide for the Project or the failure so to supply; or

·4 the opening up for inspection of any work covered up or the testing of any of the work, materials or goods in accordance with clause 3·10 (including making good in consequence of such opening up or testing) unless the inspection or test showed that the work, materials or goods were not in accordance with this Contract;

·5 failure of the Employer to give in due time ingress to or egress from the site of the Project or any part thereof through or over any land, buildings, way or passage adjoining or connected with the site and in the possession and control of the Employer, in accordance with the Contract Documents after receipt by the Architect/the Contract Administrator of such notice, if any, as the Contractor is required to give or failure of the Employer to give such ingress or egress as otherwise agreed between the Architect/the Contract Administrator and the Management Contractor;

or

continued

[7·5]·4 the Employer makes a composition or arrangement with his creditors or has a proposal in respect of his company for a voluntary arrangement for a composition of debts or scheme of arrangement approved in accordance with the Insolvency Act 1986 or has an application made under the Insolvency Act 1986 in respect of his company to the court for the appointment of an administrator or has a winding up order made or (except for the purposes of an amalgamation or reconstruction) has a resolution for voluntary winding up passed or a provisional liquidator, receiver or receiver and manager of his business or undertaking is duly appointed, or has an administrative receiver, as defined in the Insolvency Act 1986, appointed or possession is taken, by or on behalf of the holders of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge;

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7·6 Upon determination under clause 7·5, then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6·7 and 6·8 which may accrue either before the Management Contractor or any Works Contractors shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and liabilities of the Management Contractor and the *Employer*;

·1 the Management Contractor shall with all reasonable dispatch and in such manner and with such precautions as will prevent injury, death or damage of the classes in respect of which before the date of determination he was liable to indemnify the Employer under clause 6·7 or 6·8, remove from the site all his temporary buildings, plant, tools, equipment, materials and goods belonging to or hired by him and shall give facilities for his Works Contractors to do the same but subject always to the provisions of clause 7·6·2·2;

·2 after taking into account amounts previously paid under this Contract the Management Contractor shall be paid by the Employer:

·1 the Prime Cost; and

·2 the Prime Cost as defined in Part 4B of the Second Schedule of materials and goods not delivered to or adjacent to the Project but for which the Management Contractor is legally bound to pay and on such payment by the Employer any such materials or goods so paid for shall become the property of the Employer; and

·3 a Management Fee calculated as follows: the Pre-Construction Period Management Fee plus a proportion of the Construction Period Management Fee stated in the Appendix adjusted, where appropriate, in accordance with clause 4·10·2, being the ratio that the Construction Period Management Fee bears to the Contract Cost Plan Total applied to the sum of the amounts referred to in clause 7·6·2·1 and 7·6·2·2; and

·4 the reasonable cost of removal under clause 7·6·1; and

·5 any direct loss and/or damage caused to the Management Contractor by the determination.

Determination by Employer or Management Contractor (7·7 to 7·9)

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7·7 Without prejudice to any other rights or remedies which the Employer or the Management Contractor may possess if the carrying out of the whole or substantially the whole of the uncompleted Project (other than the execution of work required under clause 2·5) is suspended for a continuous period of the length named in the Appendix by reason of:

·1 force majeure; or

·2 loss or damage to the Project occasioned by any one or more of the Specified Perils; or

·3 civil commotion

then the Employer or the Management Contractor may thereupon by notice by registered post or recorded delivery to the Management Contractor or to the Employer forthwith determine the employment of the Management Contractor under this Contract provided that such notice shall not be given unreasonably or vexatiously.

Specified Perils — negligence etc. by Management Contractor

7·8 The Management Contractor shall not be entitled to give notice under clause 7·7·2 where the loss or damage to the Project occasioned by one or more of the Specified Perils was caused by some negligence or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory obligations.

Rights and duties of Employer and Management Contractor

7·9 Upon such determination under clause 7·7 the provisions of clause 7·6 shall apply with the exception of clause 7·6·2·5.

Determination at will by Employer (7·10 to 7·13)

Employer's option

7·10 Without prejudice to any other rights or remedies which the Employer or the Management Contractor may possess, the Employer may at any time by notice in writing to the Management Contractor forthwith determine the employment of the Management Contractor under this Contract.

Determination under clause 7·10 – rights and duties of Employer and Management Contractor

7·11 In the event of the employment of the Management Contractor under this Contract being determined under clause 7·10 then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6·7 and 6·8 which may accrue either before the Management Contractor or any Works Contractors shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and liabilities of the Employer and the Management Contractor:

·1 the Employer shall indemnify the Management Contractor against any valid claims made against him by Works Contractors and others in relation to the Project, such indemnity to be limited to the extent of sums properly due to such Works Contractors and others as shall not have been paid to the Management Contractor by the Employer.

·2 the Management Contractor shall if so required by the Employer or by the Architect/the Contract Administrator on behalf of the Employer within 14 days of the date of the determination, assign to the Employer without payment the benefit of any agreement for the supply of materials or goods and/or for the execution of any work for the purpose of this Contract to the extent that the same is assignable, but on the terms that a supplier or Works Contractor shall be entitled to make any reasonable objection to any further assignment thereof by the Employer.

Determination before Construction Period

7·12 In the event of determination under clause 7·10 taking place before the issue by the Employer of a written notice to proceed under clause 2·1 then the Employer shall pay to the Management Contractor in respect of his co-operation with the Professional Team as referred to in Article 1 and clause 2·1 an appropriate proportion of the Pre-Construction Period Management Fee less any amount paid under an Interim Certificate issued in accordance with clause 4·2·1

Determination during Construction Period

7·13 In the event of determination under clause 7·10 taking place after the issue by the Employer of the written notice to proceed under clause 2·1 then upon such determination the provisions of clause 7·6 shall apply.

SECTION 8: Works Contractors

Works Contractors (8·1 to 8·5)

...ms of work – ...orks Contractors — **8·1** Clauses 8·1 to 8·5 shall apply in respect of the items of work to be carried out by Works Contractors which are identified in the Contract Cost Plan or in Instructions

...lection of Works Contractors – ...ms of Works Contracts — **8·2** ·1 The Works Contractors to carry out the items of work so identified shall be selected by agreement in writing between the Management Contractor and the Architect/the Contract Administrator and that selection shall be confirmed in an Instruction. Provided that, save where the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor otherwise agree, the Management Contractor shall only employ any persons as Works Contractors who will

·1 enter into a contract on the current unamended standard Form of Works Contract (Works Contract/1 and Works Contract/2) issued by the Joint Contracts Tribunal with the Management Contractor and execute that contract under seal where this Contract is under seal; and

2 if so required (as recorded in Works Contract/1) enter into an Employer/Works Contractor Agreement (Works Contract/3) with the Employer and execute that Agreement under seal where the Works Contract is under seal.

...ominated ...ppliers to Works Contractors — ·2 The Management Contractor shall send to the Architect/the Contract Administrator any submissions by a Works Contractor under clause 8·4·1 of the Works Contract Conditions in respect of restrictions, limitations or exclusions in a proposed contract of sale between such Works Contractor and a Nominated Supplier; and the Management Contractor shall not be required to instruct a Works Contractor to enter into a contract of sale with such Nominated Supplier unless and until the Architect/the Contract Administrator has specifically approved in writing to the Management Contractor the said restrictions, limitations or exclusions. Such approval shall be immediately confirmed in writing by the Management Contractor to the Works Contractor. Where any liability of a Works Contractor to the Management Contractor is limited under the provisions of clause 8·4·1 of the Works Contract Conditions the liability of the Management Contractor to the Employer shall be limited to the same extent.

...ties required ...om Management Contractor under ...orks Contracts — **8·3** ·1 The Management Contractor shall fulfil all the duties required from him under each Works Contract.

·2 The Architect/the Contract Administrator shall on the issue of each Interim Certificate direct the Management Contractor as to the amounts in respect of each Works Contractor which are included in the amount stated as due in such Interim Certificate.

·3 Where any Works Contractor requests the Management Contractor, who shall forthwith send such requests to the Architect/the Contract Administrator, that he be informed directly by the Architect/the Contract Administrator of the amount included for him in each relevant Interim Certificate, the Architect/the Contract Administrator shall so inform that Works Contractor.

·4 The Management Contractor shall immediately inform the Architect/the Contract Administrator of all notifications from Works Contractors under clause 2·13 of the Works Contract Conditions of the practical completion of their work together with the Management Contractor's observations thereon. When in the opinion of the Architect/the Contract Administrator practical completion of the Works Contractor's work is achieved he shall consent to the Management Contractor issuing a certificate of practical completion to the Works Contractor in accordance with clause 2·14 of the Works Contract Conditions.

...nal payment to ...orks Contractor — **8·4** If following a request by a Works Contractor it is desired by the Employer or by the Architect/the Contract Administrator on his behalf to secure final payment to such Works Contractor before the issue of the certificate referred to in clause 4·11, and if such Works Contractor has satisfactorily indemnified the Management Contractor against any latent defects, then the Architect/the Contract Administrator may in an Interim Certificate direct an amount to cover the said final payment.

Loss and expense caused by matters materially affecting regular progress – Works Contracts

8·5 Upon receipt of a written application properly made by a Works Contractor under clause 4 45 of the Works Contract Conditions in respect of matters affecting regular progress of the Works by matters referred to in clauses 4 46 1 to 4 46 7 of the Works Contract Conditions the Management Contractor shall pass to the Architect/the Contract Administrator a copy of that written application together with his comments upon the application. Thereafter, if and as soon as the Architect/the Contract Administrator is of the opinion that the regular progress of the Works Contract or any part thereof has been or is likely to be materially affected as referred to in the aforesaid clause 4 45 and as set out in the application of the Works Contractor then the Architect/the Contract Administrator shall himself ascertain, or shall instruct the Quantity Surveyor to ascertain, the amount of such loss and/or expense in collaboration with the Management Contractor.

SECTION 9: Settlement of disputes – Arbitration

Settlement of disputes – Arbitration (9·1 to 9·7)

Dispute or difference – appointment of Arbitrator — **9·1** If a dispute or difference as referred to in Article 8 has arisen including a dispute or difference relating to

- any matter or thing left by this Contract to the discretion of the Architect/the Contract Administrator or
- the withholding by the Architect/the Contract Administrator of any certificate to which the Management Contractor may claim to be entitled or
- the rights and liabilities of the parties under section 4, clauses 6 13 and 6 14, or 7·1 to 7·13 or
- the unreasonable withholding of consent or agreement by the Employer or the Architect/the Contract Administrator on his behalf or by the Management Contractor or
- the adjustment of the Management Fee under clause 4·10 2 or 4 10 3 or as to any rate or any addition which has to be agreed under the Second Schedule or
- the refusal by the Architect/the Contract Administrator to include an item as Prime Cost

then such dispute or difference shall be referred to the arbitration and final decision of a person to be agreed between the parties to act as Arbitrator, or, failing agreement within 14 days after either party has given to the other a written request to concur in the appointment of an Arbitrator, a person to be appointed on the request of either party by the person named in the Appendix.

Arbitration – joinder — **9·2** Provided that if the dispute or difference to be referred to arbitration under this Contract raises issues which are substantially the same as or connected with issues raised in a related dispute between

the Employer and any Works Contractor under an Employer/Works Contractor Agreement, (Works Contract/3), or

the Management Contractor and any Works Contractor under a Works Contract; or

the Works Contractor and any Nominated Supplier to whom section 8 of the Works Contract Conditions applies

and if the related dispute has already been referred for determination to an Arbitrator, the Employer and the Management Contractor hereby agree that

1 the dispute or difference under this Contract shall be referred to the Arbitrator appointed to determine the related dispute; and

·2 such Arbitrator shall have power to make such directions and all necessary awards in the same way as if the procedure of the High Court as to joining one or more defendants or joining co-defendants or third parties was available to the parties and to him; and

·3 the agreement and consent referred to in clause 9 6 on appeals or applications to the High Court on any question of law shall apply to any question of law arising out of the awards of such arbitrator in respect of all related disputes referred to him or arising in the course of the reference of all the related disputes referred to him;

save that the Employer or the Management Contractor may require the dispute or difference

Time of opening of arbitration — **9·3** Such reference, except

1 on article 3 or article 4, or

2 on the questions
whether or not the issue of an instruction is empowered by the Conditions, or
whether or not a certificate has been improperly withheld, or
whether a certificate is not in accordance with the Conditions or
whether a determination under clause 6 4 8 will be just and equitable,

3 on any dispute or difference under clauses 2 12 to 2 14 and 6 13 and 6 14 or

4 on any dispute or difference under clause 2 3 4 or clause 2 8 in regard to a withholding of consent by the Contractor, under clause 3 3 3, under clause 3 6 4 in regard to any objection by the Management Contractor whether for himself or on behalf of a Works Contractor

shall not be opened until after Practical Completion or alleged Practical Completion of the Project or termination or alleged termination of the Management Contractor's employment under this Contract or abandonment of the Project, unless with the written consent of the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor

Powers of Arbitrator — **9 4** Subject to the provisions of clause 1 14 and clause 3 7 of the Works Contract Conditions the Arbitrator shall, without prejudice to the generality of his powers, have power to direct such measurements and/or valuations as may in his opinion be desirable in order to determine the rights of the parties and to ascertain and award any sum which ought to have been the subject of or included in any certificate and to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision, requirement or notice had been given.

Award final and binding — **9·5** Subject to clause 9 6 the award of such Arbitrator shall be final and binding on the parties

Appeals – questions of law — **9 6** The parties hereby agree and consent pursuant to sections 1(3)(a) and 2(1)(b) of the Arbitration Act 1979, that either party

1 may appeal to the High Court on any question of law arising out of an award made in an arbitration under this Arbitration Agreement and

2 may apply to the High Court to determine any question of law arising in the course of the reference,

and the parties agree that the High Court should have jurisdiction to determine any such questions of law

Proper law of the Contract — **9 7** Whatever the nationality, residence or domicile of the Employer, the Management Contractor, any Works Contractor or supplier or the Arbitrator, and wherever the Project or any part thereof is situated, the law of England shall be the proper law of this Contract and in particular (but not so as to derogate from the generality of the foregoing) the provisions of the Arbitration Act 1950 (notwithstanding anything in S 34 thereof) to 1979 shall apply to any arbitration under this Contract wherever the same, or any part of it, shall be conducted [e]

Footnotes — [e] Where the parties do not wish the proper law of the Contract to be the Law of England and/or do not wish

APPENDIX FOUR

MANAGEMENT CONTRACTING - THE CLIENTS' VIEW

SOURCE : COPY OF AUTHOR'S PUBLICATION

TO THE ACSE (1987)

Management Contracting—The Client's View

By Shamil G. Naoum[1] and David Langford[2]

Abstract: One of the features of the construction industry of the late 1970s and the early 1980s has been the emergence of a diversity of building procurement methods. Among the most popular has been "management contracting" (MC), and this has assumed a prominent place in the battery of procurement methods offered by contractors. The writers (1984) have defined management contracting as the "process whereby a contractor is employed to undertake the co-ordination of specialist sub-contractors to complete a project. The management contractor relies upon a percentage fee or a lump sum to be remunerated for the services offered. The management contractor becomes associated with the client team of professional advisors and in common with other professionals has liability for the provision of a professional service." This paper presents some research findings from the Construction Study Unit at Brunel University. It summarizes the development of and the market for management contracting in the U.K. It then reports the results of interviews with construction clients who are asked to compare management contracting with the traditional method of project procurement.

Management Contracting Practice

The U.S. Experience

"Management contracting" is similar to "construction management," which first originated in the U.S., where it is also known as professional construction management (PCM). PCM was a rather informal method until the late 1960s, but as construction costs increased during the early 70s and delayed projects became more frequent, the need for new approaches and techniques for managing the total construction program became more evident (Heery 1978).

In PCM, a contractor performs a management function under a professional services contract with the client (Barrie 1976), treating project planning, design and the construction plan as integrated tasks. Figs. 1(*b*) and 1(*c*) show two typical organizational forms of PCM practice in the U.S. As the professional of the construction team, the construction manager works with the designers and the client, from the brief through the completion of construction, providing leadership in regard to time and cost. The construction manager can be a firm or an individual and is paid a fixed fee based on the value of the work.

Where organizations undertake this role, a large number of contracting and architecture-engineering firms offer this serive. This practice has been mirrored in the United Kingdom, and some of the early pioneers of the CM approach have independently or in conjunction with contractors, established themselves there.

The early experiences of the U.K. industry have been encouraging, and much can be learned from the analyses of trends in the United States.

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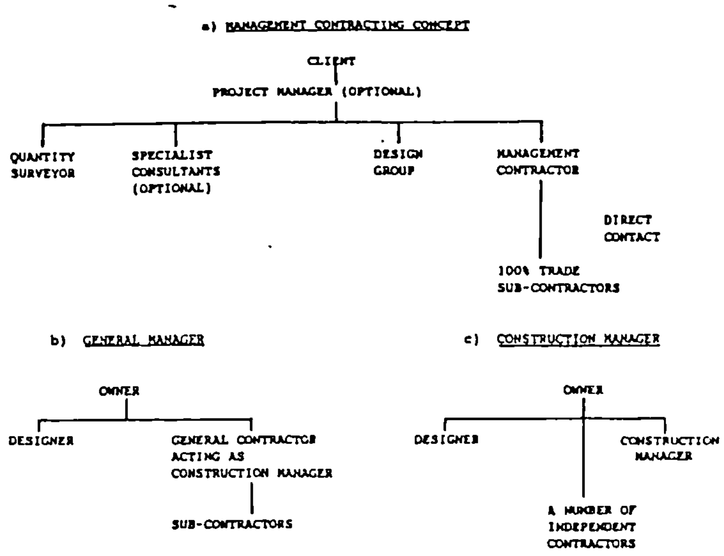

FIG. 1.—Alternative Construction Management Concepts

Rad and Miller (1976) reviewed the practice and concluded that the greater growth in CM services took place in the "design" sector of the industry. This process contrasts with U.K. experience where (formerly) prime contractors were the first to offer CM services to clients. In the U.S. the Architect-Engineer's view of PCM was outlined by Tatum, Gans and Harper (1980), who identified several differences between the A/E performances in MC and the traditional system. During the design process, the A/E must be receptive to construction advice from the CM—an agency outside its own organization. A positive attitude toward the support of construction activities, along with clear and specific design documentation, were seen as essential for effective A/E performance. However, care must be taken to distinguish construction management services from management contracting. Construction management is a service most suited to design professionals, while MC would expect to draw upon skills more familiar to a contracting organization. In this sense, the U.K. building procurement practice can be segmented into construction management and management contracting.

The organizational differences between these methods is well recognized and is shown in Figs. 1(*a*) and 1(*c*). The central difference is in the role of the client; while the client in CM has an active role in MC, this role may be more muted, allowing the client to take a more detached view. However, both systems rely upon trade contractors for the actual construction work. Barrie (1979) found that CM projects were generally well organized in the view of the trade contractors. Many of the less favorable comments were the result of design changes or modifications made after the contract award. A number of individual contractors concluded that, while they generally handled items in about the same manner as a general contractor, bidding was handled better. Thus, the literature to date has considered the A/E's role and the trade contractor's position in regard to PCM in the U.S., but little research has been conducted on the clients' or owners' perspectives. Moreover, research has focused on PCM rather than management contracting. Hence, this paper seeks to assess client satisfaction with the service provided by management contractors rather than by (professional) construction managers.

Management Contracting and Management Contractors

Use of Management Contracting in U.K.

As has been noted, since the 1960s progress has been made in developing contractual procedures that provide a variety of organizational patterns. Particular attention has been paid to methods that enable the introduction of the contractors' skills at various stages of the design process. Several reasons for this development may be identified: Construction techniques are becoming more complex; confidence in the professionalism of contractors has been increasing; and the need for a reduction

TABLE 1.—History of Management Contractors

Year (1)	Number entered market (2)	Cumulative (3)	Company identification (code) (4)
1928 (MFS)			J
1968	1	1	J
1970	1	2	K
1971	2	4	A, D
1974	1	5	F
1977	1	6	B
1978	1	7	G
1979	3	10	E, M, Q
1980	5	15	C, I, L, M, P
1981	2	17	O, R
1982	1	18	H

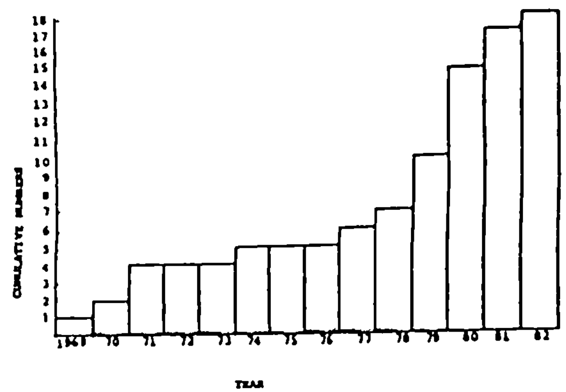

FIG. 2.—Cumulative Number of Contractors Entering MC Market

TABLE 2.—Procurement Method Adopted for Their Turnover by the Management Contractors Identified by this Method, by Contractor

Building procurement method (1)	A (2)	B (3)	C (4)	D (5)	E (6)	F (7)	G (8)	H (9)	I (10)	J (11)	K (12)	L (13)	M (14)	N (15)	O (16)	P (17)	Q (18)	R (19)
	Percentage of Total Turnover Obtained																	
Traditional	40	30			75	80	70	95	80		70	60	30	80	80	70	50	80
MC	30	20	50	25	25	15	25	5	15	100	25	20	60	15	10	25	25	20
Others	30	50	50	75		5	5		5		5	20	10	5	10	15	25	—
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of projects constructed	31	20	6	40	12	40	28	6	5	61 (MC)	51	22	33	26	15	27	30	11

of project time and cost has become more pressing.

Such reasons presaged management contracting as one of the alternative methods for building procurement. Moreover, contractors have become more market-centered and have sought to stimulate demand by satisfying existing and new customers.

The research has identified 18 principal management contractors operating in the U.K. Data were collected during interviews with 14 management contractors and during telephone discussions with another four contractors.

The management contractors were asked when their organizations first became involved with management contracting. The results are shown in Table 1.

From the results shown in Table 1 it can be seen that the management fee system (MFS) was used as early as 1928 by firm J. It was not until the late 1960s that "pure" management contracting gained recognition within the industry. Now it is seen as part of an essential business portfolio by most large contracting firms in the U.K. Fig. 2 plots the growth in the number of firms offered management contracting as a service. It shows no entry to the MC market in 1972, 1973, 1975 and 1976. However, the number of management contractors increased rapidly during 1979 and 1980, perhaps because at that time it was recognized by a number of influential organizations that clients could benefit from management contracting and that it had certain advantages to offer. By early 1980 many reports and articles were published, and seminars and conferences were organized to encourage the industry to talk and think about what management contracting meant and its utility to the industry. The number of contractors involved only provides part of the picture. How committed were these organizations to the provision of management contracting services?

The management contractors providing research data were questioned concerning the extent of management contracting in relation to their total turnover, the results of which are shown in Table 2.

"Although firm J stated that 100% of its turnover was obtained through a management contract, much of this work was in the form of a management fee contract, which may be identified as a hybrid form of management contracting. The management contractors were then questioned as to the method by which they are selected in a MC. The results showed that, on average, 95% were selected through competition and only 5% directly.

Form of Contract

In the private sector, the building team used the management contractor's own form of contract on 80% of the projects. The public sector, e.g., Public Services Agency (PSA), British Airport Authority (BAA), and recently some large private owners have developed their own management contract modified to suit the particular objectives of a project. These management contracts are based upon the Joint Contract Tribunal (JCT) or Government Contract (GC)/works 1 (minor work), 2 (major work) standard form of contract. A fundamental element of the contract is the fee structure; two types may be identified: (1) Cost reimbursement for preliminaries and subcontracting work plus a management fee; and (2) a lump sum for preliminaries plus reimbursement for subcontracting work plus a management fee. The management fee represents the overhead and profit. The management contractor is paid a fixed percentage or a lump sum fee for the services provided at the design stage.

Table 3 shows the range of fees that have been established during the course of the study. Of course, there are factors that will influence the range; these would include the general condition of the contract, competition, the extent of services, complexity of the project, etc. Nonetheless, it is interesting to see the general decline in margins as the projects become larger.

Market Share of Management Contracting in U.K.

The market share of management contracting can be illustrated by a survey carried out by the writers by the end of 1983. The total output of MC work is given in Table 4.

TABLE 3.—Approximate Fees

Project value (£) (1)	Percentage fee (2)
Less than 2 million	4–6
2–5 million	3.5–4.5
5–10 million	2.5–4
10–20 million	2.0–3.0
over 20 million	1.5–2.5

TABLE 4.—Output of Management Contracting (In 1983 Prices)

Year (1)	Total output (2)	Number of projects (3)
1982	£338 million	83
1983	£580 million	110
1984	£740 million	154

By the end of 1984, a survey (Centre of Construction Market Information 1985) established a figure of £890 million of management contracting output for 1984 (U.K. only). But it was stated that some contractors find it difficult—if not impossible—to separate output to the various packages they offer. This is particularly true of management fee contracts.

Management Contracting Projects

Some of the management contractors interviewed were able to provide details of projects completed using "pure" management contracting. An analysis of 170 building projects showed that MC was applied to all types of projects and clients. The building types were offices, health facilities, factories, schools, public premises and general buildings.

Fig. 3 shows the percentage of MC by value of projects and indicates that the majority of management contracting is applied to fairly large

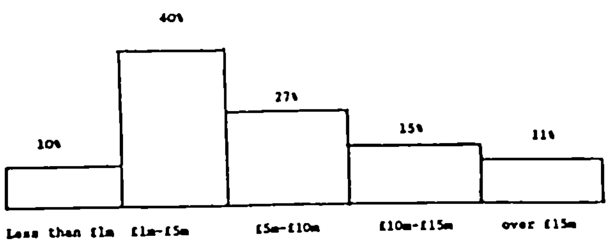

FIG. 3.—Percentage of Management Contracting by Value of Projects

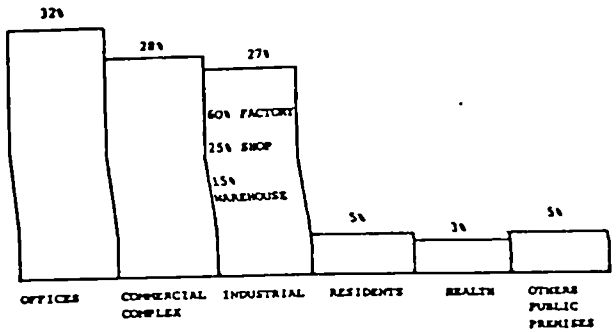

FIG. 4.—Percentage of Management Contracting by Building Type

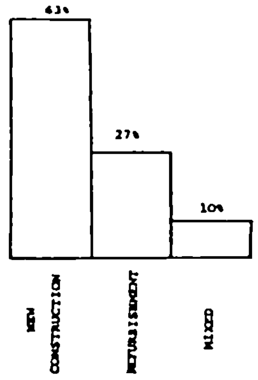

FIG. 5.—Percentage of Management Contracting by Construction Type

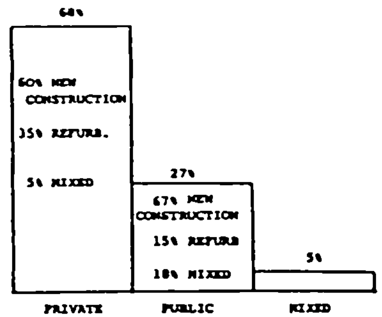

FIG. 6.—Percentage of Management Contracting by Sectors

and, presumably, complex buildings. Fig. 4 divides the value of projects by building type and shows that about 50% of those surveyed MC were commercial buildings and offices and 27% were industrial buildings. The industrial sector could be further subdivided into 60% factories and 40% warehouses and others. The rest of the work was accounted for by banks, houses, and other public premises. Fig. 5 shows that 63% of the MC were used for new types of construction and 37% for other than new, i.e., refurbishment, remedial work, modernization, etc.

Fig. 6 indicates that 68% of the *projects have been commissioned* by private-sector clients and 27% by the public sector.

Clients and Management Contracting

Introduction

The research sought to examine and compare the attitudes of client organizations to management contracting. Although MC has grown in popularity, clients are still uncertain about the precise role of the management contractor. Therefore, in different ways, one of the aims of the study was to examine the client organizations to try to answer the following questions: (1) Who are the clients that used MC? (2) how do client organizations view MC? (3) why have clients used MC? (4) what is the level of client satisfaction with MC? (5) what were the clients' criteria of satisfaction? (6) why is MC favored above traditional contracting? and (7) what are the problems associated with MC?

Again, structured interviews were used to supplement data collected by questionnaire. The questionnaire was divided into seven section headings to correspond to the questions posed above. The questionnaire was sent to 10 client organizations prior to the interview. Interviews were carried out by running through the questionnaire to comment on the answers of each section heading, and were documented using a mini tape recorder.

Clients for Management Contracting

According to lists provided by the management contractors, the analysis of the projects showed that the number of clients using a management contract amounted to 175 organizations and a further 38 organizations were identified by the CCMI (1985) report.

55% of the clients used management contracting only once, 30% used the system twice and 15% were considered very specialized users of management contracting.

For purposes of analysis the clients for managements contracting were classified as follows:

1. Fifty percent of the clients sought purpose-built premises, and can be segmented into the following markets: (1) Department stores, 6%; (2) bankers/merchant bankers, 7%; (3) industrial and commercial facilities, 16%; (4) government clients building premises for their own use, 5%; and (5) other purpose-built clients, 16%.
2. Ten percent were public or private clients who commission premises for commercial or public use.
3. Eighteen percent were property developers.
4. Nine percent were investment companies.
5. Thirteen percent were council, borough or public health authorities.

Client's View

Introduction.—Details provided by the clients interviewed indicate that all organizations participating were very experienced and undertaking different types of work under different types of contractual arrangements. The percentage of management contracting work ranged between 3% and 8% of their total construction portfolio. Only one client had commissioned 50% of his work to MC and 50% to the traditional method. All clients stated that they started using MC as an alternative to the traditional method with a view to evaluating performance.

The 10 participating organizations were asked to identify and signify their reasons for choosing the management contracting method. Prominent criteria were the following: Minimizing the overall time of the building process; obtaining reliable time estimates for the project; and suiting large and complex projects. Surprisingly, clients did not see the minimizing of the overall building cost as an important criterion. Naoum and Langford (1984) reported the following rank for clients' criteria when considering a building project: (1) Increasing the reliability of cost and time estimates; (2) minimizing the duration of the preconstruction and construction periods; (3) increasing management contractors' involvement during the design stage; (4) more flexibility during construction; (5) reduced maintenance costs; (6) suitability; (7) providing a high degree of personal control over specialized work; (8) lower costs in use; (9) cheapest cost; and (10) aesthetic appeal.

Clients' Attitude Toward MC.—Having established the criteria by which clients choose a management contract, it is necessary to review their attitudes toward using the system in the future. Table 5 shows the clients' responses to the question of whether they will use MC again.

TABLE 5.—Attitudes toward MC in Future

Statement (1)	Number (2)	Identifier (3)
Not decided	1	A
Not on majority of our projects	1	B
Definitely for all our projects	3	C, F, H
Definitely for our large complex projects	1	D
Fewer but definitely the MFS	1	E
Depends on our criteria	1	G

Clients A and B had a negative attitude towards the system, basically because management contractors are seen as contributing to already complex organizational structures and procedures.

Client A is an extremely large public organization and forms part of a governmental department. The role of the organization is to provide, manage, maintain and furnish the property used by the government. The organization designs its buildings using either its professional staff or consultants. It also supervises the construction.

All construction work is done by private contractors. Client A wanted to find the best way to improve its performance in meeting different requirements on major projects. Despite the fact that client A has constructed nine projects on an MC, the organization hasn't made up its collective mind yet regarding satisfaction with the system because of the following reasons: (1) The uncertainty of the ultimate cost; (2) the liability of the management contractor is not well defined; (3) it is an expensive method when spending tax payers' money; (4) the complex organizational structure of the client may have influenced contractor performance.

Client B is a large national and international banker. The type of work the organization undertakes is mainly refurbishment of existing premises costing between £100,000 and £1.2 million. The organization employs about 200 professionals in its property service department. Client B used management contracting as part of ongoing research to evaluate its performance against the traditional method. *After* using an MC the organization found that projects completed on that basis were good value for money but not better than the traditional method and generally with an equal quality. Client B did not find management contracting the best method for the majority of its work mainly because of its views that management contracting is definitely not suitable for small refurbishment jobs. In the case of Client B, the premises must be occupied while construction is in progress. So, with little packages, the job would be too messy (i.e., interaction between the subcontractors). Client B admitted that it would use a management contract in cases where timely completion is vital. The organization might suffer a 10% increase on cost to save time.

Client C is a large national and international property developer and has a simple organizational structure with seven professionals. It constructs flats and offices costing between £600,000 and £6 million. Client C used MC as an alternative to in-house construction management. Minimizing the construction time is Client C's first priority for project success. It is the construction stage during which the organization starts to invest money with no return. In general, client C was satisfied with management contracting but was looking for improvement in areas that involve contract documentation.

Client D is a public authority that constructs buildings for public use. The organization employs a large number of in-house professionals but had to change its structure to simplify its procedures when using management contracting. Client D has built only two large complex projects within the last 10 years. One was built using management contracting and another using the construction management concept. Those two projects cost £400 million. Management contracting was used to achieve the time scale and because flexibility in the design was necessary. Accountability was another factor that was fairly important. Client D was very satisfied in terms of time and fairly satisfied in terms of cost and quality. The organization has now commissioned a third major project using the construction management concept. All other small projects were constructed using the traditional form of contract.

Client E is a private manufacturer and retailer and constructs buildings all over England and overseas. Client E has been involved with "pure" management contracting since 1980, after having used the fee system since 1928. This change of direction came as a result of meeting with management contractors to introduce the system and to make use of local subcontractors. Their current management contracts were for a warehouse, three new stores, and an extension to an existing building. The organization has never considered the cheapest cost as its primary criterion. Time was always the most important factor because a competitive advantage was gained from a short construction period. Client E was satisfied with MC but its future developments will focus on the management fee system.

Client F is a property developer with worldwide interests and has commissioned 20 projects on a management contract basis within two years. Dissatisfaction with conventional lump sum contracting was the main reason client F was attracted to management contracting. Like client C, compressing construction time was the main criterion for adopting the management contracting system. Again, the interest on capital borrowings was client F's greatest concern. Quality was equally important because the building could not be sold if quality were lacking. Client F believes that clients should achieve greater control of time and cost. To client F, management contracting is the best way of exercising project control; that view is strengthened when the project is complex or if the client wants to start on-site work quickly.

Client G is an industrialist and retailer. The organization employs a large number of in-house professionals but, like client D, had to change its structure to obtain full advantage of MC. After meeting with management contractors and getting recommendations from other clients, client G adopted MC. The reliability of the estimated cost and time was the main reason for choosing an MC. Client G was satisfied with MC and believes that it is much suited to complex projects, and to projects for which speed of construction is vital. The size of the projects was irrelevant to client G, but it would not use the system on jobs below £100,000.

Management Contracting versus Traditional Contracting.—So far the above discussions have focused basically upon management contracting. This section will compare MC and the traditional form of contract from the standpoint of the client, having in mind his needs in terms of function, economy, speed and aesthetics.

Eight clients were interviewed and two postal responses received. All were asked questions that sought to compare MC with the traditional method (Table 6).

As can be seen, there is a conflict of opinion concerning the risk to be absorbed by clients when dealing with a management contractor. Clients A, B and D saw the principal risk arising from the absence of a tendered lump sum price from the main contractor prior to construction. Client F claimed that clients are subject to a greater risk in respect to costs because of the staggering and phasing of orders for specific work over a long period. While in the traditional method it was the main contractor who was taking that risk by putting a lump sum bid out at the outset, the contractors' perception of risk was also different for management and traditional contracting. With MC the contractor is likely to settle for a smaller guaranteed profit and abandon a higher potential profit through the management of implicit risks. This balance between profit and risk has implications for clients. Larger clients may be better placed to take risks and consequently have a cheaper project. A simple equation may illustrate the situation:

Management contractors' profit = contractors' traditional profit

− potential risk profit

TABLE 6.—Responses to Questions on Management Contracting versus Traditional Method

Question/statement (1)	Response: Yes (2)	Same (3)	No (4)
1. MC is riskier to clients.	6	2	2
2. Is MC more profitable to the contractors?	10	—	—
3. Does MC involve fewer claims?	3	4	3
4. Is MC more flexible?	10	—	—
5. Does MC allow an earlier start on site?	10	—	—
6. Is MC quicker?	10	—	—
7. Is MC more reliable in predicting the construction time?	9	1	—
8. Is MC cheaper?	2	4	4
9. Is MC more reliable in estimating construction cost?	6	3	1
10. Does MC provide more control for subcontractors?	9	1	—
11. Does MC exercise more control over operations?	9	1	—
12. Does MC provide a better building design?	1	1	8

The building industry has now experienced management contracting for a number of years, and clients are currently more aware of the risk implications of an MC. If the management contractors' profit is equated to their management fee, then higher fees may be recommended for higher risks. This is perhaps why some clients were more alert to the risks that may be assumed by MC. However, care should be taken to exert the appropriate amount of pressure to assume risk because higher risks by the MC may limit the number of organizations prepared to tender.

All clients studied agreed that management contracting is flexible in that it enables variations on the original design and specifications throughout the course of construction; they added that cost can be controlled by changes in the design but without affecting project performance. Client H stated that "with the amount of changes our organization made for the last management contract, it could have been a disaster if we had used the traditional form of contract."

However, not all clients reacted positively regarding the assertion that fewer claims arose with an MC. Client D, while generally satisfied with MC, was unconvinced that MCs were less claims-conscious than traditional contractors.

Clients A, B, F, H and J did not experience any differences in claims between the JCT traditional form of contract and MC. This was unexpected because, at stage one of the study, the management contractors stressed that the system involved fewer claims and could run an MC without a form of contract. It is seen more as a philosophy, an attitude, a contract of trust.

Frequently the time factor was seen as one of the major advantages of management contracting; none of the clients sampled commented unfavorably about the MC's time performance. All clients agreed that an MC reduces the precontract period by overlapping the design and construction processes; this enabled the project to be completed in a shorter period than for a traditional method. However, some clients added that their experience with past management contracts counted very much in considering the company's other needs.

Conflicting attitudes about the cost factor were observed. Client A is a large public organization with a commitment to public accountability. Here a mismatch between the expectations of a public body and the procedures of MC, with uncertain final costs, could be observed. It also seemed to cost the organization a lot more in "resource costs," i.e., in-house monitoring and control and consultants' fees. Because of the way client A is organized it is naturally biased toward caution in committing itself to spending taxpayers' money and ensuring that its accounting offices (i.e., the chief executive) have good answers to critical questions that might be put to them by the public accounts committees. On the other hand, although client D was a public organization, it did not feel constrained in using MC because of public accountability. The public sector has experienced cost reimbursement contracts for many years. This particular form of contract would certainly seem to be far more in conflict with the concept of public accountability than a "pure" management contract would, simply because the contractor carries out the work himself with little provision for realistic and comprehensive competition (Chartered Institute of Building 1982). Traditionally, the public sector has taken a narrow view and awarded contracts by means of open competition on the basis of drawings and bills of quantities.

An official report by Wood (1977), have shown this view to be false, for "although in the selection of the contractor competition on price is very useful, it is not necessarily an essential means to the end of achieving value for money. We suspect that value for money is largely sought in the wrong place, it often seems to be looked for primarily at the letting of the construction contract" (Wood 1977).

Client B stated that there is a tendency for greater involvement of the professional consultants: "The architect and Q.S. [Quantity Surveyor] get involved more than they should in some work which is the management contractor's job." This overlapping responsibility was reflected in higher fees being paid. Most of the staff members have long been involved with the traditional system and their roles are frequently transposed when management contracting is used. In an internal cost analysis, client B found that under a management contract the client pays more than in the traditional system because of a less competititive tendering situation and partly because of the higher costs of preliminaries. Clients C, E, F and G have a fairly positive attitude toward the cost performance of management contracting. One distinguishing characteristic among this group is that low costs were not considered as essential for client satisfaction. Clients C and F stated that as developers, the cheapest cost solution did not always provide the appropriate building. For example, if the client spends more money on the mechanical and electrical installation, the running and maintenance costs would be lower with consequent benefits for the life-cycle costs of the development.

Clients confirmed that a management contract enables greater control of subcontractors than does the traditional method; moreover, it provides more control to the construction operations. With a management contract there is one professional builder totally responsible for managing a particular project, thus confirming this relationship (Sidwell 1982). Sidwell used 32 cases studies to investigate the relationship between contractual arrangements and project success. The essential element that brought about success was the level of managerial control. Such control is seen as the main characteristic of management contracting.

None of the clients interviewed felt that management contracting produced a better design than the traditional method, but they did not choose a management contract for that reason in the first place. This evidence refutes the (Construction Industry Research and Information Association 1982) conclusion that clients who use management contracting frequently want the management contractor to be responsible for managing the design. Client C said that management contracting does not provide a better design because of conflict between the management contractor and the architect. Such conflict may come from the commercial orientation of management contractors being countered by the professional attitudes held by other client advisers. There is also the problem of who has to decide quality standards (unlike the traditional method where the architect is responsible). Client B commented that with management contracting "there can be an element of jealousy by the professional consultants by the fact that the management contractor is taking their roles and authority as a team leader." The issue of dominance within the project team is often the most vexatious and is the subject of ongoing research.

Conclusions

Management contracting evolved as an alternative to traditional contracting in circumstances where projects are large and/or complex and where clients want their building quickly. However, it seeks to supplement rather than supplant traditional contracting.

Since management contracting was created around 1969, there is now much competition among large construction firms to stay in the management contracting market. The pilot study with management contractors provided a picture of the development of management contracting and its market share. The following conclusions are summarized from the analysis:

1. The use of management contracting is growing throughout the building industry. The number of contractors offering a management contract service has increased by 50% between 1979 and 1983. The number of principal management contractors was estimated at 20 in 1983 with a market share of £580 million. There is also a tendency in the U.K. for a design and consultants firm to offer management contracting services.
2. In practice, no firm in the U.K. specializes 100% in "pure" management contracts. The percentage of traditional contracting is still greater than other forms of contracting: on average 50% of the management contractor's construction output, with 25% for management contracting and 25% other types of procurement methods, e.g., project management and package deal.
3. An analysis of 170 management contracts indicated that 63% of the projects were new buildings, 27% refurbishment work and 10% a mix of both.
4. Results of the market distribution showed that 68% of the projects have been commissioned by private sector clients, 27% for those in the public sector, and 5% by a public enterprise in conjunction with a private organization. When analyzed by type of construction, 60% of the private projects were new buildings and 35% refurbishment projects. In the public sector, 67% were new buildings, 15% refurbishments and 18% a mix of both.
5. When the projects were divided by value, 32% of the surveyed management contracting projects were offices, 28% commercial complexes, 27% industrial work, and 13% residential, public premises, etc.
6. The number of clients using management contracting was estimated to be 213 organizations. Fifty percent were purpose-built clients, 18% property developers, 9% investment companies and 33% accounted for other forms of public and private clients.

Ten clients' experiences were reviewed. The results of the clients studied in this paper showed that management contracting work accounted for between 3% and 8% of the firms' total expenditures on construction work. Management contracting was used mainly for office block jobs. The main criteria for choosing a management contractor were minimizing the overall construction time and suitability to large and/or complex projects.

The clients interviewed scored the performances of MC and traditional contracting. Issues such as technical complexity, aesthetic/prestige value, economy, time, and exceptional size and/or complexity of projects were discussed. Scoring was on a 1–5 scale with "1" indicating the minimum and "5" indicating the maximum capacity to meet the requirements. Both management contracting and traditional contracting were scored. The results showed that both systems' rates were "4" for projects with high technical complexity. However, the traditional system's rates were higher for projects requiring a high aesthetic/prestige value. This is because the preconstruction time is long enough to optimize design. The rating for "economy" was expected to be higher for the traditional method but, since most of the clients studied had a strong emphasis upon early completion, the lower score could be expected. The private sector clients were particularly emphatic about the importance of time.

Performances for time, size and complexity due to the nature of the project were scored higher for management contracting. This might also convince other clients that management contracting can be a valid alternative to the traditional method when these factors are of the essence.

The difference between clients' criteria and their organizational structures has influenced their views and attitudes toward management contracting. These views have, in one way, prevented the long-term use of management contracting by some clients but led other clients toward continuous use of the system. For example, client A is a sophisticated firm and is very much concerned about public accountability and financial control. Client A agrees that management contracting saves time and that saving time is saving money, but to quantify that saving is impossible in the public sector. Client B is a private firm and also has a sophisticated organization with copious internal resources to manage its construction projects. Client B stated that in its experience management contracting projects are shorter in duration. But the failures to capitalize on any advantages that management contracting can offer is sometimes within the client's organization. If its own procedures are not matched to project requirements, the client may lose the advantages of management contracting. The client could delay progress if his approvals are not matched to the speed of the management contractor's work. Moreover, the type of work client B commissions is not seen as appropriate for the long-term use of management contracting.

On the other hand, clients C–G, having smaller organizational structures with simple procedures, had a more positive attitude towards management contracting. However, these clients have their own limits for the application of management contracting; current experience is shaping how they will use the system in the future. The client's attitude towards management contracting could be shaped by how the building team performed on the last job. From this, clients may oscillate between traditional and management procurement methods.

Management contractors and clients have criticized many contracting organizations for entering management contracting without the right personnel. Client C noted that, "although from the client's point of view,

tects, structural engineers and quantity surveyors [illegible] within the
the proceedings to gain the advantage of their know-how within the
building industry, many have not yet either understood or chosen to
understand this change in status and merely regard themselves as ad-
ministrative middle-men in between the sub-contractors and the client
in his professional team and thus does not inject any creative ideas which
is one of the principle objects of the exercise and is indeed the reason
why certainly in our case, after a careful selection process, we bring them
into the proceeding at the earliest possible stage."

Even though attitudes are influenced by the experiences of individual
clients it seems that there is room for improvement in the management
contracting system itself. One such shift would be for management con-
tractors to adopt a professional—as opposed to commercial—role. Yet
this change may be shaped by clients who can do much to fashion events
by matching their own management procedures to the requirements of
the procurement method they have chosen. Project success is often elu-
sive but the appropriate mix of client control and procurement method
can make it less so.

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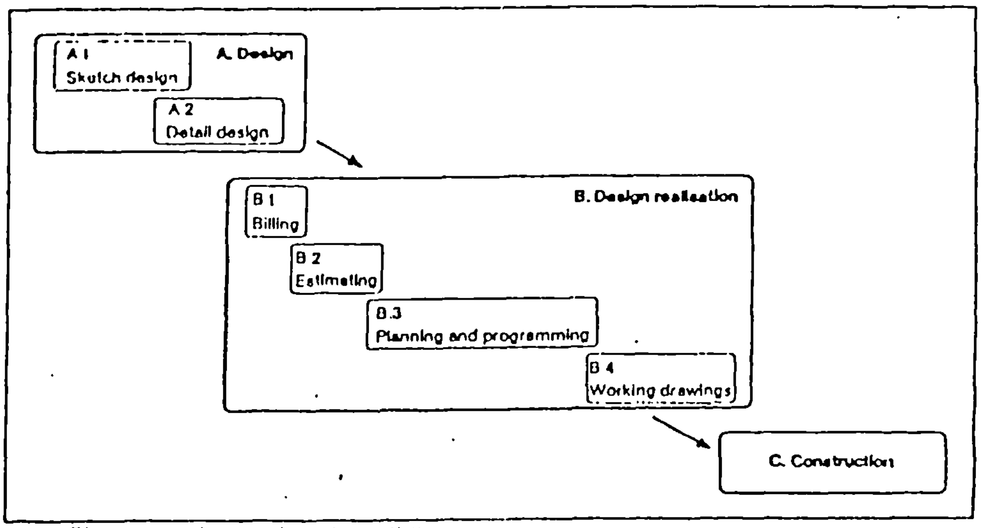
APPENDIX FIVE

PREVIOUS RESEARCH MODELS



The research model of the building process.

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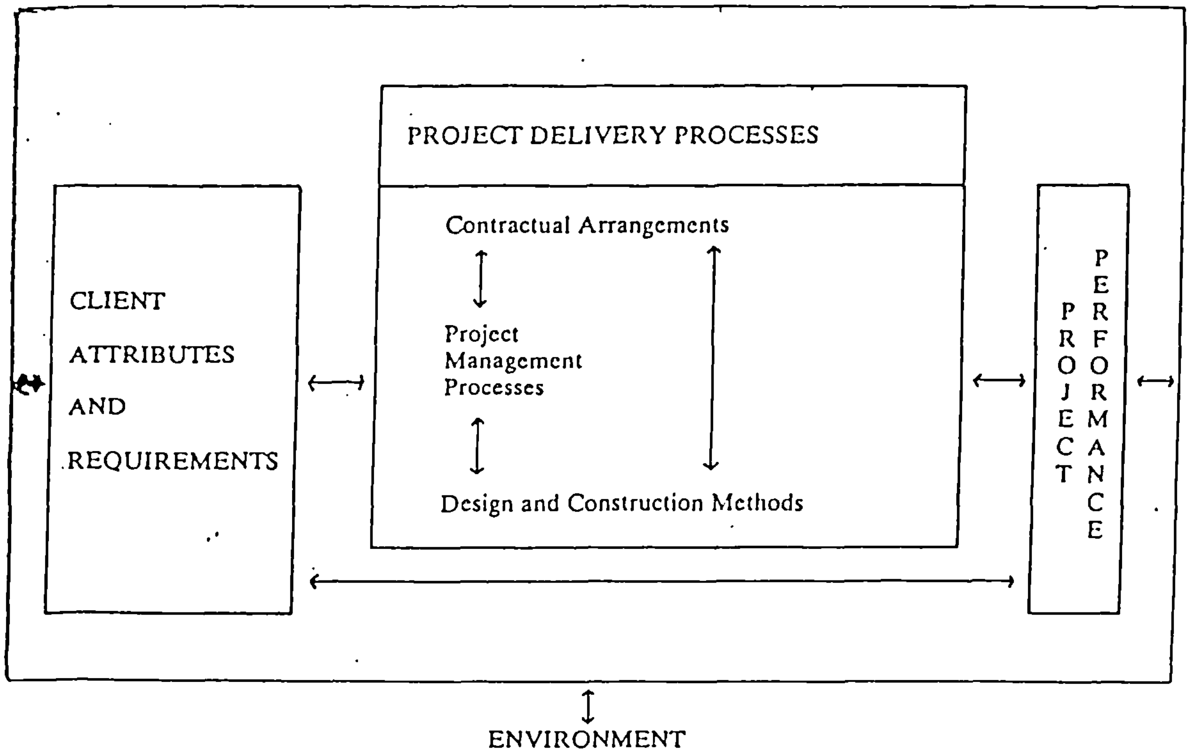
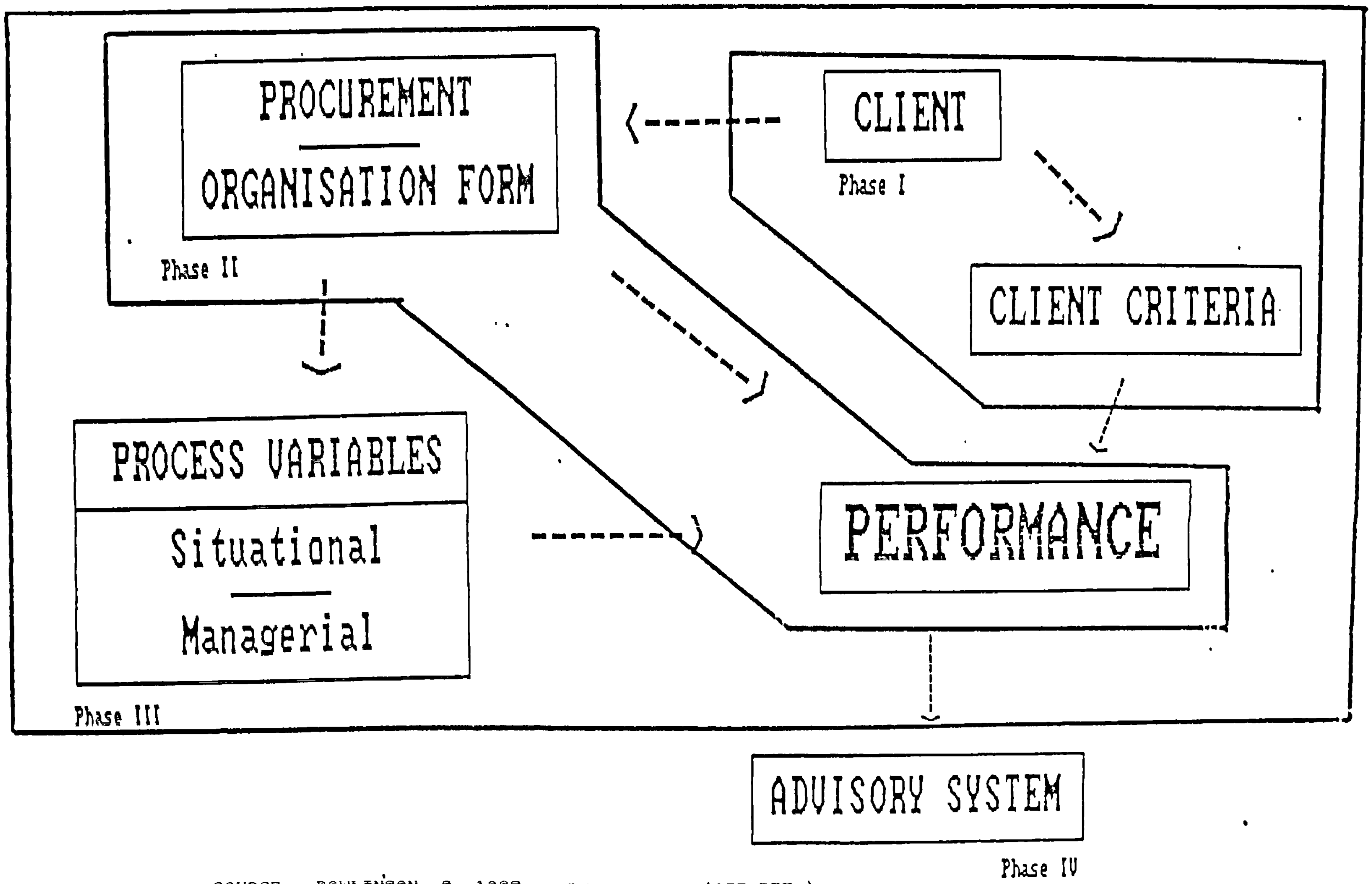
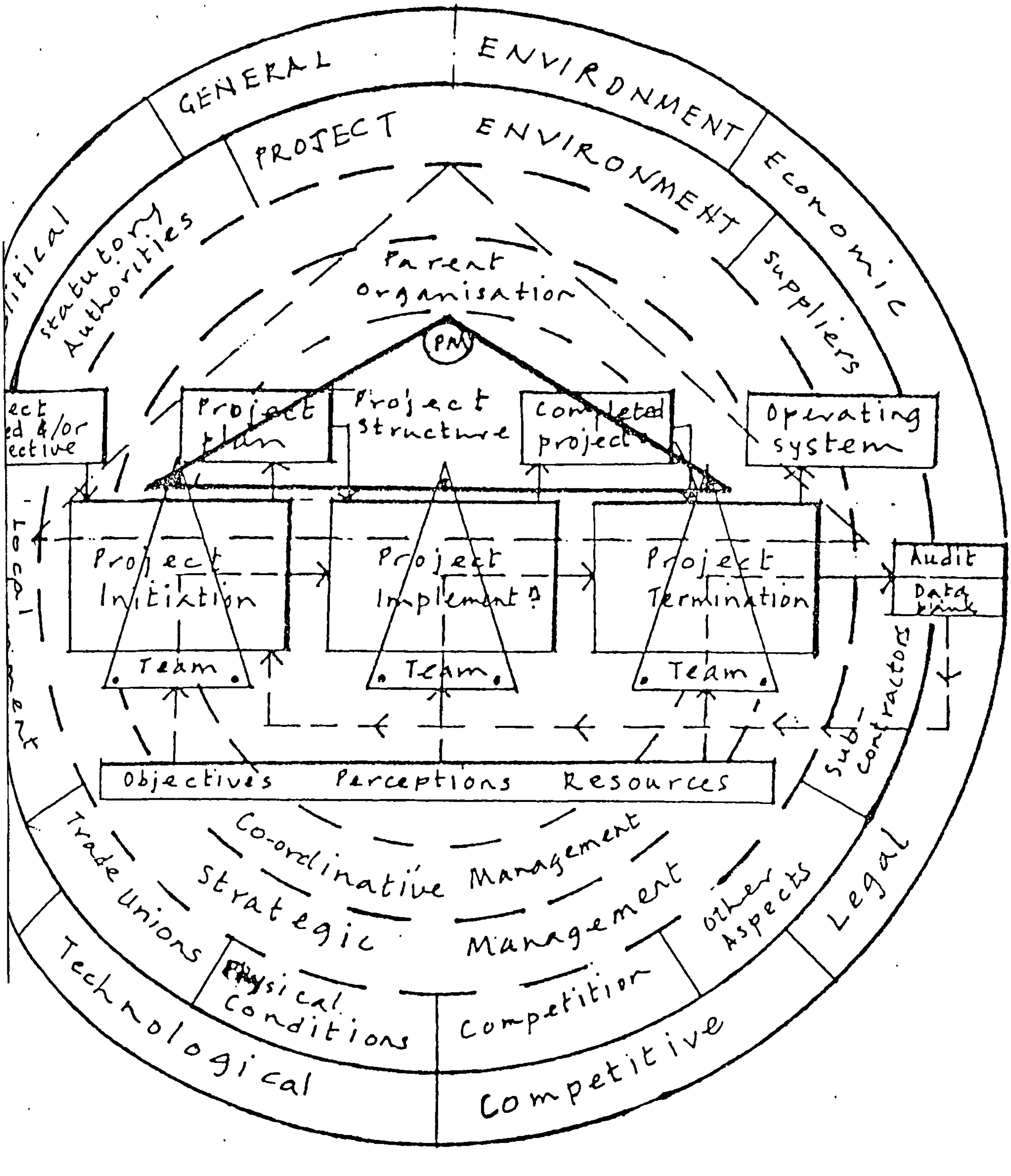


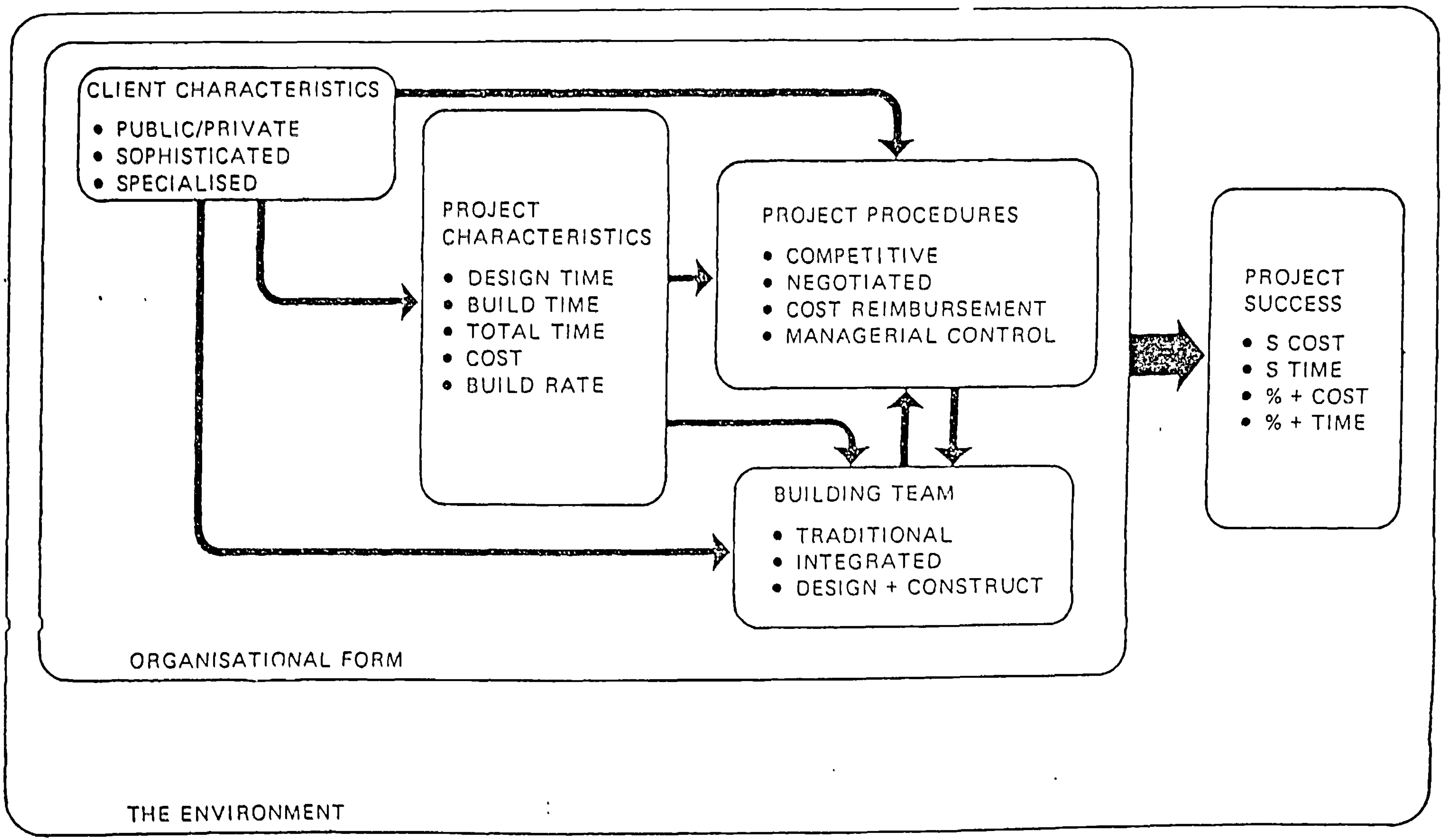
SOURCE - NAHAPIET, H. & J. 1985 (SEE REF.) MODEL - 2



SOURCE = ROWLINSON, S. 1987 = PHD THESIS (SEE REF.) MODEL - 3



SOURCE - NEWCOMBE, R. 1988 - UNPUBLISHED WORK (SEE REF.) MODEL - 4



SOURCE - SIDWELL, A. 1982 - PHD THESIS (SEE REF.)

MODEL - 5

APPENDIX SIX

PILOT STUDY QUESTIONNAIRE

THE INTERVIEW QUESTIONS

1)YOUR ORGANIZATION

A)Approximate turnover for your organization?

B)Percentage(by value)of your work done for the following forms of contracts:

TRADITIONAL:
MANAGEMENT CONTRACTING:
OTHERS:

C)Percentage(by value)of management contracts work done for the following type of clients:

Private:
Public :

D)Approximate breakdown of your management contract work into building types liste below:

a)WORK DOWN FOR PRIVATE SECTOR

Building type

NEW HOUSING :
INDUSTRIAL:
OFFICES:
SHOPS:
OTHERS:

b)WORK DONE FOR PRIVATE SECTOR:

NEW HOUSING:
PUBLIC CORPORATION :
SCHOOLS:
HEALTH:
OFFICES;FACTORIES;SHOPS:
CIVIL ENGINEERING WORK:
OTHERS:

E)Percentage of project procedure adopted when appointing the management contracto

NEGOTIATED:

COMPETITIVE:

COST REINBURESEMENT:

OTHERS:

2)MANAGEMENR CONTRACTING WITHIN YOUR ORGANIZATION:

A)How long has your organization been involved as an architect in management contracts and why?

B)List of the projects with client name that your organization been appointed for management contracts:

C)What is the procedure for the selection and appointment of the management contractor?

D)What form of contract used in management contracting?

E)On what basis is the management fee charged and how are payment made?

F)Details of your staffing personal:

3) CLIENT SATISFACTION

Allocate a mark out of 10 to each of the factors listed below according to the magnitude of importance each factor wuold be to different client:

CLIENT CRITERIA	HOUSING	INDUST.	COMMERC	HEALTH	C.E.
A-SPEED					
a-The minimization of preconstraction time.					
b-Reliability of estimated preconstraction time.					
c-Your lack of involvement during the design and const. stage(i.e. the minimization of client time spent in consultation with the architect.)					
d-reliability of the estimated cost and time.					
e-Others					
B-COST					
a-Cheapest cost					
b-Reliability of original price					
o-Mantinance cost					
d-Cost in use					
e-Finance arrangements offerd.					
f-Others					
C-QUALITY					
a-Aesthatic					
b-Suitability					
c-Flexibility enabiling the client to change his mind concerning the building layout etc. during the const. phase.					
d-Management consultancy service offerd during the desgn stage (i.e.advice concerning production problems,layout problems,etc., andrelating them to the new building design.					
e-A high degree of personal control over specialised work peculiar to project requirement.					
f-Others.					

4)MANAGEMENT CONTRACTING UTILITY:

A)During what stages in the design/constraction process does the management contractor get involve?
B)How involve is the management contractor with regards to advice to the client and/or to you?
C)What is the procedure for the selection and appointment of sub-contractors?
D)What form of contract is used with sub-contracters?
E)How are sub-contractors supervised and controlled?

5)ADVANTAGES AND DISADVANTAGES

A)Are ther deficincies apparent to you,as an architect,on the traditional process?If yes,what are they?

B)The areas in which management contracting can or does it's greatest contribution:

C)What are the benefits to the client associated with management contracting?

D)What are the limits for the application of management contracting?

E)Why the management contractor does not directly undertake any of the work?

F)Which of the following problems do you think need to be overcome?

1)No universally accepted definition of management contracting.
2)Acceptance of the management contractor as part of the project team.
3)No standard form of management contract and sub-contract.
4)Defining duties and responsib-liyies of members of the project team.
5)Defining and agreeing work packages.
6)Associated problems of communication.
7)High liquidated and ascertained damages;
8)Agreeing the E.P.C. at an early stage.
9)Lack of exposure to management contracting.
1o)Program control.
11)Attitude of personnel.
12)Abortive effort and cost of preparing submissions.
13)Later work packages suffer as a consequence of overexpenditure on early work packages.
14)Others.

APPENDIX SEVEN

CASE STUDY QUESTIONNAIRE

CASE STUDY QUESTIONNAIRE

Note : Assurance is given that the answers to the questionnaire will be used for statistical purposes only. The anonymity of the respondents will be respected, and names of organizations or individuals will not be published, if they so request.

SECTION I. GENERAL PARTICULARS OF ORGANIZATION

I.I. Name of organization ______________________

I.2. Address ______________________

____

I.3. Name of respondent and position within organization. ______________________

____

SECTION 2. ORGANIZATION PARTICULARS

2.I. Approximate annual turnover. ______________________

2.2. Please state an approximate breakdown of your organization's turnover into the following contractual arrangements. (BY VALUE)

	%
Traditional contracting	
Management Contracting	
Design & Construct	
Project Management	
Others (please state)	

2.3. What type of projects does your organization specialised in ?

(please circle response)

Industrial projects / Commercial / Housing / Hospitals / Airport /

Others (please state) ______________________

SECTION 3. PROJECT DATA

3.I. Name of project ______________________________

3.2. Client name ______________________________

3.3. Project type

Factory building / Warehouse / Shope / Office / House / School / Hospital / Airport / Others (please state) ______________________________

3.4. Gross floor area

3.5. Please give brief discription of project. (e.g. location, construction method, purpose of building etc.)

3.6. How was the project financed by

Public Funding ☐

Private funding ☐

3.7. How experianced was the client with that type of construction

Very experianced ☐

Moderatly experianced ☐

Not experianced at all ☐

3.8. What was the client category

Speculative developer ☐

Developer of projects for the primary use of the company ☐

Others (please state) ______________________________

3.9. Did the client employ any professional personnel solely concerned with planning, design etc. of the building work ? YES / NO

if YES, were they Architect ☐ Please state numbers

Engineers ☐

Quantity Surveyors ☐

Building Surveyors ☐

Others (please state)

3.IO. <u>How specialised were the building designers with that type of project</u> ?

Very specialised	☐
Moderatly specialised	☐
Not specialised at all	☐

3.II. <u>What basis was the contract let by</u> ?

Traditional method / Management Contracting Method

3.I2 <u>Date the main contractor was appointed</u> ? ____________________

3.I3. <u>How was the main contractor appointed</u> ? (please circle response)

Open Tender / Selected Tender / Direct Negotiation / Two Stage Tender /

Others (please state) ____________________________________

3.I4. <u>What form of contract was used</u> ? (please circle response)

JCT / Client's Own / Contractors Own / Others (please state) ______________

3.I5. <u>Please give duration or dates (AS STATED) of the following stages. Please complete as fully as possible, although partially completed may still be of use</u>.

	PROGRAMMED	ACTUAL
Brief development in weeks.	----------------	----------------
Date the design started.	----------------	----------------
Date the design completed. (in case of MC. the date of last package been designed)	----------------	----------------
Tender period for main contractor.	----------------	----------------
Date the construction start on site.	----------------	----------------
Date the construction completed.	----------------	----------------

3.I6. Please give the overall <u>contractual</u> price tender accepted for the building ?

_______________ Pounds

3.I7. Please give the <u>actual</u> price on completion of building ?

_______________ Pounds

3.I8. <u>Please give an approximate percentage of services cost out of the overall price of the building</u> ?

_______________ Percent

3.19. <u>If there was overrun on time please state reasons</u> ?

3.20. <u>If there was overrun on cost please state reasons</u> ?

3.21. <u>How complex was the project</u> ? (if complex please state factors that made it complex)

High	
Medium	
low (simple)	

SECTION 4 : CLIENT CRITERIA

4.I. The following are a number of criteria which commonly applied by clients of the building industry in assessing the performance of their projects.

At the outset of this project, please tick the column which best describes the client's initial level of importance at the commencement of the building process.

	Very important	Fairly important	Partly important	Not really	Not at a
a) Reliability of the estimated design time.					
b) Reliability of the estimated const. time.					
c) Minimizing the overall time of building.					
d) Reliability of the estimated const. cost.					
e) To obtain a building at the cheapest cost.					
f) To obtain a building with low maintinance cost.					
g) To obtain a building with low running cost.					
h) To obtain knowledge of exactly how much to pay each period during construction.					
i) To obtain a building with high aesthetic quality.					
j) To obtain a building with idealy fit's it's purpose.					
k) Management consultancy services from the contractor during the design stage.					
l) To have flexibility enabling the client to change his mind during construction.					
m) To have confidence in the design.					
n) To have confidence in the main contractor.					
o) Input of contractor's expertise in refining solution and buildability.					
p) To have an early start on site.					
q) Minimizing the construction time.					

4.2. How well were the following criteria acheived after the project been completed. (please tick the column which best describe the level of success).

	Very successful	Fairly	Partly	Not really	Not at all
a) The actual design time when compared with the estimated it was considered as					
b) The actual construction time when compared with the estimated it was considered as					
c) The overall time of the project was performed					
d) The actual construction cost when compared with estimated it was considered as					
e) When the building was completed the cost of the building as to be the cheapest was					
f) When the building was occupied the acheivement of having a low maintenance cost					
g) When the building was occupied the acheivement of having a low running cost was					
h) The actual payment at each stage during the construction compared with the expected was					
i) The aesthetic of the building was performed					
j) The idea of having a building which fits it's purpose was acheived					
k) The management consultancy services offered by the contractor at the design stage were					
l) Although there were a number of variations during construction the flexibility to cope with the changes was					
m) The client's confidence in the design was					
n) The client's confidence in the contractor was					
o) The idea of getting an input of contractor's expertise in refining solution and buildability was aveived					
p) An early start on site was acheived					
q) The construction time was performed					

4.3. Are there any other criteria that the client considered at the commencement of the project, if so , what are they, what level of importance would you give them and what was the level of success when the project been completed.

CRITERIA CONSIDERED	Level of importance	Level of success
r)		
s)		
t)		

4.4. From the criteria on 4.I & 4.3 , Please rank the TEN most important criteria in the table in order of importance to the client concerned.

i.e. if the cheapest cost was most important , place (e) under I in the table.

I	2	3	4	5	6	7	8	9	IO

4.5. CLIENT SATISFACTION

HOW SATISFIED WAS THE CLIENT ON COST H / M / L

HOW SATISFIED WAS THE CLIENT ON TIME H/ M / L

HOW SATISFIED WAS THE CLIENT ON BUILDINS AESTHETIC H / M / L

HOE FUNCTIONAL WAS THE BUILDING ON COMPLETION H / M / L

ANY FURTHER COMMENTS

THANK YOU FOR YOUR ATTENTION

APPENDIX EIGHT

THE RESEARCH DATA

CLIENT CHARACTERISTICS

C1 = CLIENT TYPE - 1 = PRIVATE, 2 = PUBLIC
C2 = CLIENT EXPERIENCE - 1 = HIGHLY EXPERIENCED, 2 = MODERATE, 3 = NOT EXPERIENCED
C3 = CLIENT BUSINESS - 1 = BESPOKE, 2 = SPECULATIVE CLIENT
C4 = CLIENT CRITERIA - 1 = HIGHLY IMPORTANT, 2 = MODERATELY, 3 = NOT IMPORTANT

DESIGNER CHARACTERISTICS

C5 = DESIGN SOURCE - 1 = INHOUSE DESIGN INPUT, 2 = OUTSIDE
C6 = DESIGNER EXPERIENCE - 1 = HIGHLY EXPERIENCED, 2 = MODERATE, 3 = NOT EXPERIENCED

PROJECT CHARACTERISTICS

C7 = BUILDING TYPE - 1 = COMMERCIAL, 2 = INDUSTRIAL
C8 = CONSTRUCTION TYPE - 1 = NEW CONSTRUCTION, 2 = REFURBISH
C9 = BUILDING COST - 1 = LOW, 2 = AVERAGE, 3 = HIGH
C10= GROSS FLOOR AREA - 1 = LOW, 2 = AVERAGE, 3 = HIGH
C11= PROJECT COMPLEXITY - 1 = HIGHLY COMPLEX, 2 = MODERATELY 3 = LOW COMPLEXITY
C12= BUILDING RATE - 1 = HIGH, 2 = MODERATE, 3 = LOW

CONTRACT PROCEDURE

C13= CONTRACT PROCEDURE - 1 = SELECTED TENDER, 2 = OPEN TENDER 3 = DIRECT NEGOTIATION

PROCUREMENT METHOD

C14= PROCUREMENT METHOD - 1 = MANAGEMENT CONTRACT 2 = TRADITIONAL CONTRACT

PROJECT PERFORMANCE

C15= PRE-CONSTRUCTION TIME 1 = LONG TIME, 2 = AVERAGE, 3 = SHORT
C16= BUILDING TIME - 1 = LONG TIME, 2 = AVERAGE, 3 = SHORT
C17= TOTAL TIME - 1 = LONG TIME, 2 = AVERAGE, 3 = SHORT
C18= SPEED SQM/WEEK - 1 = LOW SPEED, 2 = AVERAGE, 3 = HIGH
C19= UNIT COST £/SQM - 1 = LOW COST , 2 = AVERAGE, 3 = HIGH
C20= TIME OVERRUN - 1 = UNDERRUN , 2 = AVERAGE, 3 = HIGH
C21= COST OVERRUN - 1 = UNDERRUN , 2 = AVERAGE, 3 = HIGH
C22= TIME SATISFACTION - 1 = HIGH LEVEL, 2 = MODERATE, 3 = LOW
C23= COST SATISFACTION - 1 = HIGH LEVEL, 2 = MODERATE, 3 = LOW
C24= QUALITY SATISFACTION- 1 = HIGH LEVEL, 2 = MODERATE, 3 = LOW

ROW	C1 CLIENT TYP	C2 CLIENT EXP	C3 CLIENT BUSINESS	C4A TIME CRITERIA	C4B CERTAINTY	C4C CHEAP COST	C4D QUALITY
1	2	2	1	1	1	3	3
2	1	1	1	1	1	2	3
3	1	1	2	1	2	3	2
4	2	2	2	3	1	2	3
5	2	1	1	1	2	2	1
6	2	1	1	1	1	2	3
7	1	1	1	1	1	3	3
8	1	2	1	1	1	3	2
9	1	2	1	2	1	3	3
10	1	2	2	1	2	2	1
11	1	2	2	1	1	3	3
12	1	2	2	2	1	3	1
13	1	3	2	2	1	3	3
14	1	2	2	1	2	3	1
15	1	1	1	2	1	2	3
16	1	2	2	1	2	3	3
17	1	3	2	2	1	1	3
18	1	2	2	1	1	3	3
19	1	2	2	1	1	3	2
20	2	2	2	1	1	2	2
21	1	1	2	1	1	3	2
22	1	1	2	2	1	3	3
23	2	2	1	1	1	2	3
24	1	1	1	1	1	3	3
25	2	1	2	2	1	1	3
26	2	2	1	1	1	3	3
27	1	2	1	1	1	3	3
28	1	1	2	1	1	3	3
29	1	3	1	1	1	3	2
30	1	1	2	1	1	3	2
31	1	2	2	1	1	3	3
32	1	3	1	2	1	3	1
33	1	2	2	2	1	3	3
34	1	1	1	1	1	2	2
35	1	1	1	2	1	3	3
36	1	*	1	1	1	2	3
37	1	*	1	*	*	*	*
38	*	*	1	1	1	3	2
39	*	*	1	1	1	3	3
40 1	1	3	1	2	1	1	2
41 2	1	1	2	3	1	2	1
42 3	1	2	1	2	2	1	1
43 4	1	1	1	2	1	2	1
44 5	2	2	2	3	1	1	2

TRADITIONAL CONTRACTS

ROW	C1 CLIENT TYP	C2 CLIENT EXP	C3 CLIENT BUSINESS	C4A TIME CRITERIA	C4B CERTAINTY	C4C CHEAP COST	C4D QUALITY
45	1	1	2	1	1	2	3
46	1	1	2	2	1	1	3
47	1	2	1	2	1	1	2
48	2	1	2	1	2	1	3
49	1	2	2	2	1	2	1
50	2	*	*	1	1	2	2
51	1	1	1	2	1	1	2
52	1	1	1	3	1	1	2
53	2	3	1	1	2	2	1
54	1	1	1	2	1	1	2
55	1	1	1	2	1	1	2
56	1	2	*	2	1	1	2
57	1	*	1	2	1	1	2
58	*	3	1	3	1	2	1
59	*	*	*	2	1	1	3
60	*	*	1	2	1	1	2
61	2	*	2	2	1	1	2
62	*	*	1	*	+	*	*
63	*	*	1	2	1	1	2
64	1	2	2	2	1	2	3
65	1	3	2	3	1	2	1
66	1	2	1	2	1	1	2
67	1	2	2	2	1	1	2
68	1	2	1	2	1	1	2
69	*	*	1	2	1	1	2

ROW		C4E VARIATION	C4F MANAGE	C5 DESIGN SOURCE	C6 DESIGNER EXP.	C7 BULDING TYP.	C8 CONSTUCT TYP.
1		2	2	2	1	1	1
2		3	2	1	2	1	1
3		3	1	2	2	1	2
4		2	1	1	3	1	1
5		3	3	1	3	1	1
6		3	2	2	1	1	1
7		2	2	1	1	1	2
8		2	3	2	1	1	1
9		2	1	1	1	1	2
10		3	3	2	2	1	2
11		2	2	1	1	1	1
12		2	3	2	2	1	1
13		2	1	1	1	1	1
14		3	2	1	*	1	1
15		1	3	1	1	1	1
16		2	1	2	1	1	1
17		2	3	2	2	1	1
18		2	2	2	2	1	1
19		3	2	1	2	1	2
20		3	3	2	2	1	1
21		3	2	2	1	1	1
22		2	1	2	2	1	1
23		2	3	1	1	1	1
24		2	2	1	1	1	1
25		3	2	1	2	1	1
26		2	2	1	1	1	1
27		2	2	1	3	2	1
28		2	2	1	3	2	1
29		2	3	2	1	2	1
30		3	2	2	2	2	1
31		2	2	2	2	2	1
32		2	3	1	3	2	1
33		2	1	1	*	*	*
34		3	3	1	1	2	1
35		2	1	1	1	2	1
36		2	3	*	1	2	1
37		*	*	1	*	2	1
38		3	2	*	1	2	*
39		2	2	*	*	2	*
40	1	3	3	2	2	1	1
41	2	3	2	1	1	1	1
42	3	3	3	2	*	1	1
43	4	3	3	1	*	1	1
44	5	2	3	2	3	1	1

TRADITIONAL CONTRACTS

ROW	C4E VARIATION	C4F MANAGE	C5 DESIGN	C6 DESIGNER	C7 BUILDING	C8 CONSTRUCT
45	2	3	1	1	1	2
46	3	2	1	1	1	1
47	3	3	1	2	1	1
48	2	3	2	2	2	2
49	3	3	2	3	2	*
50	3	3	*	*	2	*
51	3	3	2	1	2	2
52	2	3	1	1	2	1
53	3	3	2	3	2	2
54	3	3	2	3	2	2
55	3	3	2	1	2	1
56	3	3	2	3	2	2
57	3	3	2	*	2	1
58	2	3	2	*	2	1
59	2	3	*	*	2	1
60	3	3	*	*	*	*
61	3	3	1	3	2	2
62	*	*	*	*	2	*
63	3	3	*	*	2	*
64	2	3	1	2	1	1
65	2	3	1	2	1	1
66	3	3	2	1	1	1
67	3	3	1	2	1	1
68	3	3	2	2	1	1
69	3	3	1	*	2	*

ROW	C9 BUILDING COST	C10 GROSS AERA	C11 COMPLEXITY	C12 VALUE PER WEEK	C13 PROCEDURE	C14 PROCURE METHOD
1	6.40	9259	1	68500	1	1
2	6.50	7000	1	84400	1	1
3	7.90	4400	1	179545	1	1
4	30.50	35000	2	231000	1	1
5	7.40	10185	3	97000	1	1
6	1.80	1500	2	32200	1	1
7	4.10	6350	1	73200	1	1
8	2.10	3305	2	40400	1	1
9	31.90	36800	1	179000	1	1
10	1.60	5600	1	12300	1	1
11	11.00	11000	1	211500	1	1
12	6.50	5250	1	90300	1	1
13	4.00	10000	1	55600	1	1
14	21.50	35000	1	233700	1	1
15	3.80	4500	1	105500	1	1
16	8.50	3900	2	100000	1	1
17	6.80	7680	2	65400	1	1
18	15.00	11111	1	134000	1	1
19	8.00	9345	1	94200	3	1
20	5.10	3900	2	43600	1	1
21	4.00	4800	2	48800	1	1
22	31.00	45737	1	199000	3	1
23	2.30	2560	3	57500	2	1
24	8.50	17150	1	80950	1	1
25	50.00	29000	1	179000	2	1
26	31.00	46300	1	221500	3	1
27	1.90	8333	3	47500	2	1
28	11.80	24148	2	128260	2	1
29	5.60	5500	1	82333	2	1
30	7.50	6000	2	83333	3	1
31	3.50	6000	2	67300	3	1
32	3.00	5600	3	42800	3	1
33	9.50	30000	2	115850	3	1
34	1.50	7685	3	26800	3	1
35	10.50	16720	2	91000	3	1

ROW		C9 BUILDING COST	C10 GROSS AERA	C11 COMPLEXITY	C12 VALUE PER WEEK	C13 PROCEDURE	C14 PROCUREME METHOD
36		1.80	5680	3	34615	3	1
37		3.00	6600	1	85700	2	1
38		2.50	1440	*	56818	2	1
39		1.00	1765	*	38461	2	1
40	1	5.50	9808	2	47400	2	2
41	2	8.40	15794	2	123600	2	2
42	3	2.30	2691	3	27400	2	2
43	4	40.00	102005	3	196100	2	2
44	5	2.00	2584	2	27000	2	2
45	.	2.95	3000	1	73700	1	2
46	.	14.20	12000	2	142000	1	2
47	.	6.00	11160	2	115400	1	2
48	.	7.20	14163	2	64285	2	2
49	.	3.30	6140	3	28448	2	2
50		1.90	6140	3	40428	2	2
51		0.50	2370	3	19230	1	2
52		1.80	12000	3	30000	2	2
53		2.20	1768	3	39285	2	2
54		0.70	2087	2	14285	1	2
55		0.60	759	3	24000	2	2
56		0.90	1505	3	28125	3	2
57		0.90	4391	3	17307	3	2
58		1.70	4087	3	30357	3	2
59		1.00	2676	3	17857	2	2
60		1.00	3136	2	26315	1	2
61		5.90	14000	2	80821	1	2
62		1.20	4273	3	23076	3	2
63		1.40	3000	2	31818	3	2
64		10.20	16385	1	89500	3	2
65		4.80	11071	1	39500	*	3
66		0.90	1162	3	11500	1	2
67		9.50	18245	1	91400	3	2
68		8.80	17783	2	44000	3	2
69		0.70	5420	3	23333	3	2

ROW	C15 DESIGN TIME	C16 BUILDING TIME	C17 TOTAL TIME	C18 AREA/WEK	C19 COST/SQM	C20 OVERRUN ON TIME	C21 OVERRUN ON COST	C22 TME SATS	C23 CST SATS	C24 QLT SATS
1	17	92	109	101	690	1	1	2	1	1
2	17	77	94	91	923	1	1	1	2	2
3	33	44	77	100	1806	3	3	3	3	2
4	20	132	152	165	879	1	1	1	1	1
5	20	76	96	134	728	1	1	1	1	1
6	10	52	62	29	1200	1	1	1	3	3
7	12	56	68	114	652	1	1	1	1	1
8	15	52	67	64	655	1	1	1	2	1
9	*	178	*	222	864	3	1	1	1	2
10	52	130	182	43	283	3	1	3	1	1
11	24	52	76	211	1000	1	1	1	2	3
12	*	55	*	73	1238	1	1	1	2	1
13	*	72	*	138	403	2	1	1	1	1
14	*	*	*	380	614	*	*	*	3	2
15	20	36	56	125	810	1	1	1	2	1
16	20	82	102	114	883	1	1	1	2	1
17	24	104	128	74	885	1	1	2	2	2
18	30	112	142	100	1350	2	2	1	3	2
19	20	68	88	137	856	1	3	1	2	1
20	30	117	147	33	1307	1	2	1	3	3
21	25	82	107	58	833	1	2	1	1	3
22	26	156	182	293	679	1	3	1	2	1
23	20	40	60	64	898	1	1	1	1	1
24	15	105	120	163	500	1	1	1	1	1
25	100	280	340	103	1724	1	3	1	3	1
26	20	140	160	330	670	1	3	1	2	1
27	20	40	60	208	228	3	1	1	1	1
28	*	92	*	252	509	1	1	1	2	2
29	*	68	*	80	1018	1	1	1	1	1
30	16	74	90	100	1250	3	1	2	3	1
31	10	52	62	115	583	1	1	1	1	2
32	15	70	85	80	535	1	1	2	1	1
33	7	82	89	366	316	1	1	1	1	1
34	9	56	65	137	195	1	1	1	1	1
35	10	112	132	150	610	1	1	1	1	1
36	9	52	61	109	317	1	1	1	1	1

ROW		C15 DESIGN TIME	C16 BUILDING TIME	C17 TOTAL TIME	C18 AREA/WEK	C19 COST/SQM	C20 OVERRUN ON TIME	C21 OVERRUN ON COST	C22 TME SATS	C23 CST SATS	C24 QLT SATS
37		3	35	38	188	1063	1	1	1	1	1
38		4	44	48	32	1736	1	1	1	1	1
39		9	26	35	68	566	*	*	3	3	1
40	1	24	116	140	84	560	3	3	3	3	1
41	2	56	68	124	232	531	1	1	1	1	1
42	3	168	84	252	32	827	1	1	1	2	1
43	4	316	204	520	500	393	3	2	2	2	1
44	5	104	74	178	35	740	1	3	1	2	1
45	.	52	40	92	75	989	1	1	1	1	1
46	.	52	200	152	120	1180	1	2	1	1	1
47	.	40	52	92	215	537	1	1	1	1	2
48	.	92	112	204	126	475	3	3	2	1	1
49	.	26	116	132	65	433	3	1	3	1	2
50		6	47	53	42	309	1	1	1	2	1
51		8	26	34	91	210	1	1	1	1	2
52		18	60	78	200	150	1	1	1	1	1
53		39	56	95	32	1244	1	3	3	3	2
54		25	49	74	43	335	3	3	1	2	2
55		24	25	49	30	790	1	1	1	1	3
6		61	32	93	47	205	3	2	3	1	1
7		58	52	110	85	205	3	2	2	1	1
8		16	56	72	73	416	3	3	2	2	3
9		73	56	129	48	373	1	3	1	2	2
0		29	38	67	83	318	1	1	1	1	1
1		40	73	113	192	421	3	3	2	3	2
2		22	52	74	83	280	1	1	1	1	1
3		24	44	68	68	466	3	1	2	1	1
4		78	114	192	143	624	1	2	1	2	1
5		50	122	172	90	430	1	2	1	2	3
6		*	78	*	15	774	3	3	3	3	1
7		70	104	174	176	521	2	3	2	3	1
8		100	182	282	98	460	3	2	3	2	2
9		24	30	54	180	129	2	1	1	1	1

APPENDIX NINE

SIEGEL'S AND GREENE'S

STATISTICAL CHARTS

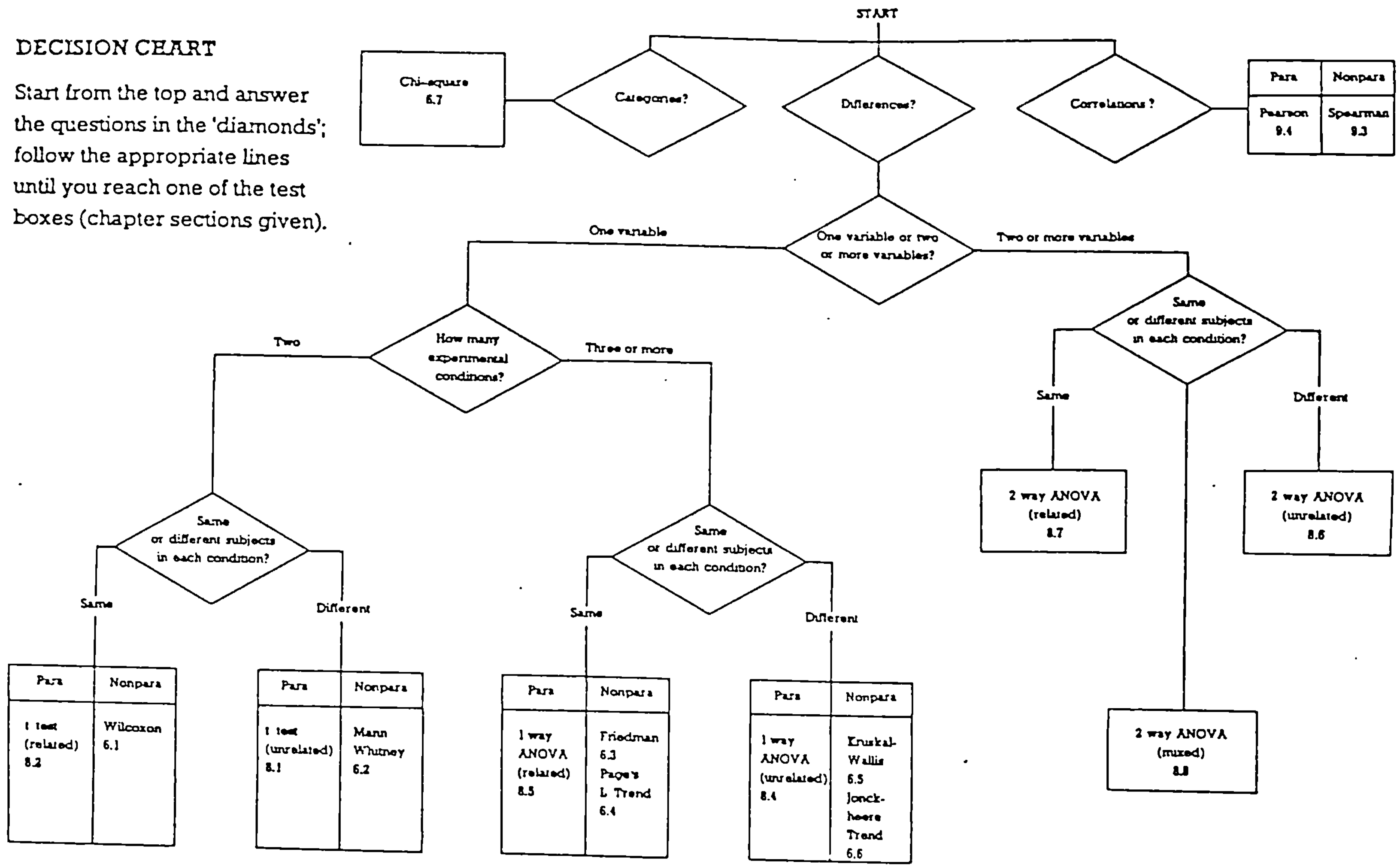
EL OF ASURE-AENT	NONPARAMETRIC STATISTICAL TEST*					NONPARAMETRIC MEASURE OF CORRELATION (Chap. 9)
	One-sample case (Chap. 4)	Two-sample case		k-sample case		
		Related samples (Chap. 5)	Independent samples (Chap. 6)	Related samples (Chap. 7)	Independent samples (Chap. 8)	
ominal	Binomial test, pp. 36–42 χ^2 one-sample test, pp. 42–47	McNemar test for the significance of changes, pp. 63–67	Fisher exact probability test, pp. 96–104 χ^2 test for two independent samples, pp. 104–111	Cochran Q test, pp. 161–166	χ^2 test for k independent samples, pp. 175–179	Contingency coefficient: C, pp. 196–202
rdinal	Kolmogorov-Smirnov one-sample test, pp. 47–52 One-sample runs test, pp. 52–58	Sign test, pp. 68–75 Wilcoxon matched-pairs signed-ranks test,† pp. 75–83	Median test, pp. 111–116 Mann-Whitney U test, pp. 116–127 Kolmogorov-Smirnov two-sample test, pp. 127–136 Wald-Wolfowitz runs test, pp. 136–145 Moses test of extreme reactions, pp. 145–152	Friedman two-way analysis of variance, pp. 166–172	Extension of the median test, pp. 179–184 Kruskal-Wallis one-way analysis of variance, pp. 184–193	Spearman rank correlation coefficient: r_S, pp. 202–213 Kendall rank correlation coefficient: τ, pp. 213–223 Kendall partial rank correlation coefficient: $\tau_{xy.z}$, pp. 223–229 Kendall coefficient of concordance: W, pp. 229–238
terval		Walsh test, pp. 83–87 Randomization test for matched pairs, pp. 88–92	Randomization test for two independent samples, pp. 152–156			

* Each column lists, cumulatively downward, the tests applicable to the given level of measurement. For example, in the case of k related samples, when ordinal measurement has been achieved both the Friedman two-way analysis of variance and the Cochran Q test are applicable.

† The Wilcoxon test requires ordinal measurement not only within pairs, as is required for the sign test, but also of the differences between pairs. See the discussion on pp. 75–76.

DECISION CHART

Start from the top and answer the questions in the 'diamonds'; follow the appropriate lines until you reach one of the test boxes (chapter sections given).



APPENDIX TEN

CHI-SQUARE TEST RESULTS

CHI-SQUARE NO. 1 - PROCUREMENT METHOD V CLIENT TYPE

	MANAGEMENT CONTRACTS (1)	TRADITIONAL CONTRACTS (2)	TOTALS
PUBLIC SECTOR (2)	8	5	13
PRIVATE SECTOR (1)	31	25	56
TOTALS	39	30	69

X^2 = .17 D.F. = 1 P < NOT SIGN. R = - .154

CHI-SQUARE NO. 2 - PROCUREMENT METHOD V CLIENT EXPERIENCE

	MANAGEMENT CONTRACTS (1)	TRADITIONAL CONTRACTS (2)	TOTALS
HIGHLY EXPERIENCE (1)	14	9	23
NORMAL EXPERIENCE (2) & (3)	21	13	34
TOTALS	35	22	57

X^2 = .12 D.F. = 1 P < NOT SIGN. R = .041

CHI-SQUARE NO. 3 - PROCUREMENT METHOD V CLIENT BUISINESS

	MANAGEMENT CONTRACTS (1)	TRADITIONAL CONTRACTS (2)	TOTALS
BESPOKE CLIENTS (1)	19	16	35
SPECULATIVE (2)	20	14	44
TOTALS	39	30	69

X^2 = .15 D.F. = 1 P < NOT SIGN. R = .187

CHI-SQUARE NO. 4 - CLIENT EXPERIENCE V CLIENT SATISFACTION ON TIME

	HIGHLY EXPERIENCED (1)	MEDIUM & LOW (2) & (3)	TOTALS
HIGHLY SATISFIED (1)	19	15	34
OTHERS (2) & (3)	4	14	18
TOTALS	23	29	52

$X^2 = 4.5$ D.F. = 1 $P < .05$ $R = .308$

CHI-SQUARE NO. 5 - CLIENT EXPERIENCE V CLIENT SATISFACTION ON COST

	HIGHLY EXPERIENCED	MEDIUM &LOW (2) & (3)	TOTALS
HIGHLY SATISFIED (1)	20	12	32
OTHERS (2) & (3)	5	15	20
TOTALS	25	27	52

$X^2 = 8.2$ D.F. = 1 $P < .01$ $R = .360$

CHI-SQUARE NO. 6 - CLIENT TYPE V CONSTRUCTION PERFORMANCE UNDER MC

	LONG (1)	AVERAGE (2)	SHORT (3)	TOTAL
PRIVATE CLIENT (1)	20	58	27	105
PUBLIC CLIENT (2)	21	12	5	38
TOTALS	41	70	32	143

$X^2 = 17.92$ D.F. = 2 $P < .01$

CHI-SQUARE NO. 7 - PROCUREMENT METHOD V DESIGNER EXPERIENCE

	MANAGEMENT CONTRACTS (1)	TRADITIONAL CONTRACTS (2)	TOTALS
HIGHLY EXPERIENCED (1)	18	7	25
OTHERS (2) & (3)	17	13	30
TOTALS	35	20	55

$X^2 = 1.2$ D.F. = 1 P < NOT SIGNF. R = .201

CHI-SQUARE NO. 8 - PROCUREMENT METHOD V SOURCE OF DESIGN

	MANAGEMENT CONTRACTS(1)	TRADITIONAL CONTRACTS(2)	TOTALS
IN-HOUSE DESIGN INPUT (1)	13	11	24
OUT-SIDE DESIGN INPUT (2)	15	14	29
TOTALS	28	25	53

$X^2 = .92$ D.F. = 1 P < NOT SIGNF. R = .141

CHI-SQUARE NO. 9 - DESIGN EXOERIENCE V PRE-CONSTRUCTION TIME

	SHORT (3) PREBLD TIME	LONG & AVG. PREBLD TIME (1) & (2)	TOTALS
HIGHLY EXPERIENCE DESIGNERS (1)	20	5	25
OTHERS (2) & (3)	16	14	30
TOTALS	36	19	55

$X^2 = 4.48$ D.F. = 1 $P < .05$ R = .306

CHI-SQUARE NO.10 - DESIGNER EXPERIENCE V TIME OVERRUN

	WITHIN EST. TIME (1) & (2)	HIGH OVERRUN (3)	TOTALS
HIGHLY EXPERIENCED DESIGNERS (1)	18	8	26
OTHERS (2) & (3)	10	16	26
TOTALS	28	24	52

$X^2 = 4.8$ D.F. = 1 $P < .05$ R = .345

CHI-SQUARE NO. 11- DESIGNER EXPERIENCE V COST OVERRUN

	WITHIN EST. BUDGET (1) & (2)	HIGH OVERRUN (3)	TOTALS
HIGHLY EXPERIENCED DESIGNERS (1)	15	10	25
OTHERS (2) & (3)	9	18	27
TOTALS	24	28	52

$X^2 = 3.85$ D.F. = 1 $P < .05$ R = .273

CHI-SQUARE NO.12 - DESIGNER EXPERIENCE V CLIENT SATISFACTION ON TIME

	HIGHLY (1) SATISFIED	OTHERS (2) & (3)	TOTALS
HIGHLY EXPERIENCED (1)	20	3	23
OTHERS (2) & (3)	14	12	26
TOTALS	34	15	49

$X^2 = 5.64$ D.F. = 1 $P < .02$ R = .331

CHI-SQUARE NO. 13 – DESIGNERS EXPERIENCE AND CLIENT SATISFACTION ON QUALITY

	HIGHLY SATISFIED (1)	OTHERS (2)&(3)	TOTALS
HIGHLY EXPERIENCED (1)	20	3	23
OTHERS (2) & (3)	13	10	23
TOTALS	33	13	46

$X^2 = 5.1$ D.F. = 1 $P < .025$ R = .357

CHI-SQUARE NO. 14 – SOURCE OF DESIGN AND SPEED DURING CONSTRUCTION

	IN-HOUSE DESIGNERS (1)	OTHERS (2)	TOTALS
HIGH SPEED (3)	15	4	19
OTHERS (1) & (2)	9	15	24
TOTALS	24	19	43

$X^2 = 5.1$ D.F. = 1 $P < .01$ R = .571

CHI-SQUARE NO. 15 – PROCUREMENT METHOD V BUILDING COST

	MORE THAN £5 MILLION (3)	£2M – £5M (2)	LESS THAN £2 MILLION (1)	TOTALS
MANAGEMENT CONTRACTS (1)	23	10	6	39
TRADITIONAL CONTRACTS (2)	10	6	14	20
TOTALS	33	16	20	69

$X^2 = 8.02$ D.F. = 2 $P < .02$ R = –.244

CHI-SQUARE NO.16 - PROCUREMENT METHOD AND PROJECT COMPLEXITY

	HIGHLY (1)	MEDIUM (2)	LOW (3)	TOTALS
MANAGEMENT CONTRACTS (1)	19	12	6	37
TRADITIONAL CONTRACTS (2)	8	6	14	28
TOTALS	27	18	20	65

X^2 = 8.7   D.F. = 2   P < .02   R = .441

CHI-SQUARE NO. 17 - PROCUREMENT METHOD AND BUILDING RATE £ PER WEEK

	MORE THAN £100,000 / WEEK (1)	BETWEEN (2) 50,000 AND 100,000 / WK	LESS THAN £50,000 / WEEK (3)	TOTALS
MANAGEMENT CONTRACTS (1)	13	16	10	39
TRADITIONAL CONTRACTS (2)	4	5	21	21
TOTALS	17	21	31	60

X^2 = 13.7   D.F. = 2   P < .001   R = -.388

CHI-SQUARE NO. 18 - PROJECT COMPLEXITY V BUILDING TIME

	HIGHLY COMPLEX (1)	(2) & (3) NORMAL COMPLEXITY	TOTALS
LONG BUILDING TIME (1)	16	9	25
AVERAGE AND SHORT TIME (2)&(3)	11	26	37
TOTALS	27	35	62

X^2 = 6.8   D.F. = 1   P < 6.8   R = .305

CHI-SQUARE NO. 19 - PROJECT COMPLEXITY V UNIT COST (COST / SQM)

	HIGHLY COMPLEX	NORMAL COMPLEXITY	TOTALS
HIGH UNIT COST COST / SQM	15	6	21
AVERAGE AND LOW UNIT COST	5	30	35
TOTALS	20	36	56

$X^2 = 6.17$ D.F. = 1 $P < .025$ R = .438

CHI-SQUARE NO. 20 - PROCUREMENT METHOD V CONTRACT PROCEDURE

	MANAGEMENT CONTRACTS	TRADITIONAL CONTRACTS	TOTALS
COMPETITION	28	21	49
NEGOTIATION	11	9	20
TOTALS	39	30	69

$X^2 = .04$ D.F. = 1 $P <$ NOT SIGNIF. R =

CHI-SQUARE NO. 21 - PROCUREMENT METHOD V PRE-CONSTRUCTION TIME

	MANAGEMENT CONTRACTS	TRADITIONAL CONTRACTS	TOTALS
LONG	3	9	12
AVERAGE	4	8	12
SHORT	24	12	36

$X^2 = 8.28$ D.F. = 2 $P < .02$ R = .405

CHI-SQUARE NO.22 - PROCUREMENT METHOD V CONSTRUCTION TIME

	SHORT TIME (3)	AVERAGE (2)	LONG TIME (1)	TOTAL
MANAGEMENT CONTRACTS (1)	11	14	5	30
TRADITIONAL CONTRACTS (2)	3	17	10	30
TOTALS	14	31	15	60

$X^2 = 6.53$ D.F. = 2 $P < .05$ R = -.293

CHI-SQUARE NO. 23 - CONSTRUCTION TIME V CONSTRUCTION TYPE UNDER MC
TAKEN FROM 170 LIST OF MC PROJECTS

	SHORT TIME (3)	AVERAGE (2)	LONG TIME (1)	TOTALS
NEW CONSTRUCTION (1)	9	31	15	55
REFURBISH (2)	9	6	2	17
TOTALS	18	37	17	72

$X^2 = 9.39$ D.F. = 2 $P < .01$ R =

CHI-SQUARE NO. 24 - PROCUREMENT METHOD V TOTAL TIME

	SHORT TIME (3)	AVERAGE (2)	LONG TIME (1)	TOTALS
MANAGEMENT CONTRACTS (1)	7	19	4	30
TRADITIONAL CONTRACTS (2)	3	15	12	30
TOTALS	10	34	16	60

$X^2 = 7.5$ D.F. = 2 $P < .025$ R = -.297

CHI-SQUARE NO.25 - PROCUREMENT METHOD V SPEED OF CONSTRUCTION

	HIGH SPEED (3)	AVERAGE SPEED (2)	LOW SPEED (1)	TOTAL
MANAGEMENT CONTRACTS (1)	12	21	5	38
TRADITIONAL CONTRACTS (2)	5	14	11	30
TOTALS	17	35	16	68

$X^2 = 6.1$ D.F. = 2 $P < .05$ $R = -.244$

CHI-SQUARE NO. 26 - PROCUREMENT METHOD V UNIT COST (COST/SQM)

	LOW & AVG. (1) & (2)	HIGH (3)	TOTAL
MANAGEMENT CONTRACTS (1)	22	17	39
TRADITIONAL CONTRACTS (2)	23	7	30
TOTALS	45	24	69

$X^2 = 4.12$ D.F. = 2 $P < .05$ $R = -.409$

CHI-SQUARE NO. 27 - PROCUREMENT METHOD V TIME OVERRUN

	HIGH OVERUN (3)	WITHIN EST. TIME (1)&(2)	TOTALS
MANAGEMENT CONTRACTS (1)	5	28	33
TRADITIONAL CONTRACTS (2)	11	18	29
TOTALS	16	46	62

X^2 $P < .05$ $R = .311$

CHI-SQUARE NO. 28 - PROCUREMENT METHOD V COST OVERRUN

	HIGH (3) OVERRUN	WITHIN EST. TIME (1)&(2)	TOTALS
MANAGEMENT CONTRACTS (1)	4	33	37
TRADITIONAL CONTRACTS (2)	14	15	29
TOTALS	18	48	66

$X^2 = 11.1$ D.F. = 1 $P < .001$ R = .308

CHI-SQUARE NO. 29 - PROCUREMENT METHOD V CLIENT SATISFACTION ON TIME

	HIGHLY (1) SATISFIED	(2) & NORMAL (3) SATISFACTION	TOTALS
MANAGEMENT CONTRACTS	30	8	38
TRADITIONAL CONTRACTS	15	14	29
TOTALS	45	22	67

$X^2 = 5.1$ D.F. = 1 $P < .025$ R = .323

CHI-SQUARE NO. 30 - PROCUREMENT METHOD V CLIENT SATISFACTION ON COST

	HIGHLY (1) SATISFIED	(2) & NORMAL (3) SATISFACTION	TOTALS
MANAGEMENT CONTRACTS	21	17	38
TRADITIONAL CONTRACTS	15	15	30
TOTALS	36	32	68

CHI-SQUARE NO. 31 - PROCUREMENT METHOD V CLIENT SATISFACTION ON QUALITY

	HIGHLY (1) SATISFIED	NORMAL (2)& (3) SATISFACTION	TOTALS
MANAGEMENT CONTRACTS (1)	24	13	37
TRADITIONAL CONTRACTS (2)	20	9	29
TOTALS	44	22	66

X^2 = .21 D.F. = 1 P < NOT SIGNF. R = .135

CHI-SQUARE NO. -

X^2 = D.F. = P < R =

CHI-SQUARE NO. -

?

APPENDIX ELEVEN

CORRELATION COEFFICIENT MATRIX

	C1 CLINT TYPE	C2 CLINT EXP.	C3 CLINT BUSNS	C4A TIME CRIT.	C4B CERTN CRIT.	C4C CHEAP COST.	C4D QLTY CRIT.	C4E VAR. CRIT	C4F MGT. CRIT.
C14 PROCUREMENT	-.154	.041	.187	.594	-.043	-.784	-.381	.350	.610
C15 PRE-BLD TIME	.023	-.073	-.065	.279	.165	-.334	-.291	.182	.266
C16 BUILD TIME	.243	-.002	.064	.146	.016	.016	.064	.031	-.232
C17 TOTAL TIME	.146	-.027	-.199	.245	.115	-.192	-.166	.129	.053
C18 AREA/WEEK	-.067	-.161	-.232	.075	-.027	.281	.092	-.175	-.358
C19 COST/SQM	.275	-.077	-.165	-.317	.161	.283	.125	.065	-.323
C20 +/- TIME	-.184	.098	.021	.142	.108	-.243	-.240	.328	.107
C21 +/- COST	.206	.126	.207	.189	.107	-.277	-.106	.187	.099
C22 TIME SATS.	-.128	.308	-.226	.034	.276	-.172	-.384	.303	.214
C23 COST SATS.	-.089	.360	.246	.027	.132	-.086	-.079	.069	.065
C24 QLTY SATS.	-.245	.168	.009	.100	.082	-.086	-.109	.083	.018

	C5 DESIN SORCE	C6 DESIN EXP.	C7 BUILD TYPE	C8 CONST TYPE	C9 BUILD COST	C10 GROSS AREA	C11 COMP-LEXTY	C12 VALU/ WEEK	C13 PROCE-DURE	C14 PROC-URMNT
PROCUREMENT	.141	.201	.237	.187	-.244	-.078	.441	.388	-.682	.000
PREBLD TIME	-.005	.306	-.252	-.026	.431	.612	.104	.184	-.369	.405
BUILD TIME	-.095	.118	-.434	-.133	.825	.679	.305	.505	-.116	-.293
TOTAL TIME	-.028	.241	-.408	-.146	.699	.744	.114	.381	-.258	-.297
AREA/WEEK	-.571	.021	-.178	-.137	.631	.848	-.184	.728	.059	-.244
COST/SQM	.159	-.109	-.360	-.030	.287	-.069	.438	.380	.246	-.409
+/- TIME	.288	.345	.186	.353	-.003	.103	.142	-.129	-.116	.311
+/- COST	.243	.348	-.082	.249	.229	.161	-.077	.081	-.298	.308
TIME SATS.	.455	.331	.074	.260	-.123	-.054	.123	-.194	-.294	.323
COST SATS.	.197	.273	-.244	.041	.133	.078	-.179	.145	-.335	.119
QLTY SATS.	.198	.357	.158	.223	-.004	-.026	.060	.046	-.037	.135

	C1 PRE- TIME	C2 BUILD TIME	C3 TOTAL TIME	C4A AREA/ WEEK	C4B COST/ SQM	C4C +/- TIME	C4D +/- COST	C4E TIME SATS	C4F COST SATS.
C16 BUILD TIME	.507								
C17 TOTAL TIME	.879	.853							
C18 AREA/WEEK	.326	.365	.399						
C19 COST/SQM	-.043	.178	.066	-.214					
C20 +/- TIME	.264	.150	.219	.016	-.211				
C21 +/- COST	.283	.306	.360	-.018	.092	.349			
C22 TIME SATIS.	.161	.112	.183	-.204	-.004	.659	.356		
C23 COST SATIS.	.202	.180	.246	-.068	.253	.179	.677	.410	
C24 QULTY SATIS.	-.058	.012	-.069	-.009	-.003	.270	.234	.217	.285

APPENDIX TWELEVE

SCORING MATRIX FOR PROJECT PERFORMANCE

CLIENT AND PROJECT CHARACTERISTICS	PROJECT PERFORMANCE																					
	MANAGEMENT CONTRACTS											TRADITIONAL CONTRACTS										
	DESIGN TIME	BUILD TIME	TOTAL TIME	SPEED (A/W)	UNIT COST	% +/- TIME	% +/- COST	LEVEL S TIME	LEVEL S COST	LEVEL S QLTY	TOTAL SCORES	DESIGN TIME	BUILD TIME	TOTAL TIME	SPEED (A/W)	UNIT COST	% +/- TIME	% +/- COST	LEVEL S TIME	LEVEL S COST	LEVEL S QLTY	TOTAL SCORES
SPECULATIVE < £5M N = 4MC, 3TRC	2	1	2	1	2	1	2	2	2	2	17	1	2	1	3	3	2	2	3	3	3	23
SPECULATIVE > £5M N = 14MC, 6TRC	3	2	3	3	1	2	3	2	2	1	22	2	2	2	3	3	2	2	3	2	3	24
BESPOKE < £5M N = 12MC, 11TRC	3	2	3	3	1	2	2	3	3	3	25	1	2	2	2	3	2	2	2	3	2	21
BESPOKE > £5M N = 7MC, 4TRC	3	2	3	3	3	2	2	3	3	2	26	2	1	1	3	2	2	3	2	2	2	20
BLD RATE < 50,000 N = 10MC, 21TRC	3	2	2	2	1	3	3	3	3	2	24	2	2	1	1	3	2	2	2	2	3	21
BLD RATE > 50,000 N = 29MC, 9TRC	3	2	3	3	1	3	2	2	3	2	24	1	2	1	3	2	1	1	1	3	2	17
INDUSTRIAL < £5M N = 8MC, 13TRC	3	2	3	3	2	3	2	2	3	3	26	2	2	2	1	3	3	1	2	3	3	22
INDUSTRIAL > £5M N = 8MC, 5TRC	3	2	3	3	3	3	2	2	3	3	27	1	2	1	2	3	1	2	2	2	3	20
COMMERCIAL < £5M N = 8MC, 5TRC	3	1	3	2	1	3	2	3	2	2	22	2	2	2	3	3	2	3	3	2	3	25
COMMERCIAL > £5M N = 18MC, 8TRC	3	2	3	2	1	3	2	3	3	2	24	1	1	1	3	2	2	1	1	2	3	17
AREA < 7000 SQM N = 15MC, 18TRC	3	3	3	2	1	2	3	3	2	2	24	2	2	2	2	3	2	2	3	3	3	24
AREA > 7000 SQM N = 24MC, 12TRC	3	2	3	3	3	3	2	3	3	2	28	1	1	1	3	2	2	2	2	2	3	20
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APPENDIX 18 - SCORING MATRIX OF PROJECT PERFORMANCE

MEASUREMENTS

AVERAGE PERFORMANCE FOR PROJECTS COSTING LESS THAN £5 MILLION

DESIGN TIME = 34 WEEKS

BUILDING TIME = 52 WEEKS

TOTAL TIME = 96 WEEKS

SPEED (A/W) = 81 AREA / WEEK

COST / SQM = 562 £/SQM

% +/- TIME = 5%

% +/- COST = 5%

AVERAGE PERFORMANCE FOR PROJECTS COSTING MORE THAN £5 MILLION

DESIGN TIME = 55 WEEKS

BUILDING TIME = 88 WEEKS

TOTAL TIME = 140 WEEKS

SPEED (A/W) = 125 SQM/WEEK

COST / SQM = 775 £/SQM

% +/- TIME = 8%

% +/- COST = 7%

SCORE 1 = LOW PERFORMANCE

SCORE 2 = AVERAGE PERFORMANCE

SCORE 3 = HIGH PERFORMANCE

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[illegible]

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Articles of Agreement

made the ____________ day of ______________________________________ 19____

between ____

____

____

of (or whose registered office is situated at) ______________________________

____

____

(hereinafter called 'the Employer') of the one part

and ____

____

____

of (or whose registered office is situated at) ______________________________

____

____

(hereinafter called 'the Management Contractor') of the other part

Whereas

First The Employer wishes to have constructed the building works described in the First Sche hereto (hereinafter called 'the Project') and has appointed professional advisers (herei called 'the Professional Team') for the design of and otherwise in connection with the Pr who have prepared or are preparing Drawings and a Specification for the Project herei called the 'Project Drawings' and the 'Project Specification';

Second the Project comprises works or items of work to be carried out under Works Contract persons other than the Management Contractor in the manner hereinafter appearing tog with such site facilities and services to be provided by the Management Contractor a required by the Professional Team and recorded in the Fifth Schedule hereto in accord with Article 6.3.

third the Employer and the Management Contractor have agreed that the Management Contractor will, subject to the Conditions annexed hereto, co-operate with the Professional Team during the design stages and in the planning, programming and cost estimating for the Project, and will secure the carrying out and completion of the Project, and in so doing shall include

in the Pre-Construction Period the services as relevant set out in the Third Schedule hereto, and

in the Construction Period the services set out in the Third Schedule including any alterations made thereto by agreement between the Professional Team and the Management Contractor prior to the issue under clause 2.1 of the written notification by the Architect/the Contract Administrator of the date when it will be practicable to commence the construction of the Project.

fourth the Employer intends subject to the Conditions to give to the Management Contractor, and the Management Contractor is willing to receive and act upon, the written notice from the Employer referred to in clause 2.1 of the Conditions requiring the Management Contractor to continue such co-operation and to proceed to set out and secure the carrying out and completion of the Project in accordance with Article 1;

fifth the status of the Employer for the purposes of the Statutory Tax Deduction Scheme under the Finance (No 2) Act 1975 or any amendment or re-enactment thereof as at the date of this Agreement is stated in the Appendix.

Now Is hereby agreed as follows

Article 1
For the consideration mentioned in Article 2 the Management Contractor will

1 subject to the Conditions co-operate with the Professional Team during the design stages and in the planning, programming and cost estimating for, and in securing the carrying out and completion of the Project and in so doing shall include the services set out in the Third Schedule including any alterations made thereto by agreement between the Professional Team and the Management Contractor prior to the issue under clause 2.1 of the written notification by the Architect/the Contract Administrator of the date when it will be practicable to commence the construction of the Project; and

2 subject to receipt of the written notice from the Employer under clause 2.1 and subject to the Contract Documents, set out, manage, organise, supervise and secure the carrying out and completion of the Project on or before the Date for Completion or such other date as may be fixed under the Conditions inclusive of all such works or items of work as are to be carried out under and in accordance with the Works Contracts which the Management Contractor is required to enter into hereunder.

Article 2
Subject to the Conditions the Employer will pay to the Management Contractor the amounts due in accordance with section 4.

Article 3A [a] [b]
The term 'the Architect' in the Conditions shall mean

____

of ______________________________

____

or in the event of his death or ceasing to be the Architect for the purpose of this Contract other person as the Employer shall, within a reasonable time but in any case no later th days after such death or cessation, nominate for that purpose being a person entitled use of the name 'Architect' and *not being a person to whom the Management Contrac later than 7 days after such nomination shall object for reasons considered to be suffici an Arbitrator appointed in accordance with Section 9* [c] Provided always that no p subsequently appointed to be the Architect under this Contract shall be entitled to disreg overrule any certificate or opinion or decision or approval or instruction given or express the Architect for the time being

Contract Administrator

Article 3B [a] [b]
The term 'the Contract Administrator' in the Conditions shall mean

____

of ____

____

or, in the event of his death or ceasing to be the Contract Administrator for the purpose c Contract, such other person as the Employer shall, within a reasonable time but in any ca later than 21 days after such death of cessation, nominate for that purpose, *not being a p to whom the Management Contractor no later than 7 days after such nomination shall obje reasons considered to be sufficient by an Arbitrator appointed in accordance with Section* Provided always that no person subsequently appointed to be the Contract Administrator u this Contract shall be entitled to disregard or overrule any certificate or opinion or decisi approval or instruction given or expressed by the Contract Administrator for the time be

Quantity Surveyor

Article 4 [b]
The term 'the Quantity Surveyor' in the Conditions shall mean

____

of ____

____

or, in the event of his death or ceasing to be the Quantity Surveyor for the purpose Contract, such other person as the Employer shall, within a reasonable time but in any ca later than 21 days after such death or cessation, nominate for that purpose, *not being a p to whom the Contractor no later than 7 days after such nomination shall object for re considered to be sufficient by an Arbitrator appointed in accordance with Section 9* [c]

Notes

[a] Article 3A is applicable where the person concerned is entitled to use the name 'Architect' under accordance with the Architects Registration Acts, 1931 to 1969. Article 3B is applicable in all other Therefore complete whichever is appropriate and delete the alternative. Where Article 3A is comple expression 'the Contract Administrator' shall be deemed to have been deleted throughout the Con Where Article 3B is completed the expression 'the Architect' shall be deemed to have been c throughout the Conditions.

[b] In cases where the Project is to be carried out under the direction of officials of the Local Authority in names of such officials as are to perform the respective functions of 'the Architect'/'the C Administrator' and 'the Quantity Surveyor' under this contract

[c] Strike out words in italics in cases where 'the Architect', 'the Contract Administrator' or 'the C Surveyor' is an official of the Local Authority or in the employment of the Employer.

Article 5

Professional Team

The term 'the Professional Team' shall mean the Architect/the Contract Administrator named in Article 3A/3B and the Quantity Surveyor named in Article 4 and

____

____

____

____

____

and such other persons as may be notified in writing to the Management Contractor by the Architect/the Contract Administrator.

Article 6

Project Drawings, Project Specification, Contract Cost Plan, Appendix Part 2 and Third and Fifth Schedules

6·1 The Employer will cause the Project Drawings and the Project Specification which describe generally the scope of the Project, to be prepared as soon as reasonably practicable after the date of this Contract unless previously prepared.

6·2 The Employer will cause a Contract Cost Plan (to be annexed hereto) based upon the Project Drawings and the Project Specification to be prepared as soon as reasonably practicable after the date of this Contract by the Quantity Surveyor in collaboration with the remainder of the Professional Team and with the Management Contractor.

6·3 If the Management Contractor consents to:

the Contract Cost Plan and to the total thereof,

the entries inserted in the Appendix Part 2,

any alterations made to the Third Schedule

the entries in the Fifth Schedule as agreed between the Professional Team and the Management Contractor and completed by the Professional Team

he shall notify such consent to the Architect/the Contract Administrator and thereupon initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign the Appendix Part 2. If the Employer issues the written notice to proceed under clause 2·1 the Employer shall thereupon *initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign* and date the Appendix Part 2 and the Employer and the Management Contractor shall sign the Project Drawings, the Project Specification and the Contract Cost Plan.

Article 7

Drawings, specifications and bills of quantities for Works Contractors or otherwise

The Employer will cause such drawings and specifications and bills of quantities for Works Contracts or otherwise to be prepared and issued by or under the direction of the Professional Team as are necessary and in such a way as to enable the Management Contractor properly to discharge his obligations.

Article 8

Settlement of disputes – Arbitration

If any dispute or difference as to the construction of this contract or any matter or thing of whatever nature arising thereunder or in connection therewith, shall arise between the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor either during the progress or after the completion or abandonment of the Project, except on a decision of the Employer to state in the written notice under clause 2·1 that the Management Contractor is not to proceed or under clauses 5·9 to 5·17 (statutory tax deduction scheme) to the extent provided in clause 5·17 or under clause 3 of the VAT Agreement, such dispute or difference shall be and is hereby referred to arbitration in accordance with section 9.

ATTESTATION

Signed by or on behalf of the Employer [d1] ______________________________

in the presence of

Signed by or on behalf of the Management Contractor [d1] ______________________________

in the presence of

Signed, sealed and delivered by [d2]/The Common seal of [d3]: ______________________________

in the presence of [d2]/was hereunto affixed in the presence of [d3]:

Signed, sealed and delivered by [d2]/The Common seal of [d3]: ______________________________

in the presence of [d2]/was hereunto affixed in the presence of [d3]:

[d1] For use if Agreement is executed under hand

[d2] For use if Agreement is executed under seal by an individual or firm or unincorporated body

[d3] For use if Agreement is executed under seal by a company or other body corporate

THE CONDITIONS hereinbefore referred to

SECTION 1: Intentions of the Parties

Interpretation, definitions etc. (1·1 to 1·3)

Method of reference to clauses **1·1** Unless otherwise specifically stated a reference in the Recitals, the Articles of Agreement, the Conditions, the Appendix or the Schedules to any clause or section means that clause or section of the Conditions.

Articles etc. to be read as a whole **1·2** The Recitals, the Articles of Agreement, the Conditions, the Appendix and the Schedules are to be read as a whole and the effect or operation of any recital, article or clause in the Conditions or item in or entry in the Appendix or in the Schedules must therefore unless otherwise specifically stated be read subject to any relevant qualification or modification in any other recital, article or any of the clauses in the Conditions or item in or entry in the Appendix or the Schedules.

Definitions **1·3** Unless the context otherwise requires or the Recitals or the Articles or the Conditions or an item in or entry in the Appendix or the Schedules specifically otherwise provides, the following words and phrases in the Recitals, the Articles of Agreement, the Conditions, the Appendix and the Schedules shall have the meanings given below or as ascribed in the recital, article, clause, section, Appendix item or the Schedule to which reference is made.

Word or phrase	**Meaning**
All Risks Insurance	see clause 6·2
Appendix	the Appendix Parts 1 and 2 to the Conditions as completed, and with Part 2 signed, by the Employer and the Management Contractor
Arbitrator	the person appointed under section 9 to be the Arbitrator
Articles or Articles of Agreement	the Articles of Agreement to which the Conditions are annexed or any one of the Articles.
Architect	the person named in Article 3A or any successor duly appointed under Article 3A or otherwise agreed as the person to be the Architect
Certificate of Completion of Making Good Defects	see clause 2·6
Completion Date	the Date for Completion or any other date fixed under clause 2·12 or, if applicable, clause 3·6·6.
Conditions	the clauses 1·1 to 9·7., and the Supplemental Provisions ("the VAT Agreement") annexed to the Articles of Agreement
Construction Period	the period starting with the day when the Management Contractor is given possession of the site and ending on the day named in the certificate of Practical Completion
Construction Period Management Fee	The amount which is part of the Management Fee and which is stated in the Appendix as the Construction Period Management Fee and which is adjustable, if applicable in accordance with clause 4·10·2
Contract Administrator	The person named in Article 3B or any successor duly appointed under Article 3B or otherwise agreed as the person to be the Contract Administrator.
Contract Cost Plan	the document referred to in Article 6·2 which is based upon the Project Drawings and the Project Specification and annexed hereto

1 *continued*

Contract Cost Plan Total:	the total of the Contract Cost Plan as stated in the Acor which total does not include the Management Fee
Contract Documents:	the Project Drawings, the Project Specification, the Ar of Agreement, the Conditions, the Appendix, the Co Cost Plan annexed hereto and the Schedules
Date for Completion:	the date fixed and stated in the Appendix unde reference to clause 1 3
Date of Possession:	the date fixed and stated in the Appendix unde reference to clause 2 3 1.
Defects Liability Period:	the period named in the Appendix under the refer clause 2 5
Employer:	the person named as the Employer in the Artic Agreement
Excepted Risks:	ionising radiations or contamination by radioactivity fro nuclear fuel or from any nuclear waste from the comb of nuclear fuel, radioactive toxic explosive or hazardous properties of any explosive nuclear ass or nuclear component thereof, pressure waves caus aircraft or other aerial devices travelling at sonic or sonic speeds
Final Certificate:	the certificate to which clause 4 12 refers
Instruction:	an instruction to the Management Contractor issued Architect/the Contract Administrator
Interim Certificate:	any one of the certificates to which clause 4 2 refers
Joint Names Policy:	a policy of insurance which includes the Mana Contractor and the Employer as the insured
Management Contractor:	the person named as the Management Contracto Articles of Agreement.
Management Contractor's Manager on site:	The person named in the Appendix under the refer clause 3 13
Management Fee:	the sum of the Pre-Construction Period Managem and the Construction Period Management Fee
person:	an individual, firm (partnership), or body corporate
Practical Completion:	see clause 2 4
Pre-Construction Period:	the period starting on the date of execution of the and ending on the day immediately prior to the Possession
Pre-Construction Period Management Fee:	the amount which is part of the Management Fee a is stated in, or is to be ascertained in accordance Schedule attached to, the Appendix
Preliminary Instruction:	an instruction referred to in clause 3 6 3
Prime Cost:	the cost of the Project ascertained in accordanc Second Schedule.
Professional Team:	the persons referred to or named in Article 5
Project:	the building works briefly described in the First and shown and described generally in the Project and the Project Specification

	[illegible] the Project Specification
Project Drawings:	the drawings for the Project listed in the Fourth Schedule hereto upon which the Contract Cost Plan has been based and which have been signed by or on behalf of the Employer and the Management Contractor.
Project Extension Items:	see clause 2 13
Project Specification:	the specification for the Project upon which the Contract Cost Plan has been based and which has been signed by or on behalf of the Employer and the Management Contractor
Quantity Surveyor:	the person named in Article 4 or any successor duly appointed under Article 4 or otherwise agreed as the person to be the Quantity Surveyor.
Recital or Recitals:	the Recitals or any one of the Recitals set out before Article 1.
Relevant Event:	any one of the events set out in clause 2 10 of the Works Contract Conditions.
Retention:	see clause 4 7.
Schedules:	the Schedules to the Conditions, that is the First and Second Schedules; the Third Schedule (including any alterations made thereto and initialled by or on behalf of the Employer and the Management Contractor), the Fourth Schedule; and the Fifth Schedule as completed and initialled by or on behalf of the Employer and the Management Contractor.
Site Materials:	see clause 6 2.
Specified Perils:	fire, lightning, explosion, storm, tempest, flood, bursting or overflowing of water tanks, apparatus or pipes, earthquake, aircraft and other aerial devices or articles dropped therefrom, riot and civil commotion but excluding Excepted Risks.
Statutory Requirements:	see clause 5 1.
VAT Agreement:	see clause 5 6.
Works:	in respect of any Works Contract the works brief particulars of which are referred to in Section 1, and which are fully shown and described in the Numbered Documents listed in the second Recital of Section 3, of the relevant Works Contract/1.
Works Contract:	the contract between the Management Contractor and a Works Contractor as referred to in clause 8 2·1·1 and defined in the Works Contract Conditions, clause 1 3 as: "the completed Sections 1, 2 and 3 of Works Contract/1 including the Numbered Documents listed in Section 3 and the Works Contract Conditions".
Works Contract Conditions:	the Conditions (Works Contract/2) which are incorporated into the Works Contract by Article 1 2 in Works Contract/1, Section 3.

[illegible] an Instruction or a Direction of the Management Contractor issued under the Works Contract

1 the alteration or modification of the design quality or quantity of the Works as shown in the Works Contract including

 1 the addition, omission or substitution of any work;

 2 the alteration of the kind or standard of any of the materials or goods to be used in the Works,

 3 the removal from the site of any work, materials or goods executed or brought thereon by the Works Contractor for the purposes of the Works other than work, materials or goods which are not in accordance with the Works Contract

2· the imposition by the Employer or by the Management Contractor of any obligations or restrictions in regarc to the matters set out in paragraphs 2 1 to 2 4 or the addition to or alteration or omission of any suct obligations or restrictions so imposed or imposed « the Works Contract in regard to

 1 access to the site or use of any specific part of the site,

 2 limitations of working space,

 3 limitations of working hours,

 4 the execution or completion of the work in an specific order

Where clause 4·3 of the Works Contract Condition applies the term 'Variation' has the same meaning b in paragraph 1 of this definition delete 'design quali or quantity' and insert 'design or quality'.

Works Contractor see clauses 8 1 and 8 2.

Obligations of Management Contractor (1 4 to 1 8)

ooperation with rofessional Team 1·4 The Management Contractor shall upon and subject to the Conditions co-operate with t Professional Team as stated in Article 1.

pecific obligations of Management ontractor 1 5 The Management Contractor shall during the progress of the Project:

·1 prepare all necessary programmes for the execution of the Project,

·2 enter into Works Contracts in sufficient time to enable the Project to be duly carried c and completed on or before the Completion Date;

·3 ensure that all items of work to be carried out by Works Contractors as referred to clause 8 1 are carried out in accordance with the Project Specification and with t Works Contracts, using materials, goods and workmanship of the quality and standar therein specified, and that where and to the extent that approval of the quality of materi or the standards of workmanship is a matter for the opinion of the Architect/the Contr Administrator such quality and standards are to the reasonable satisfaction of t Architect/the Contract Administrator;

·4 provide or secure the provision of such site facilities and services as are listed in the F Schedule or secure such site facilities and services as may be agreed with or may instructed by, the Architect/the Contract Administrator.

1·5 *continued*

·5 provide continual supervision of the Project and perform and provide everything necessary for the organisation and management of the Project;

·6 ensure that the Project is carried out in an economical and expeditious manner and in accordance with the Contract Documents;

·7 keep and make available all necessary detailed records in a form prescribed by or agreed with the Quantity Surveyor to enable the Quantity Surveyor to verify the Prime Cost.

Obligations in Third Schedule

1·6 Without prejudice to the generality of clause 1·5 the Management Contractor shall carry out the specific obligations listed in the Third Schedule.

Management Contractor's liability to Employer

1·7 Subject to clause 3·21 the Management Contractor shall be fully liable to the Employer for any breach of the terms of this Contract including any breach occasioned by the breach by any Works Contractor of his obligations under the relevant Works Contract.

Compliance with Instructions

1·8 The Management Contractor shall forthwith comply or secure compliance with all Instructions save that where such Instruction is one requiring a Works Contract Variation within the definition of 'Works Contract Variation' the Management Contractor before securing compliance shall submit to the Architect/the Contract Administrator any written objection, or where relevant any written consent or withholding of consent, to compliance with the Instruction received by the Management Contractor from a Works Contractor under clause 3·4·1 of the Works Contract Conditions; and the Management Contractor need not comply or secure compliance with such Instruction to the extent that the written objection, or where relevant the written withholding of consent, of the Works Contractor to compliance with the Instruction is reasonable.

Contract Documents – other documents – Works Contracts (1·9 to 1·12)

Custody and copies of Contract Documents

1·9 The Contract Documents shall remain in the custody of the Employer so as to be available at all reasonable times for the inspection of the Management Contractor. Immediately after the execution of this Contract the Architect/the Contract Administrator without charge to the Management Contractor shall provide him (unless he shall have been previously so provided) with one certified copy of the Contract Documents.

Further drawings and details

1·10 The Architect/The Contract Administrator without charge to the Management Contractor shall provide him with copies of such drawings and specifications and bills of quantities as referred to in Article 7 and of such further drawings, details, descriptive schedules or other like documents (in a form and by such reproduction methods as are agreed between the Architect/the Contract Administrator and the Management Contractor in writing) as are reasonably necessary either to explain and amplify the Project Specification or the Project Drawings or to enable the Project to be carried out and completed in accordance with this Contract.

Limits to use of documents

1·11 None of the Contract Documents or the documents mentioned in clause 1·10 shall be used by the Management Contractor for any purpose other than this Contract and neither the Employer nor any member of the Professional Team shall divulge or use except for the purpose of this Contract any of the rates or prices in any Works Contract nor the Management Fee set out in the Appendix.

Copies of Works Contracts

1·12 Immediately after the execution of each Works Contract the Management Contractor shall provide the Architect/the Contract Administrator (unless he shall have been previously so provided) with one certified copy of each Works Contract.

Certificates – issue – effect of Final Certificate – effect of other certificates (1·13 and 1·15)

Issue of certificates

1·13 Except where otherwise specifically so provided any certificate to be issued by the Architect/the Contract Administrator under the Conditions shall be issued to the Employer and a duplicate copy thereof shall be sent at the same time to the Management Contractor.

Effect of Final Certificate

1·14 ·1 Except as provided in clauses 1·14·2 and 1·14·3 (and save in respect of fraud) the Final Certificate shall have effect in any proceedings arising out of or in connection with this Contract (whether by arbitration under section 9 or otherwise) as

·1 conclusive evidence that where the quality of materials or the standard of workmanship stated in the Project Specification and/or in a Works Contract are to be to the reasonable satisfaction of the Architect/the Contract Administrator the same are to such satisfaction, and

1·14·1 *continued*

2 conclusive evidence that any necessary effect has been given to all the term this Contract with regard to payment save where there has been any accide inclusion or exclusion of any work, materials, goods or figure in any computatio any mathematical error in any computation in which event the Final Certificate s have effect as conclusive evidence as to all other computations, and

3 conclusive evidence that all and only such extensions of time, if any, as are under clauses 2 12 to 2 14 have been given, and

4 conclusive evidence that the ascertainment of direct loss and/or expens respect of applications by Works Contractors as referred to in clause 8 5 and inclusion of such ascertained loss and/or expense in Prime Cost is in settlement of all or any claims which the Management Contractor has or may h on behalf of Works Contractors arising out of any of the matters referred t clauses 4 46 1 to 4 46 7 of the Works Contract Conditions whether such claim for breach of contract, duty of care, statutory duty or otherwise

2 If any arbitration or other proceedings have been commenced by either party before Final Certificate has been issued the Final Certificate shall have effect as conclu evidence as provided in clause 1 14 1 after either

1 such proceedings have been concluded, whereupon the Final Certificate shal subject to the terms of any award or judgement in or settlement of s proceedings, or

2 a period of 12 months during which neither party has taken any further step in s proceedings, whereupon the Final Certificate shall be subject to any terms agr in partial settlement,

whichever is the earlier.

3 If any arbitration or other proceedings have been commenced by either party withi days after the Final Certificate has been issued, the Final Certificate shall have effec conclusive evidence as provided in clause 1 14 1 save only in respect of all matter which those proceedings relate

4 The Final Certificate shall in no circumstances be conclusive as to the sufficiency of design for which any Works Contractor is responsible to the Employer under Employer/Works Contractor Agreement (Works Contract/3) or to the Manager Contractor under clause 1 7 4 of the Works Contract Conditions

Effect of certificates other than the Final Certificate

1·15 Save as stated in clause 1 14 no certificate of the Architect/the Contract Administrator sh itself be conclusive evidence that any work materials or goods to which it relates ar accordance with this Contract.

Employer's notice requiring Management Contractor to proceed – possession of the site (2·1 to 2·3)

Employer's notice requiring Management Contractor to proceed

2·1 When the Architect/the Contract Administrator notifies the Employer in writing (with a copy to the Management Contractor) of the date when it will be practicable to commence the construction of the Project and the Management Contractor has initialled any alterations made to the Third Schedule, initialled the Fifth Schedule and signed the Appendix Part 2, the Employer, not later than 14 days from the date of that written notification (or not later than the expiry of such other period as may be stated in the Appendix), shall by notice in writing to the Management Contractor state whether or not he is to continue co-operation with the Professional Team and to proceed to set out and secure the carrying out and completion of the Project in accordance with Article 1. If the written notice requires the Management Contractor so to proceed the Employer shall initial any alterations made to the Third Schedule, initial the Fifth Schedule and sign and date the Appendix Part 2.

Management Contractor not to proceed – deemed determination of Management Contractor's employment

2·2 If the Employer states in the written notice given under clause 2·1 that the Management Contractor is not to proceed or if the Employer fails to notify the Management Contractor in accordance with the provisions of clause 2·1, the employment of the Management Contractor shall be deemed to have been determined and the Employer, within one month (or such other period as may be stated in the Appendix) calculated from the latest date when written notice by the Employer under clause 2·1 to proceed might have been given, shall pay to the Management Contractor the Pre-Construction Period Management Fee less any amount paid under an Interim Certificate issued in accordance with clause 4·2·1. Such payment shall be reduced to take into account the extent to which the reason why the Employer did not require the Management Contractor to proceed as referred to in clause 2·1 was because of some default, whether by act or omission, of the Management Contractor, his servants or agents, in discharging his obligations in the period prior to the date when the Employer was required to issue the notice referred to in clause 2·1.

Possession of the site

2·3 **1** If the Employer gives the notice to proceed under clause 2·1, then the Employer shall give possession of the site to the Management Contractor on the Date of Possession whereupon the Management Contractor shall secure the commencement of the Project and shall ensure the regular and diligent progress of the Project and its completion on or before the Completion Date.

Deferment of Possession

2 Where clause 2·3·2 is stated in the Appendix to apply the Employer may defer the giving of possession under clause 2·3·1 for a period not exceeding 6 weeks or such lesser period stated in the Appendix calculated from the Date of Possession.

Possession by Management Contractor

3 For the purposes of the insurance of the Project, the Management Contractor shall retain possession of the site and the Project up to and including the date of issue of the certificate of Practical Completion and, subject to clauses 2·3·4 and 2·8, the Employer shall not be entitled to take possession of any part or parts of the site or Project until that date.

Use or occupation by Employer

4 The Employer may, with the consent in writing of the Management Contractor, use or occupy the site or the Project or any part or parts thereof whether for the purposes of storage of his goods or otherwise before the date of issue of the certificate of Practical Completion by the Architect/the Contract Administrator. Before the Management Contractor shall give his consent to such use or occupation the Management Contractor shall notify the insurers under clause 6·4·1·1 or 6·4·3·1 whichever may be applicable and obtain confirmation that such use or occupation will not prejudice the insurance. Subject to such confirmation the consent of the Management Contractor shall not be unreasonably withheld.

Insurers – additional premium

5 Where the insurers in giving the confirmation referred to in clause 2·3·4 have made it a condition of such confirmation that an additional premium is required the Management Contractor shall notify the Employer of the amount of the additional premium. If the Employer continues to require use or occupation under clause 2·3·4 the Management Contractor shall pay the additional premium required and shall provide the Employer, if so requested, with the receipt therefor.

Certificate of Project Completion

2.4 [illegible] the [illegible] of the Architect/the Contract Administrator [illegible] of the Project is achieved he shall forthwith issue a certificate to that effect and Practical Completion of the Project shall be deemed for all the purposes of this Contract to have taken place on the day named in such certificate.

Schedule of defects – securing the making good of defects

2.5 Without prejudice to the operation of clause 3.12 any defects, shrinkages or other faults which shall appear within the Defects Liability Period stated in the Appendix and which are due to materials, goods or workmanship not in accordance with this Contract or to frost occurring before Practical Completion of the Project, shall be specified by the Architect/the Contract Administrator in a schedule of defects which he shall deliver to the Management Contractor not later than 14 days after the expiration of the Defects Liability Period. Within a reasonable time after receipt of such schedule the Management Contractor shall secure the making good of the defects, shrinkages or other faults therein specified but, subject to clause 3.21, at no cost to the Employer unless the Architect/the Contract Administrator shall otherwise instruct, and if the Architect/the Contractor Administrator does so otherwise instruct then an appropriate deduction in respect of any such defects, shrinkages or other faults not made good shall be made to the Prime Cost.

Certificate of Completion of Making Good Defects

2.6 When in the opinion of the Architect/the Contract Administrator any defects, shrinkages or other faults which he may have required to be made good under clause 2.5 shall have been made good he shall issue a certificate to that effect, and completion of making good defects shall be deemed for all the purposes of this Contract to have taken place on the day named in such certificate (the 'Certificate of Completion of Making Good Defects').

Frost

2.7 In no case shall the Management Contractor be required at no cost to the Employer to secure the making good of any damage by frost which may appear after Practical Completion, unless the Architect/the Contract Administrator shall certify that such damage is due to injury which took place before Practical Completion.

[e] Partial possession by Employer

Employer's wish – Management Contractor's consent

2.8 If at any time or times before the date of issue by the Architect/the Contract Administrator of the certificate of Practical Completion the Employer wishes to take possession of any part or parts of the Project and the consent of the Management Contractor (which consent shall not be unreasonably withheld) has been obtained, then notwithstanding anything expressed or implied elsewhere in this Contract, the Employer may take possession thereof. The Architect/the Contract Administrator shall thereupon issue to the Management Contractor on behalf of the Employer a written statement identifying the part or parts of the Project taken into possession and giving the date when the Employer took possession (in clauses 2.8, 6.3, 6.5.2 and 6.9 referred to as 'the relevant part' and 'the relevant date' respectively).

Practical Completion – relevant part

1 For the purposes of clauses 2.5, 2.6 and 4.7 Practical Completion of the relevant part shall be deemed to have occurred and the Defects Liability Period in respect of the relevant part shall be deemed to have commenced on the relevant date.

Defects etc. – relevant part

2 When in the opinion of the Architect/the Contract Administrator any defects, shrinkages or other faults in the relevant part which he may have required to be made good under clause 2.5 shall have been made good he shall issue a certificate to that effect.

Insurance – relevant part

3 As from the relevant date the insurance taken out under clause 6.4 shall terminate in respect of the relevant part but not further or otherwise; and where clause 6.5 applies the obligation of the Employer to insure under clause 6.5.2 shall from the relevant date include the relevant part.

Liquidated damages – relevant part

4 In lieu of any sum to be paid or allowed by the Management Contractor under clauses 2.9 to 2.11 in respect of any period during which the Project may remain incomplete occurring after the relevant date there shall be paid or allowed such sum as bears the same ratio to the sum which would be paid or allowed apart from the provisions of clause 2.8 as the Contract Cost Plan Total less the amount contained therein in respect of the relevant part bears to the Contract Cost Plan Total.

Footnotes: [e] Phased Completion: Supplements are issued for use with the Management and [illegible] Contracts.

Damages for non-completion (2·9 to 2·11)

...ure to secure ...oject completion Architect's/ Contract Administrator's certificate

2·9 If the Management Contractor fails to secure the completion of the Project by the Completion Date then the Architect/the Contract Administrator shall issue a certificate to that effect. In the event of an extension of time being made after the issue of such a certificate the Architect/the Contract Administrator shall issue a written cancellation of that certificate and shall issue such further certificate under clause 2·9 as may be necessary.

...quidated and ...certained ...amages

2·10 Subject to the issue of a certificate under clause 2·9 and to clause 3·21 the Management Contractor shall, as the Employer may require in writing not later than the date of the Final Certificate, pay or allow to the Employer the whole or such part as may be specified in writing by the Employer of a sum calculated at the rate stated in the Appendix as liquidated and ascertained damages for the period between the Completion Date and the date of Practical Completion of the Project, and the Employer may deduct the same from any monies due or to become due to the Management Contractor under this Contract (including any balance stated as due to the Management Contractor in the Final Certificate) or the Employer may recover the same from the Management Contractor as a debt.

...ause 2·9 ...rtificate – ...ncellation

2·11 If after the operation of clause 2·10 the relevant certificate under clause 2·9 is cancelled the Employer shall pay or repay to the Management Contractor any amounts recovered, allowed or paid under clause 2·10 but taking into account the effect of a further certificate, if any, issued under clause 2·9.

Extension of time (2·12 to 2·14)

...tension of Project Completion Date

2·12 ·1 If and whenever it becomes reasonably apparent that the Completion Date is not likely to be or has not been achieved, the Management Contractor shall forthwith advise the Architect/the Contract Administrator of the cause of the delay and if in the opinion of the Architect/the Contract Administrator the completion of the Project is likely to be or has been delayed beyond the Completion Date by any of the Project Extension Items in clause 2·13 then the Architect/the Contract Administrator shall as soon as he is able to assess the length of the delay beyond the Completion Date give in writing an extension of time by fixing such later date as the Completion Date which he considers to be fair and reasonable provided that no extension shall be made in the case of delay which the Management Contractor has not used his best endeavours to avoid or reduce. If, in the opinion of the Architect/the Contract Administrator, upon receipt of such advice from the Management Contractor, it is not fair and reasonable to fix a later date as a new Completion Date he shall so notify the Management Contractor.

·2 After the first occasion on which the Architect/the Contract Administrator fixed a new Completion Date the Architect/the Contract Administrator may in writing fix a Completion Date earlier than that previously fixed under clause 2·12·1 if in his opinion the fixing of such earlier Completion Date is fair and reasonable having regard to the omission of any work or obligations instructed under clause 3·4 after the last occasion on which the Architect/the Contract Administrator fixed a new Completion Date.

Project ...tension Items

2·13 The Project Extension Items referred to in clause 2·12·1 are:

·1 any cause which impedes the proper discharge by the Management Contractor of his obligations under this Contract including

any default, whether by act or omission, of the Employer or any persons for whom the Employer is responsible, in regard to the Project or

the Management Contractor not having received in due time necessary specifications or bills of quantities for Works Contracts or instructions, drawings, details or levels from the Professional Team for which he specifically applied in writing provided that such application was made on a date which having regard to the Completion Date was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same;

where clause 2·3·2 is stated in the Appendix to apply, the deferment of the Employer giving the possession of the site under clause 2·3·1;

2.13 *continued*

2 any Relevant Event, except the Relevant Event referred to in clause 2.10.7.1 of the Works Contract Conditions, which entitles any Works Contractor to an extension of time under clause 2.3 and/or clause 2.7 of the Works Contract Conditions for completion of his Works.

Provided that no Project Extension Item shall be considered to the extent that it was caused or contributed to by any default, whether by act or omission, of the Management Contractor his servants or agents or of any Works Contractor his servants or agents or sub-contractors.

Extension of period or periods for completion of Works Contracts

2.14 The Management Contractor shall in accordance with clause 2.3 of the Works Contract Conditions notify the Architect/the Contract Administrator of any proposed decision on extensions of the period or periods for completion of a Works Contract in sufficient time so that the Architect/the Contract Administrator can express in writing to the Management Contractor any dissent from the proposed decision before the Management Contractor is required to notify the Works Contractor of his decision in accordance with the provisions of clauses 2.3 and 2.4 of the Works Contract Conditions. If the Architect/the Contract Administrator wishes to dissent from the proposed decision of the Management Contractor, he shall so notify the Management Contractor in writing before the Management Contractor is required under the aforesaid clauses of the Works Contract Conditions to notify the Works Contractor of his decision.

SECTION 3: Control of the Project

Management Contractor's staff, operatives and documentation (3.1 and 3.2)

Management personnel of Management Contractor – consent of Architect/Contract Administrator

3·1 The Management Contractor shall employ, upon the Project and working on the site the management personnel as listed in an attachment to the Second Schedule. The consent of the Architect/the Contract Administrator shall be obtained for the replacement, addition or deletion of any such management personnel but such consent shall not be unreasonably withheld.

Access to Management Contractor's documentation

3·2 To the extent necessary for the proper execution of the Project or the ascertainment of any payment due to the Management Contractor, the Quantity Surveyor and the Architect/the Contract Administrator shall be afforded access to all documentation of the Management Contractor relating to the Project.

Instructions (3.3 to 3.6)

Architect's/Contract Administrator's instructions

3·3 ·1 The Architect/the Contract Administrator shall issue to the Management Contractor such Instructions as are reasonably necessary to enable the Management Contractor properly to discharge his obligations. All such Instructions shall be issued in writing.

·2 If the Architect/the Contract Administrator purports to issue an Instruction otherwise than in writing it may be confirmed in writing by the Architect/the Contract Administrator to the Management Contractor or by the Management Contractor to the Architect/the Contract Administrator within 7 days of the purported issue. If not so confirmed it shall be of no effect.

·3 If under clause 3.7 of the Works Contract Conditions a Works Contractor requires the Management Contractor to request the Architect/the Contract Administrator to specify in writing the provision of this Contract which empowers the issue of any Instruction issued by the Management Contractor to a Works Contractor, the Management Contractor shall so request the Architect/the Contract Administrator and the Architect/the Contract Administrator shall comply with any such request and the Management Contractor shall deliver to the Works Contractor a copy of the answer to that request.

Project Changes – Works Contract Variations – provisional sums in Works Contracts

3·4 Without prejudice to the generality of clause 3.3.1 the Architect/the Contract Administrator may issue to the Management Contractor Instructions which may require Project Changes or Works Contract Variations, and shall issue Instructions in regard to the expenditure of provisional sums in Works Contracts.

Postponement

3·5 The Architect/the Contract Administrator may issue Instructions to the Management Contractor in regard to the postponement of any work to be executed under the provisions of this Contract.

Acceleration – alteration of sequence or timing

3·6 ·1 Clause 3.6 only applies where so stated in the Appendix.

·2 Where the Employer desires

either

a Completion Date earlier than the Completion Date current at the date of a Preliminary Instruction under clause 3.6.3,

or

the cancellation of, or a reduction in the length of, any extension of time being fixed under clause 2.12 so that either the Completion Date current at the date of the Preliminary Instruction under clause 3.6.3 is not extended or is not extended by the length of the extension of time that would otherwise have been given under clause 2.12

the Employer may cause the Architect/the Contract Administrator to issue a Preliminary Instruction under clause 3.6.3

continued

3 If the Employer causes the Architect/the Contract Administrator to issue a Prelim Instruction to the Management Contractor to accelerate the carrying out, or to alt sequence or timing of, any work to be executed under the provisions of this Contra Architect/the Contract Administrator shall in such Instruction set out the exact natu the desire of the Employer in regard to the Completion Date as referred to in clause for which the Preliminary Instruction has been issued

4 If the Management Contractor, or through him any Works Contractor, makes a reaso objection to compliance with such Instruction the Preliminary Instruction shall eit withdrawn or so varied as to meet any such objection and then re-issued by the Arc the Contract Administrator.

5 As soon as reasonably practicable after receipt of the Preliminary Instruction (o receipt of a Preliminary Instruction re-issued under clause 3 6 4) the Manag Contractor shall inform the Architect/the Contract Administrator in writing

1 in respect of each Works Contractor affected by the proposed Instruction

either

the lump sum reasonably required by such Works Contractor (in response Management Contractor's inquiry made under clause 3 4 6 1 of the Contract Conditions) to be added to his Works Contract Sum or taken into ac in the computation of the Ascertained Final Works Contract Sum as a re compliance with the Instruction when issued by the Management Contractor the Works Contract

or

that it is not reasonably practicable to state such a lump sum and that the the Employer of compliance by such Works Contractor will therefore have ascertained in accordance with all the relevant Works Contract Conditions

and

2 either

the earlier Completion Date which can become the Completion Date for purposes of this Contract

or

the extent to which an extension of time that would otherwise be fixed Architect/the Contract Administrator under clause 2 12 can be avoided or r and the Completion Date which as a result will remain or become the Con Date for all the purposes of this Contract.

6 If on receipt of the information given to the Architect/the Contract Administrato clause 3 6 5 the Employer wishes to pay the amounts referred to in clause 3 6 to accept the Completion Date stated by the Management Contractor pursuant to 3 6 5 2 the Employer shall cause the Architect/the Contract Administrator to i Instruction

confirming the details of the acceleration or alteration of sequence o required including the change or changes to any Works Contract period or for completion of the Works Contract Works stated by Works Contra response to the Management Contractor under clause 3 4 6 2 of the Contract Conditions.

and

fixing the Completion Date

3·7 The Architect/the Contract Administrator shall determine any levels which may be required for the execution of the Project and shall provide the Management Contractor by way of accurately dimensioned drawings with such information as shall enable the Management Contractor to set out the Project. The Management Contractor shall be responsible for setting out, and shall, at no cost to the Employer, amend any errors arising from inaccurate setting out.

Materials, goods and workmanship (3·8 to 3·12)

Materials, goods and workmanship – standards

3·8 1 All materials and goods shall so far as procurable be of the respective kinds and standards described in the Project Specification, or as may be required in any specification or bills of quantities in any Works Contract provided that materials and goods shall be to the reasonable satisfaction of the Architect/the Contract Administrator where and to the extent that this is required in the Project Specification or as referred to in clause 1·5·3.

2 All workmanship shall be of the standards described in the Project Specification, or as may be required in any specification or bills of quantities in any Works Contract, or, where no such standards are described or required, shall be of a standard appropriate to the Project provided that workmanship shall be to the reasonable satisfaction of the Architect/the Contract Administrator where and to the extent that this is required in the Project Specification or as referred to in clause 1·5·3.

Provision of vouchers

3·9 The Management Contractor shall upon the request of the Architect/the Contract Administrator secure the provision of vouchers to prove that the materials and goods comply with clause 3·8·1.

Inspection – tests

3·10 The Architect/the Contract Administrator may issue Instructions requiring the Management Contractor to secure the opening up for inspection of any work covered up or secure the carrying out of any test of any materials or goods (whether or not already incorporated in the Project) or of any executed work, and such opening up or testing together with any making good in consequence thereof shall be at no cost to the Employer if the inspection or test shows that the work, materials or goods are not in accordance with this Contract.

Removal from the site – work etc. not in accordance with clause 3·8

3·11 The Architect/the Contract Administrator may issue Instructions in regard to the removal from the site of any work, materials or goods which are not in accordance with the provisions of clause 3·8. The replacement of such work, materials or goods and their removal from the site shall, subject to clause 3·21, be at no cost to the Employer.

Instructions on defects etc.

3·12 The Architect/the Contract Administrator may whenever he considers it necessary to do so, issue Instructions requiring any defect, shrinkage or other fault which shall at any time appear or be discovered and which is due to materials, goods or workmanship not in accordance with this Contract or to frost occurring before Practical Completion of the Project to be made good and the Management Contractor shall within a reasonable time after receipt of such Instructions comply or secure compliance with the same but, subject to clause 3·21, at no cost to the Employer.

Manager on site (3·13 and 3·14)

Manager – instructions by Architect/Contract Administrator

3·13 The Management Contractor shall constantly keep upon the site a competent Manager who shall be approved by the Architect/the Contract Administrator in the Pre-Construction Period and who is named in the Appendix and who shall not be changed without the prior approval of the Architect/the Contract Administrator which approval shall not be unreasonably withheld. Any Instructions given to the Manager (or to his successor duly appointed) shall be deemed to have been given to the Management Contractor.

Removal of Manager from Project

3·14 The Architect/the Contract Administrator may (but not unreasonably or vexatiously) issue Instructions ordering the removal from the Project of the Manager and his replacement by a suitable person proposed by the Management Contractor and approved by the Architect/the Contract Administrator which approval shall not be unreasonably withheld.

Unfixed materials and goods – on site

3·15 Unfixed materials and goods delivered to, placed on or adjacent to the Project and inte therefor shall not be removed except for use upon the Project unless the Architect/the Cor Administrator has consented in writing to such removal which consent shall no unreasonably withheld. Where the value of any such materials or goods has been includ any Interim Certificate under which the amount properly due to the Management Contracto been paid or discharged by the Employer, such materials and goods shall become property of the Employer but (subject to clause 6·4) the Management Contractor shall re responsible for loss or damage to the same.

Unfixed materials and goods – off-site

3·16 Where the value of any materials or goods for a Works Contract and stored off-site ha accordance with the Second Schedule, Part 2 and clause 4·19·3 of the Works Con Conditions been included in the amount directed in an Interim Certificate by the Architec Contract Administrator under clause 8·3·2 as an amount included therein in respect of a W Contractor and the Employer has paid or discharged the amount properly due to Management Contractor under the Interim Certificate such materials and goods shall bec the property of the Employer; and thereafter the Management Contractor shall not, excep use upon the Project, remove or cause or permit the same to be moved or removed from premises where they are, but the Management Contactor shall nevertheless be responsib any loss thereof or damage thereto and for the cost of storage, handling and insurance o same until such time as they are delivered to and placed on or adjacent to the Project intended therefor whereupon the provisions of clause 3·15 (except the words 'Where the v to the words 'the property of the Employer but') shall apply thereto.

Access for the Professional Team to the Project

3·17 The Professional Team shall at all reasonable times have access to the site of the Project to the workshops or other places where work is being prepared for the Project but subje such reasonable restrictions of the Management Contractor or any Works Contractor a necessary to protect any proprietary right of the Management Contractor or any W Contractor in such work.

Clerk of works

3·18 The Employer shall be entitled to appoint a clerk of works whose duty shall be to act sol inspector on behalf of the Employer under the directions of the Architect/the Co Administrator and the Management Contractor shall afford every reasonable facility fo performance of that duty.

Assignment (3·19 and 3·20)

Assignment of Contract

3·19 Neither the Employer nor the Management Contractor shall, without the written consent other, assign this Contract.

Assignment by Employer – right to bring proceedings

3·20 Where clause 3·20 is stated in the Appendix to apply then, in the event of a transfer t Employer of his freehold or leasehold interest in, or of a grant by the Employer of a leas interest in, the whole of the premises comprising the Project, the Employer may at any time Practical Completion of the Project assign to any such transferee or lessee the right to proceedings (whether by arbitration or by litigation) to enforce any of the terms of this Co made for the benefit of the Employer hereunder. The assignee shall be estopped from disp any enforceable agreements reached between the Employer and the Management Cont and which arise out of and relate to this Contract (whether or not they are or appear to derogation from the rights assigned) and made prior to the date of any assignment.

Breach of Works Contract by Works Contractor – Management Contractor's Employer's obligations

3·21 Notwithstanding anything contained elsewhere in this Contract the following provisions apply in respect of any breach of, or non-compliance with, a Works Contract by a W Contractor (which shall be deemed to include a determination of the employment of a W Contractor under clauses 9·1 to 9·5 of the Works Contract Conditions and an engagement, as a result of such breach or non-compliance, of other persons to carry ou or the whole of the Works Contract Works in accordance with clause 7·4·1 of the W Contract Conditions):

3·21 continued

·1 The Management Contractor shall in consultation with the Architect/the Contract Administrator and the Employer take all necessary steps

·1 to operate the terms of the Works Contract for dealing with such breach or non-compliance, including enforcement through arbitration or litigation if necessary, to obtain any amount due to the Management Contractor including therein any amount for which the Management Contarctor is liable to the Employer under clause 1·7, as a result of the breach or non-compliance by the Works Contractor; and

·2 to secure the satisfactory completion of the Project including the engagement for that purpose of a further Works Contractor if such engagement is

in accordance with the terms of the Works Contract with the Works Contractor who has failed to comply with the Works Contract or is in breach or

is necessary because the employment of the Works Contractor under that Works Contract has been determined because of a breach or non-compliance; and

·3 to meet any claims properly made under the Works Contract Conditions, by Works Contractors, other than the Works Contractor who is in breach or who has failed to comply with the Works Contract, in respect of the consequences to them of such breach or non-compliance.

·2 The Employer shall

·1 pay to the Management Contractor in accordance with Section 4 and the Second Schedule all amounts properly incurred by the Management Contractor in fulfilling the obligations set out in clauses 3·21·1·1 and 3·21·1·2 but subject to the right of recovery by the Employer referred to in clause 3·21·2·3, and

·2 keep an account of any liquidated and ascertained damages due, but not deducted or recovered under clauses 2·10 and 2·11 because the Completion Date has been exceeded by reason of the breach or non-compliance by a Works Contractor but shall not, except to the extent provided in clause 3·21·2·3, recover such damages from the Management Contractor.

·3 be entitled to recover from the Management Contractor all amounts paid or credited to the Management Contractor under clause 3·21·2·1 and where relevant the amount of liquidated and ascertained damages referred to in clause 3·21·2·2 but only to the extent that such amounts have been recovered by the Management Contractor from the Works Contractor who is in breach or who has failed to comply with the Works Contract.

·3 In respect of the claims properly made by Works Contractors as referred to in clause 3·21·1·3 the Management Contractor shall be entitled to deduct from amounts in respect of the Works Contractor who is in breach or who has failed to comply with the Works Contract and which are directed under clause 8·3·2 the amount of such claims which he has paid or is liable to pay to such Works Contractors together with any costs that he has incurred due to the breach or non-compliance. To the extent that the Management Contractor is not reimbursed by such deduction he shall seek to recover any shortfall in that reimbursement from the Works Contractor who is in breach or who has failed to comply with the Works Contract, through arbitration or litigation if necessary. If, despite compliance by the Management Contractor with the terms of clause 3·21·3, the Management Contractor is not fully reimbursed then the Employer shall pay to the Management Contractor the amount of that shortfall in reimbursement.

Alleged breach by Management Contractor of Works Contractor

3·22 If a Works Contractor alleges a breach of the Works Contract by the Management Contractor and as a result makes a claim against the Management Contractor then

·1 the Management Contractor shall immediately so inform the Architect/the Contract Administrator;

3·22 continued

2 subject to any Instructions the Management Contractor shall take all such action be necessary, including, on legal advice (unless the Employer decides to dispe the obtaining of such advice), either settling the claim or defending the claim in art or litigation and shall pay to the Works Contractor the amount of any settlement judgment including any costs agreed to be paid by the Management Contra awarded against him;

3 the Employer shall reimburse the Management Contractor the amounts incurred Management Contractor in connection with settling or defending the claim as refe in clause 3·22·2 but only to the extent, and not further or otherwise, that the oblig pay such amounts has been incurred other than by reason of any breach of con negligence of the Management Contractor in discharging his obligations unc Contract. This limitation on reimbursement to the Management Contractor sh however, apply to breaches of contract to which clause 3·21 applies which s governed by that clause.

Works by Employer or persons employed or engaged by Employer (3·23 to 3·25)

Information in Contract Documents — 3·23 Where the Contract Documents, in regard to any work not forming part of this Contra which is to be carried out by the Employer himself or by persons employed or oth engaged by him, provide such information as is necessary to enable the Mana Contractor to secure the carrying out and completion of the Project in accordance Conditions, the Management Contractor shall permit the execution of such work.

Information not in Contract Documents — 3·24 Where the Contract Documents do not provide the information referred to in clause 3·23 Employer requires the execution of work not forming part of this Contract by the Employ self or by persons employed or otherwise engaged by the Employer, then the Employ with the consent of the Management Contractor (which consent shall not be unreas withheld), arrange for the execution of such work.

Responsibility of Employer — 3·25 Every person employed or otherwise engaged by the Employer as referred to in clause and 3·24 shall for the purpose of clauses 6·7 and 6·8 be deemed to be a person for wh Employer is responsible and not to be a Works Contractor.

Antiquities (3·26 and 3·27)

Effect of find of antiquities — 3·26 All fossils, antiquities and other objects of interest or value which may be found on the in excavating the same during the progress of the Project shall become the property Employer and upon discovery of such an object the Management Contractor shall fort

1 use his best endeavours not to disturb the object and shall cease work if and ins the continuance of work would endanger the object or prevent or impede its exc or its removal;

2 take all steps which may be necessary to preserve the object in the exact posi condition in which it was found; and

3 inform the Architect/the Contract Administrator or the clerk of works of the discov precise location of the object.

Instructions on antiquities found — 3·27 The Architect/the Contract Administrator shall issue Instructions in regard to what is to b concerning an object reported by the Management Contractor under clause 3·26 and (prejudice to the generality of his power) such Instructions may require the Mana Contractor to permit the examination, excavation or removal of the object by a third per such third party shall for the purposes of clauses 6·7 and 6·8 be deemed to be a per whom the Management Contractor is not responsible.

Fair Wages

3·28 Clause 3·28 only applies where so stated in the Appendix and the Employer is a local aut

1 1 The Management Contractor shall pay rates of wages and observe hou conditions of labour not less favourable than those established for the tr industry in the district where the work is carried out by machinery of negotia arbitration to which the parties are organisations of employers and trade representative respectively of substantial proportions of the employers and w engaged in the trade or industry in the district

·2 in the absence of any rates of wages, hours or conditions of labour so [illegible]
the Management Contractor shall pay rates of wages and observe hours and conditions of labour which are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Management Contractor is engaged are similar.

·2 The Management Contractor shall in respect of all persons employed by him (whether in carrying out this Contract or otherwise) in every factory, workshop or other place occupied or used by him for the carrying out of this Contract (including the Project) comply with the general conditions required by clause 3·28. The Management Contractor hereby warrants that to the best of his knowledge and belief he has complied with the general conditions required by clause 3·28 for at least 3 months prior to the date of his tender for this Contract.

·3 The Management Contractor shall recognise the freedom of his workpeople to be members of trade unions.

·4 The Management Contractor shall at all times during the continuance of this Contract display, for the information of his workpeople, in every factory, workshop or place occupied or used by him for the carrying out of this Contract (including the Project) a copy of clause 3·28. Where rates of wages, hours or conditions of work have been established either by negotiation or arbitration as described in clause 3·28·1·1 or by any agreement commonly recognised by employers and workers in the district a copy of the award agreement or other document specifying or recording such rates, hours or conditions shall also be exhibited by the Management Contractor or made available by him for inspection in any such place as aforesaid.

·5 The Management Contractor shall be responsible for the observance of clause 3·28 by Works Contractors employed in the carrying out of this Contract, and shall if required notify the Employer of the names and addresses of all such Works Contractors.

·6 The Management Contractor shall keep proper wages books and time sheets showing the wages paid to and the time worked by the workpeople in his employ in and about the carrying out of this Contract, and such wages books and time sheets shall be produced whenever required for the inspection of any officer authorised by the Employer.

·7 If the Employer shall have reasonable ground for believing that the requirements of any of the preceding provisions of clause 3·28 are not being observed, he or the Architect/the Contract Administrator on his behalf shall be entitled to require proof of the rates of wages paid and hours and conditions observed by the Management Contractor and Works Contractors in carrying out the Project.

Payment (4·1 to 4·12)

Payment by Employer

4·1 The Employer shall pay the Management Contractor in accordance with the provisions of clauses 4·1 to 4·12

the Prime Cost of the Project ascertained in accordance with the Second Schedule, an

the Management Fee.

Issue of Interim Certificates – timings

4·2 The Architect/the Contract Administrator shall issue Interim Certificates stating the amount to the Management Contractor from the Employer at the following times or periods:

·1 during the Pre-Construction Period: at the period stated in the Appendix under reference to clause 4·2·1;

·2 from the Date of Possession up to and including the end of the period during which certificate of Practical Completion is issued: at the period of interim certificates state the Appendix under the reference to clause 4·2·2;

·3 after the end of the period of interim certificates during which the certificate of Prac Completion is issued: as and when further amounts are ascertained as payable to Management Contractor by the Employer provided always that the Architect/the Con Administrator shall not be required to issue an Interim Certificate within one cale month of having issued a previous Interim Certificate;

·4 at the time referred to in clause 4·11 (final amounts – Works Contractors)

Payment of amounts due in Interim Certificates

4·3 ·1 The Management Contractor shall be entitled to payment of the amounts stated as in Interim Certificates within 14 days from the date of issue of each Interim Certificate

·2 Notwithstanding the fiduciary interest of the Employer in the Retention as stated in c 4·8·1 the Employer is entitled to exercise any right under this Contract of deduction monies due or to become due to the Management Contractor against any amount s under an Interim Certificate whether or not Retention is included in that Interim Certi

·3 Where the Employer exercises any right under this Contract of deduction from n due or to become due to the Management Contractor he shall inform the Manag Contractor in writing of the reasons for that deduction.

Ascertainment of amounts due in Interim Certificates

4·4 Interim valuations shall be made by the Quantity Surveyor for the purpose of ascertain amounts to be stated as due in Interim Certificates.

– during the Pre-Construction Period

4·5 The amount to be stated as due in an Interim Certificate to which clause 4·2·1 refers sha appropriate instalment of the Pre-Construction Period Management Fee stated in, or cal by reference to the schedule attached to, the Appendix.

– after the Pre-Construction Period

4·6 The amount to be stated as due in an Interim Certificate to which clauses 4·2·2, 4·2·3 an refer shall be, as related to a date not more than 7 days before the date of the Interim Cer the sum of the following:

·1 the amounts due and payable under the respective Works Contracts ascerta accordance with Part 2 of the Second Schedule, after the deduction of any re deductible in accordance with the terms of the Works Contract,

Footnotes

[1] This entitlement is subject to the various rights of deduction given to the Employer in the C including any obligation to deduct under clauses 5·9 to 5·17 and to the obligations of the parties (VAT Agreement

4·6 continued

-2 the amounts for site staff, general facilities etc. site facilities, services and materials properly provided by the Management Contractor ascertained in accordance with Parts 1, 3A, 3B, 4A, 4B and 4C of the Second Schedule which amounts shall be subject to Retention,

together with

-3 the Pre-Construction Period Management Fee,

-4 an instalment of the Construction Period Management Fee adjusted, where appropriate, in accordance with clause 4·10·2, being the ratio that the Construction Period Management Fee bears to the Contract Cost Plan Total applied to the sum of the amounts referred to in clauses 4·6·1 and 4·6·2, subject to a maximum of 97% of the amount of the Construction Period Management Fee, adjusted, where appropriate, in accordance with clause 4·10·2, and

-5 any expenditure incurred by the Management Contractor for which he is entitled to reimbursement by the Employer in accordance with clauses 3·21 and 3·22 and any other costs incurred by the Management Contractor which are not included in clauses 4·6·1 to 4·6·4 inclusive and which are payable by the Employer to the Management Contractor in accordance with the Conditions

less the sum of the following:

-6 any payments to or credits received by the Management Contractor for materials etc. which have arisen from the carrying out of the Project,

-7 any payments to or credits received by the Management Contractor which the Employer is entitled to recover in accordance with clause 3·21·2·3 or any other clause in the Conditions, and

-8 the sum of the amounts stated as due in all the Interim Certificates previously issued under clauses 4·2·1, 4·2·2 and 4·2·3.

Retention – amount

4·7 The Retention which the Employer may deduct and retain as referred to in clause 4·6·2 shall be:

-1 3 per cent of any amount as relates to work which has not reached Practical Completion (as referred to in clauses 2·4 and 2·8·1)

-2 1·5 per cent of any amount as relates to work which has reached Practical Completion (as referred to in clauses 2·4 and 2·8·1) but in respect of which a Certificate of Completion of Making Good Defects under clause 2·6 or a certificate under clause 2·8·2 has not been issued.

Retention – rules

4·8 The Retention including that held in respect of all Works Contracts shall be subject to the following rules:

-1 the Employer's interest in the Retention is fiduciary as trustee for the Management Contractor and for any Works Contractor (but without obligation to invest);

-2 at the date of each Interim Certificate the Architect/the Contract Administrator or, if so instructed by the Architect/the Contract Administrator, the Quantity Surveyor shall prepare a statement setting out the total amount of Retention held at that date in respect of the Management Contractor and the total amount held in respect of each Works Contractor; and such statement shall be issued to the Management Contractor and by the Management Contractor to each Works Contractor named in that statement;

4·8 continued

·3 except where the Employer is a local authority the Employer shall, if the Mana... Contractor or, through the Management Contractor, any Works Contractor so requ... the date of payment of each Interim Certificate place the Retention held there... separate banking account (so designated as to identify the amount of Retention... the Employer on trust as provided in clause 4·8·1) and certify to the Arch... Contract Administrator with a copy to the Management Contractor that such am... been so placed. The Management Contractor shall similarly inform each... Contractor in respect of whom the Employer is holding Retention. The Employer... entitled to the full beneficial interest in any interest accruing in the separate... account and shall be under no duty to account for any such interest to the Mana... Contractor or to any Works Contractor;

·4 if the Employer exercises the right to deduct referred to in clause 4·3·3 aga... Retention he shall include, in the written information to the Management Contrac... under clause 4·3·3, details of any deduction from either the Retention held in re... the Management Contractor or the Retention held for any Works Contractor (as i... the statement issued under clause 4·8·2).

Final Certificate – ascertainment of Prime Cost 4·9 ·1 Not later than 6 months after Practical Completion of the Project the Man... Contractor shall provide the Quantity Surveyor, unless previously provided,... documents necessary for the purposes of the ascertainment of the Prime Cost i... all documents relating to the accounts of Works Contractors.

·2 Not later than 3 months after receipt by the Quantity Surveyor from the Man... Contractor of the documents required under clause 4·9·1, the Quantity Surve... deliver to the Architect/the Contract Administrator a statement of the Prime Cost a... Management Fee (including any adjustment of the Construction Period Manage... under clause 4·10·3) and the Architect/the Contract Administrator shall send i... the statement to the Management Contractor. If the statement refers to any dis... of any item of cost put forward by the Management Contractor part of the Pr... there shall be included in the statement the reasons for such disallowance.

Any adjustment of Construction Period Management Fee 4·10 ·1 No adjustment of the Construction Period Management Fee shall be made... accordance with clause 4·10·2 and 4·10·3.

·2 If, prior to the issue of the Final Certificate, the Prime Cost exceeds the Con... Plan Total by more than 5% (or such other percentage as is stated in the App... Construction Period Management Fee shall be adjusted in accordance with tl... set out in clause 4·10·4.

·3 If the Prime Cost exceeds or is less than the Contract Cost Plan Total by mor... (or such other percentage as is stated in the Appendix) the Construct... Management Fee shall be adjusted in accordance with the formula set ou... 4·10·4.

·4 The formula referred to in clause 4·10·2 or clause 4·10·3 is:

$$\text{ACPMF} = \text{CPMF} \times \frac{100 \pm (D - T)}{100}$$

where:

ACPMF is the adjusted Construction Period Management Fee;

CPMF is the Construction Period Management Fee as stated in the Ap...

D is the increase or decrease of the total Prime Cost when compa... Contract Cost Plan Total expressed as a percentage of the C... Plan Total;

T is 5 or such other number as is stated in the Appendix under tl... to clause 4·10·2 and 4·10·3.

± shall be + (plus) if the total Prime Cost exceeds the Contract Co... or – (minus) if the Prime Cost is less than the Contract Cost Pl...

[illegible]

days before the date of issue of the Final Certificate referred to in clause 4·12 and notwithstanding that a period of one month may not have elapsed since the issue of a previous Interim Certificate, the Architect/the Contract Administrator shall issue an Interim Certificate which shall include the amounts in respect of Works Contractors payable to the Management Contractor ascertained in accordance with Part 2 of the Second Schedule.

Final Certificate 4·12 ·1 The Architect/the Contract Administrator shall issue the Final Certificate not later than 2 months from whichever of the following events occurs the latest:

the end of the Defects Liability Period;

the issue of the Certificate of Completion of Making Good Defects under clause 2·8;

the delivery by the Quantity Surveyor to the Architect/the Contract Administrator of the statement referred to in clause 4·9·2.

·2 The Final Certificate shall state:

the sum of the amounts already stated as due in Interim Certificates, and

the sum of the Prime Cost and the Management Fee as set out in the statement to which clause 4·9·2 refers

and the difference (if any) between the two sums shall (without prejudice to the rights of the Management Contractor in respect of any Interim Certificates which have not been paid by the Employer) be expressed in the said Certificate as a balance due to the Management Contractor from the Employer or to the Employer from the Management Contractor as the case may be. Subject to any deductions authorised by these Conditions the said balance shall, as from the 28th day after the date of the said Final Certificate, be a debt payable as the case may be by the Employer to the Management Contractor or by the Management Contractor to the Employer.

Statutory Requirements (5 1 to 5 5)

Compliance with Statutory Requirements

5·1 Subject to clause 5 5 the Management Contractor shall secure compliance with, and give all notices required by, any Act of Parliament, any instrument, rule or order made under any Act of Parliament or any regulation or byelaw of any local authority or of any statutory undertaker which has any jurisdiction with regard to the Project or with whose systems the same are or will be connected (all requirements to be so complied with being referred to in the Conditions as "the Statutory Requirements").

Divergence – Statutory Requirements and documents referred to in clauses 1 9 and 1 10

5·2 If the Management Contractor shall find any divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1 9 and 1 10 or between the Statutory Requirements and any Instruction he shall immediately give to the Architect/the Contract Administrator a written notice specifying the divergence.

Divergence – Instructions

5·3 If the Management Contractor gives notice under clause 5 2 or if the Architect/the Contract Administrator shall otherwise discover or receive notice of a divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1 9 and 1 10 or between the Statutory Requirements and any Instruction the Architect/the Contract Administrator shall within 7 days of the discovery or receipt of a notice issue Instructions in relation to the divergence. If and insofar as the Instructions require the Project to be changed or any Works Contract to be varied they shall be treated as if they were Instructions issued in accordance with clause 3 4.

Emergency – compliance with Statutory Requirements

5·4 ·1 If, in any emergency, compliance with clause 5 1 requires the Management Contractor to secure the supply of materials or the execution of work before receiving Instructions under clause 5 3 the Management Contractor shall secure the supply of such limited materials or the execution of such limited work as are reasonably necessary to secure immediate compliance with the Statutory Requirements.

·2 The Management Contractor shall forthwith inform the Architect/the Contract Administrator of the emergency and of the steps that he is taking under clause 5 4 1

·3 The securing of the supply of materials or the execution of work under clause 5 4 1 shall be treated as having been so secured pursuant to an Instruction requiring a Works Contract Variation under clause 3 4, provided that the emergency arose because of a divergence between the Statutory Requirements and all or any of the documents referred to in clauses 1 9 and 1 10 or between the Statutory Requirements and any Instruction requiring a Works Contract Variation issued in accordance with clause 3 4 and the Management Contractor has complied with clause 5 4 2.

Project – non-compliance with Statutory Requirements – position of Management Contractor

5·5 Provided that the Management Contractor complies with clause 5 2 the Management Contractor shall not be liable to the Employer under this Contract if the Project does not comply with the Statutory Requirements where and to the extent that such non-compliance of the Project results from the Management Contractor having secured the carrying out of work or having provided or secured site facilities and services in accordance with the documents referred to in clauses 1 9 and 1·10 or with any Instruction issued in accordance with clause 3 4

Value Added Tax – supplemental provisions (5·6 to 5·8)

Definitions – VAT Agreement

5·6 In clauses 5 6 to 5 8 and in the supplemental provisions pursuant hereto (hereinafter called the "VAT Agreement"), "tax" means the value added tax introduced by the Finance Act 1972 which is under the care and management of the Commissioners of Customs and Excise (hereinafter and in the VAT Agreement called "the Commissioners").

Prime Cost – Management Fee – exclusive of VAT

5·7 Any reference in the Conditions to the 'Prime Cost' or the "Management Fee" shall be regarded as such cost or Fee exclusive of any tax and recovery by the Management Contractor from the Employer of tax properly chargeable by the Commissioners on the Management Contractor under or by virtue of the Finance Act 1972 or any amendment thereof on the supply of goods and services under this Contract shall be under the provisions of this clause and of the VAT Agreement.

…ossible …emption …om VAT

5·8 To the extent that after the date of this Contract the supply of goods and services to the Employer becomes exempt from the tax there shall be paid to the Management Contractor an amount equal to the loss of credit (input tax) on the supply to the Management Contractor of goods and services which contribute exclusively to the Project.

Finance (No.2) Act 1975 – statutory tax deduction scheme (5·9 to 5·17)

…efinitions

5·9 In this Condition 'the Act' means the Finance Act (No 2) Act 1975; 'the Regulations' means the Income Tax (Sub-Contractors in the Construction Industry) Regulations 1975 S.I. No.1960 or any amendment or re-enactment thereof; 'contractor' means a person who is a contractor for the purposes of the Act and the Regulations; 'evidence' means such evidence as is required by the Regulations to be produced to a 'contractor' for the verification of a 'sub-contractor's' tax certificate; 'statutory deduction' means the deduction referred to in S.69(4) of the Act or such other deduction as may be in force at the relevant time; 'sub-contractor' means a person who is a sub-contractor for the purposes of the Act and the Regulations; 'tax certificate' is a certificate issuable under S.70 of the Act.

…hether Employer …a contractor

5·10 ·1 Clauses 5·10 to 5·17 shall not apply if, in the Appendix, the Employer is stated not to be a 'contractor'.

·2 If in the Appendix the words "is a 'contractor'" are deleted, nevertheless if, at any time up to the issue and payment of the Final Certificate, the Employer becomes such a 'contractor', the Employer shall so inform the Contractor and the provisions of clauses 5·10 to 5·17 shall immediately thereupon become operative.

…rovision of …vidence – tax …ertificate

5·11 ·1 Not later than 21 days before the first payment under this Contract is due to the Management Contractor or after clause 5·10·2 has become operative the Management Contractor shall:

either

·1 provide the Employer with the evidence that the Management Contractor is entitled to be paid without the statutory deduction;

or

·2 inform the Employer in writing, and send a duplicate copy to the Architect/the Contract Administrator, that he is not entitled to be paid without the statutory deduction.

·2 If the Employer is not satisfied with the validity of the evidence submitted in accordance with clause 5·11·1·1, he shall within 14 days of the Management Contractor submitting such evidence notify the Management Contractor in writing that he intends to make the statutory deduction from payments due under this Contract to the Management Contractor who is a 'sub-contractor' and give his reasons for that decision. The Employer shall at the same time comply with clause 5·14·1

…ncertified …anagement …ontractor …btains tax …ertificate

5·12 ·1 Where clause 5·11·1·2 applies, the Management Contractor shall immediately inform the Employer if he obtains a tax certificate and thereupon clause 5·11·1·1 shall apply.

…xpiry of tax …ertificate

·2 If the period for which the tax certificate has been issued to the Management Contractor expires before the final payment is made to the Management Contractor under this Contract the Management Contractor shall not later than 28 days before the date of expiry:

either

·1 provide the Employer with evidence that the Management Contractor from the said date of expiry is entitled to be paid for a further period without the statutory deduction in which case the provisions of clause 5·11·2 shall apply if the Employer is not satisfied with the evidence;

or

·2 inform the Employer in writing that he will not be entitled to be paid without the statutory deduction after the said date of expiry.

S·12 continued

Cancellation of tax certificate

·3 The Management Contractor shall immediately inform the Employer in writing if his current tax certificate is cancelled and give the date of such cancellation.

Vouchers

S·13 The Employer shall, as a 'contractor' in accordance with the Regulations, send promptly to the Inland Revenue any voucher which, in compliance with the Management Contractor's obligations as a 'sub-contractor' under the Regulations, the Management Contractor gives to the Employer.

Statutory deduction – direct cost of materials

S·14 ·1 If at any time the Employer is of the opinion (whether because of the information given under clause S 11 1 2 or of the expiry or cancellation of the Management Contractor's tax certificate or otherwise) that he will be required by the Act to make a statutory deduction from any payment due to be made the Employer shall immediately so notify the Management Contractor in writing and require the Management Contractor to state not later than 7 days before each future payment becomes due (or within 10 days of such notification if that is later) the amount to be included in such payment which represents the direct cost to the Management Contractor and any other person of materials used or to be used in carrying out the Project.

·2 Where the Management Contractor complies with clause S 14 1 he shall indemnify the Employer against loss or expense caused to the Employer by any incorrect statement of the amount of direct cost referred to in clause S 14·1.

·3 Where the Management Contractor does not comply with clause S 14 1 the Employer shall be entitled to make a fair estimate of the amount of direct cost referred to in clause S 14·1.

Correction of errors

S·15 Where any error or omission has occurred in calculating or making the statutory deduction the Employer shall correct that error or omission by repayment to, or by deduction from payments to, the Management Contractor as the case may be subject only to any statutory obligation on the Employer not to make such correction.

Relation to other clauses

S·16 If compliance with clauses S 9 to S 17 involves the Employer or the Management Contractor in not complying with any other of the Conditions, then the provisions of clauses S 9 to S 17 shall prevail.

Application of arbitration agreement

S·17 The provisions of section 9 shall apply to any dispute or difference between the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor as to the operation of clauses S 9 to S 17 except where the Act or the Regulations or any other Act of Parliament or statutory instrument, rule or order made under an Act of Parliament provide for some other method of resolving such dispute or difference.

Insurance of the Project – insurance of existing structures

6·1 [a] Clause 6·4 applies whether or not clause 6·5 (existing structures – insurance) applies.

Definitions

6·2 In clause 6·4 and, so far as relevant, in other clauses of the Conditions the following phrases shall have the meanings given below:

[b] All Risks Insurance: Insurance which provides cover against any physical loss or damage to work executed and Site Materials but excluding the cost necessary to repair, replace or rectify

·1 property which is defective due to

·1 wear and tear,

·2 obsolescence,

·3 deterioration, rust or mildew;

[c] ·2 any work executed or any Site Materials lost or damaged as a result of its own defect in design, plan, specification, material or workmanship or any other work executed which is lost or damaged in consequence thereof where such work relied for its support or stability on such work which was defective;

·3 loss or damage caused by or arising from

·1 any consequence of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection, military or usurped power, confiscation, commandeering, nationalisation or requisition or loss or destruction of or damage to any property by or under the order of any government de jure or de facto or public, municipal or local authority;

·2 disappearance or shortage if such disappearance or shortage is only revealed when an inventory is made or is not traceable to an identifiable event;

·3 an Excepted Risk (as defined in clause 1·3);

and if the Contract is carried out in Northern Ireland

·4 civil commotion;

·5 any unlawful, wanton or malicious act committed maliciously by a person or persons acting on behalf of or in connection with an unlawful association; 'unlawful association' shall mean any organisation which is engaged in terrorism and includes an organisation which at any relevant time is a prescribed organisation within the meaning of the Northern Ireland (Emergency Provisions) Act 1973; 'terrorism' means the use of violence for political ends and includes any use of violence for the purpose of putting the public or any section of the public in fear.

Site Materials: all unfixed materials and goods delivered to, placed on or adjacent to the Project and intended for incorporation therein.

Benefit of Joint Names Policies – Specified Perils – Works Contractors

6·3 The Management Contractor in respect of the Joint Names Policy referred to in clause 6·4·1·1 or clause 6·4·3·1 or, where clause 6·5 is applicable, clause 6·5·3 shall, and the Employer, where clause 6·5 is applicable, in respect of the Joint Names Policy referred to in clause 6·5·2

Footnotes see page 39

provides for recognition of each Works Contractor as an insured under the relevant Joint Names Policy;

or

includes a waiver by the relevant insurers of any right of subrogation which they may have against any such Works Contractor

in respect of loss or damage by the Specified Perils to the Project and Site Materials and, where clause 6 5 applies, in respect of loss or damage by the Specified Perils to the existing structures (which shall include from the relevant date any relevant part to which clause 2 8 refers) together with the contents thereof owned by the Employer or for which he is responsible, and that this recognition or waiver shall continue up to and including the date of issue of the certificate of practical completion of the relevant Works (as referred to in clause 2 14 of the Works Contract Conditions) or, where the Project does not comprise alterations of or extensions to existing structures, the date of determination of the employment of the Management Contractor (whether or not the validity of that determination is contested) under clauses 7 1 to 7 13, or, where the Project comprises alterations of or extensions to existing structures, under clause 6 4 8 or clauses 7 1 to 7 13, whichever is the earlier.

[g] All Risks Insurance of the Project – Management Contractor to take out and maintain Joint Names Policy

…nt Names Policy for All Risks Insurance …ocesses

6·4 ·1 ·1 The Management Contractor shall, prior to the commencement of any work on site for the Project, take out a Joint Names Policy for All Risks Insurance cover no less than that defined in clause 6 2 [h][h·1] (or for such other definition of cover as the Employer may instruct) for the full reinstatement value of the Project (plus the percentage, if any, to cover professional fees stated in the Appendix) and shall (subject to clause 2 8 3) maintain such Joint Names Policy up to and including the date of issue of the certificate of Practical Completion or, where the Project does not comprise alterations of extensions to existing structures, up to and including the date of determination of the employment of the Management Contractor (whether or not the validity of that determination is contested) under clauses 7 1 to 7 13 or, where the Project comprises alterations of or extensions to existing structures, under clause 6 4 8 or clauses 7 1 to 7·13, whichever is the earlier

2 The Management Contractor shall, before taking out the Joint Names Policy, notify the Architect who shall thereupon notify the Employer of the amount of any excess (uninsured amounts) in respect of each insurance risk stated in the Policy. Subject to any alteration to such amounts of excess which the Employer may require and the insurers agree, the amounts of any excess in respect of each insurance risk insured under the Joint Names Policy shall be set out in the Appendix Part 2

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·2 The Management Contractor shall send to the Architect/the Contract Administrator for deposit with the Employer the Joint Names Policy referred to in clause 6 4 1 1 and the premium receipt therefor and also any relevant endorsement or endorsements thereof as may be required to comply with the obligation to maintain that Policy set out in clause 6 4·1·1 and the premium receipts therefor.

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·3 ·1 If the Management Contractor independently of his obligations under this Contract maintains a policy of insurance which provides (inter alia) All Risks Insurance for cover no less than that defined in clause 6 2 [h][h·1] (or for such other definition of cover as the Employer may instruct) for the full reinstatement value of the Project (plus the percentage, if any, to cover professional fees stated in the Appendix) and the Employer has given to the Management Contractor his written acceptance of the amount of any excess in respect of each insurance risk stated in the policy (which amounts shall be set out in the Appendix Part 2) then the maintenance by the Management Contractor of such policy shall, if the policy is a Joint Names Policy in respect of the aforesaid Project, be a discharge of the Management Contractor's obligation to take out and maintain a Joint Names Policy under clause 6 4·1·1.

Notes see page 39

3 *continued*

·2 If and so long as the Contractor is able to send to the Architect/the Contract Administrator for inspection by the Employer as and when he is reasonably required to do so by the Employer documentary evidence that such a policy is being maintained then the Management Contractor shall be discharged from his obligation under clause 6·4·2 to deposit the policy and the premium receipt with the Employer but on any occasion the Employer may (but not unreasonably or vexatiously) require to have sent to the Architect/the Contract Administrator for inspection by the Employer the policy to which clause 6·4·3·1 refers and the premium receipts therefor.

·3 The annual renewal date, as supplied by the Management Contractor, of the insurance referred to in clause 6·4·3·1 is stated in the Appendix.

Loss or damage – insurance claims – Management Contractor's obligations – payment by Employer

·4 If any loss or damage affecting work executed or any part thereof or any Site Materials is occasioned by any one or more of the risks covered by the Joint Names Policy referred to in clause 6·4·1·1 or clause 6·4·3·1 then, upon discovering the said loss or damage, the Management Contractor shall forthwith give notice in writing both to the Architect/the Contract Administrator and to the Employer of the extent, nature and location thereof; and the provisions of clause 6·4·5 to clause 6·4·9 shall apply.

·5 The occurrence of such loss or damage referred to in clause 6·4·4 shall be disregarded in computing any amounts payable to the Management Contractor, whether or not in respect of work executed by a Works Contractor, under or by virtue of this Contract.

·6 After any inspection required by the insurers in respect of a claim under the Joint Names Policy referred to in clause 6·4·1·1 or clause 6·4·3·1 has been completed the Management Contractor with due diligence, shall subject to clause 6·4·8 where applicable, secure the restoration of work damaged, the replacement or repair of any Site Materials which have been lost or damaged, the removal and disposal of any debris and proceed with securing the carrying out and completion of the Project.

·7 The Management Contractor, for himself and for all Works Contractors who are, pursuant to clause 6·3, recognised as an insured under the Joint Names Policy referred to in clause 6·4·1·1 or clause 6·4·3·1, shall authorise the insurers to pay all monies from such insurance in respect of the loss or damage referred to in clause 6·4·4 to the Employer.

·8 Clause 6·4·8 applies only where the Project comprises alterations of or extensions to existing structures.

·1 if it is just and equitable so to do the employment of the Management Contractor under this Contract may, within 28 days of the occurrence of the loss or damage referred to in clause 6·4·4, be determined at the option of either party by notice by registered post or recorded delivery from either party to the other. Within 7 days of *receiving such a notice (but not thereafter) either party may give to the other a* written request to concur in the appointment of an Arbitrator under section 9 in order that it may be determined whether such determination will be just and equitable;

·2 upon the giving or receiving by the Employer of such a notice of determination or, where a reference to arbitration is made as aforesaid, upon the Arbitrator upholding the notice of determination, the provisions of clause *7·6·2* except clause *7·6·2·5* shall apply.

·9 ·1 Where the restoration, replacement or repair of the loss or damage and (when required) the removal and disposal of debris is carried out by a Works Contractor or Works Contractors already engaged upon the Project such restoration replacement or repair and, when required, the removal and disposal of debris shall be treated as if they were the subject of a Works Contract Variation required by an Instruction under clause 3·4.

·2 Where clause 6·4·9·1 is not applicable the Management Contractor shall secure the restoration, replacement or repair of the loss or damage and, when required, the removal and disposal of debris, by a Works Contractor who shall be appointed in accordance with an Instruction under clause 8·1 and treated in all respects as a Works Contractor

see page 39

Specified Perils – Insurance of existing structures and contents – Employer to take out and maintain Joint Names Policy

6·5 1 Clauses 6·5·2 and 6·5·3 apply only where the Project comprises alterations of or extensions to existing structures.

2 The Employer shall, prior to the commencement of any work on site for the Project, take out a Joint Names Policy in respect of the existing structures (which shall include from the relevant date any relevant part to which clause 2·8 refers) together with the contents thereof owned by the Employer or for which he is responsible, for the full cost of reinstatement, repair or replacement of loss or damage due to one or more of the Specified Perils [k·2] and maintain such insurance up to and including the date of issue of the certificate of Practical Completion or up to and including the date of determination of the employment of the Management Contractor under clause 6·4·8 or clauses 7·1 to 7·4 or clauses 7·5 and 7·6 or clauses 7·7 to 7·9 or clauses 7·10 to 7·13 (whether or not the validity of that determination is contested) whichever is the earlier. The Management Contractor, for himself and for all Works Contractors who are, pursuant to clause 6·3, recognised as an insured under the Joint Names Policy referred to in clause 6·5·2 shall authorise the insurers to pay all monies from such insurance in respect of loss or damage to the Employer.

3 The Employer shall, as and when reasonably required to do so by the Management Contractor, produce documentary evidence and receipts showing that the Joint Names Policy required under clause 6·5 has been taken out and is being maintained. If the Employer defaults in taking out or in maintaining the Joint Names Policy required under clause 6·5·2 the Management Contractor may himself take out and maintain a Joint Names Policy against any risk in respect of which the default shall have occurred and for that purpose shall have such right of entry and inspection as may be required to make a survey and inventory of the existing structures and the relevant contents.

[d] Clause 6·4 is applicable to Projects whether they consist of the erection of new buildings or comprise alterations of or extension to existing structures. For either kind of Project the Management Contractor takes out a Joint Names Policy for All Risks Insurance for the Project as defined in clause 6·2 (or for such other definition as the Employer may instruct), and for Projects which comprise alterations of or extensions to existing structures the Employer takes out a Joint Names Policy to insure the existing structures and their contents owned by the Employer or for which the Employer is responsible against loss or damage thereto by the Specified Perils, clause 6·5. The premium paid by the Management Contractor for the Joint Names Policy for All Risks Insurance for the Project is treated as Prime Cost and reimbursed by the Employer (see Second Schedule Part 3B paragraph 11).

[h] The definition of 'All Risks Insurance' in clause 6·2 defines the risks for which insurance is required (subject to the right of the Employer in clause 6·4·1·1 or 6·4·3·1 to instruct that a different definition of cover is adopted). Policies issued by insurers are not standardised and there will be some variation in the way insurance for these risks is expressed. See also Practice Note 22 and Guide, Part A.

[i] In any policy for All Risks Insurance taken out under clause 6·4 cover should not be reduced by the terms of any exclusion written in the policy beyond the terms of clause 6·2, paragraph 2; thus an exclusion in terms 'This Policy excludes all loss of or damage to the property insured due to defective design, plan, specification, materials or workmanship' would not be in accordance with the terms of that clause and of the definition of 'All Risks Insurance'. Cover which goes beyond the terms of the exclusion in paragraph 2 may be available though not standard in all policies taken out to meet the obligation in clause 6·4 and leading insurers who underwrite 'All Risks' cover for building work have confirmed that where such improved cover is being given it will not be withdrawn as a consequence of the publication of the terms of the definition in clause 6·2 of 'All Risks Insurance'.

[k·1] In some cases it may not be possible for insurance to be taken out against certain of the risks covered by the definition of "All Risks Insurance". This matter should be arranged between the parties prior to the Architect/the Contract Administrator notifying the Employer under clause 2·1 when it would be practicable to commence the construction of the Project and either the definition of "All Risks Insurance" given in clause 6·2 amended or the risks actually covered should replace the definition; in the latter case clause 6·4 and other relevant clauses in which the definition "All Risks Insurance" is used should be amended to include the words used to replace the definition.

[k·2] In some cases it may not be possible for insurance to be taken out against certain of the Specified Perils. This matter should be arranged between the parties prior to the Architect/the Contract Administrator notifying the Employer under clause 2·1 when it would be practicable to commence the construction of the Project and either the definition of Specified Perils for the purpose of clause 6·5 amended or the risks actually covered should replace the definition; in the latter case clause 6·5 and other relevant clauses in which the definition 'Specified Perils' is used should be amended to include the words used to replace the [illegible] definition.

Insurance for Employer's loss of liquidated damages – clause 2·13·2 and Works Contract Conditions clause 2·10·3

6·6 ·1 Where it is stated in the Appendix that the insurance to which clause 6·6 refers may be required by the Employer then, not later than the date of the written notice of the Employer under clause 2·1 to the Management Contractor to proceed, the Architect/the Contract Administrator shall either inform the Management Contractor that no such insurance is required or shall instruct the Management Contractor to obtain a quotation for such insurance. This quotation shall be for an insurance on an agreed value basis [1] to be taken out and maintained by the Management Contractor until the date of Practical Completion and which will provide for payment to the Employer of a sum calculated by reference to clause 6·6·3 in the event of loss or damage to the Project, work executed, Site Materials, temporary buildings, plant and equipment for use in connection with and on or adjacent to the Project by any one or more of the Specified Perils and which loss or damage results in the Architect/the Contract Administrator giving an extension of time under clause 2·13·2 in respect of the Relevant Event referred to in clause 2·10·3 of the Works Contract Conditions and clause 2·13·2. The Architect/the Contract Administrator shall obtain from the Employer any further information which the Management Contractor reasonably requires to obtain such quotation. The Management Contractor shall send to the Architect/the Contract Administrator as soon as practicable the quotation which he has obtained and the Architect/the Contract Administrator shall thereafter instruct the Management Contractor whether or not the Employer wishes the Management Contractor to accept that quotation and such instruction shall not be unreasonably withheld or delayed. If the Management Contractor is instructed to accept the quotation the Management Contractor shall forthwith take out and maintain the relevant policy and send it to the Architect/the Contract Administrator for deposit with the Employer, together with the premium receipt therefor and also any relevant endorsement or endorsements thereof and the premium receipts therefor.

·2 The sum insured by the relevant policy shall be a sum calculated at the rate stated in the Appendix as liquidated and ascertained damages for the period of time stated in the Appendix.

·3 Payment in respect of this insurance shall be calculated at the rate referred to in clause 6·6·2 (or any revised rate produced by the application of clause 2·8·4) for the period of any extension of time finally given by the Architect/the Contract Administrator as referred to in clause 6·6·1 or for the period of time stated in the Appendix, whichever is the less.

·4 If the Management Contractor defaults in taking out or in maintaining the insurance referred to in clause 6·6·1 the Employer may himself insure against any risk in respect of which the default shall have occurred.

Injury to persons and property and Indemnity to Employer (6·7 to 6·9)

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6·7 The Management Contractor shall be liable for, and shall indemnify the Employer against, any expense, liability, loss, claim or proceedings whatsoever arising under any statute or at common law in respect of personal injury to or the death of any person whomsoever arising out of or in the course of or caused by the carrying out of the Project, except to the extent that the same is due to any act or neglect of the Employer or of any person for whom the Employer is responsible including the persons employed or otherwise engaged by the Employer to whom clauses 3·23 to 3·25 refer.

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6·8 The Management Contractor shall, subject to clause 6·9 and, where applicable, clause 6·5, be liable for, and shall indemnify the Employer against, any expense, liability, loss, claim or proceedings in respect of any injury or damage whatsoever to any property real or personal in so far as such injury or damage arises out of or in the course of or by reason of the carrying out of the Project, and to the extent that the same is due to any negligence, breach of statutory duty, omission or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents, or of any other person who may properly be on the site upon or in connection with the Project or any part thereof, his servants or agents, other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory rights or obligations.

Footnotes [1] The reference to an agreed value is intended to avoid any dispute over the amount of payment due under the insurance once the policy is issued. Insurers on receiving a proposal for the insurance to which clause 6·6 refers will normally reserve the right to be satisfied that the sum referred to in clause 6·6·2 is not more than a genuine pre-estimate of the damages which the Employer considers, at the time he enters into the Management Contract, he will suffer as a result of any delay.

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6·9 ·1 Subject to clause 6·9·2 the reference in clause 6·8 to "property real or personal" does not include the Project, work executed and/or Site Materials up to and including the date of issue of the certificate of Practical Completion or up to and including the date of determination of the employment of the Management Contractor (whether or not the validity of the determination is disputed) under clauses 7·1 to 7·13 or, where clause 6·4·8 applies, under clause 6·4·8 or clauses 7·1 to 7·13, whichever is the earlier.

·2 If clause 2·8 has been operated then, in respect of the relevant part and as from the relevant date, such relevant part shall not be regarded as "the Project" or "work executed" for the purpose of clause 6·9·1.

Insurance against injury to persons or property (6·10 to 6·12)

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6·10 ·1 ·1 Without prejudice to his obligation to indemnify the Employer under clauses 6·7 and 6·8 the Management Contractor shall take out and maintain and shall cause any Works Contractor to take out and maintain insurance which shall comply with clause 6·10·1·2 in respect of claims arising out of his liability referred to in clauses 6·7 and 6·8.

·2 The insurance in respect of claims for personal injury to, or the death of any person under a contract of service or apprenticeship with the Management Contractor or a Works Contractor as the case may be, and arising out of and in the course of such person's employment, shall comply with the Employer's Liability (Compulsory Insurance) Act 1969 and any statutory orders made thereunder or any amendment or re-enactment thereof. For all other claims to which clause 6·10·1·1 applies the insurance cover to be taken out and maintained by the Management Contractor and by each Works Contractor shall be not less than the relevant sums stated in the Appendix for any one occurrence or series of occurrences arising out of one event. [m]

·2 As and when he is reasonably required to do so by the Employer the Management Contractor shall send and shall cause any Works Contractor to send to the Architect/the Contract Administrator for inspection by the Employer documentary evidence that the insurances required by clause 6·10·1·1 have been taken out and are being maintained, but at any time the Employer may (but not unreasonably or vexatiously) require to have sent to the Architect/the Contract Administrator for inspection by the Employer the relevant policy or policies and premium receipts therefor.

·3 If the Management Contractor defaults in taking out or in maintaining, or in causing any Works Contractor to take out and maintain, insurance as provided in clause 6·10·1·1 the Employer may himself insure against any liability or expense which he may incur arising out of such default and a sum or sums equivalent to the amount paid or payable by him in respect of premiums therefor may be deducted by him from any monies due or to become due to the Management Contractor under this Contract or such amount may be recoverable by the Employer from the Management Contractor as a debt.

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6·11 ·1 Where it is stated in the Appendix that the insurance to which clause 6·11·1 refers may be required by the Employer the Management Contractor shall, if so instructed by the Architect/the Contract Administrator, take out and maintain a Joint Names Policy for such amount of indemnity as is stated in the Appendix in respect of any expense, liability, loss, claim or proceedings which the Employer may incur or sustain by reason of injury or damage to any property other than the Project and Site Materials caused by collapse, subsidence, heave, vibration, weakening or removal of support or lowering of ground water arising out of or in the course of or by reason of the carrying out of the Project excepting injury or damage:

·1 for which the Management Contractor is liable under clause 6·8;

·2 attributable to errors or omissions in the designing of the Project;

·3 which can reasonably be foreseen to be inevitable having regard to the nature of the work to be executed or the manner of its execution;

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note [m] The Management Contractor or any Works Contractor may if they so wish, insure for a sum greater than that stated in the Appendix.

6·11·1 *continued*

·4 which it is the responsibility of the Employer to insure under clause 6·5·2 (if applicable);

·5 arising from war risks or the Excepted Risks.

·2 Any such insurance as is referred to in clause 6·11·1 shall be placed with insurers to be approved by the Employer, and the Management Contractor shall send to the Architect/the Contract Administrator for deposit with the Employer the policy or policies and the premium receipts therefor.

·3 If the Management Contractor defaults in taking out or in maintaining the Joint Names Policy as provided in clause 6·11·1 the Employer may himself insure against any risk in respect of which the default shall have occurred.

Excepted Risks

6·12 Notwithstanding the provisions of clauses 6·7, 6·8 and 6·10·1, the Contractor shall not be liable either to indemnify the Employer or to insure against any personal injury to or the death of any person or any damage, loss or injury caused to the Project or Site Materials, work executed, the site, or any property, by the effect of an Excepted Risk.

War Damage (6·13 to 6·15)

Effect of war damage

6·13 In the event of the Project or any part thereof or any unfixed materials or goods intended for, delivered to and placed on or adjacent to the Project sustaining war damage as defined in clause 6·15 then notwithstanding anything expressed or implied elsewhere in this Contract:

·1 the occurrence of such war damage shall be disregarded in computing any amounts payable to the Management Contractor under or by virtue of this Contract;

·2 the Architect/the Contract Administrator may issue Instructions requiring the Management Contractor to secure the removal and/or dispose of any debris and/or damaged work and/or to execute such protective work as shall be specified;

·3 the Management Contractor shall secure the reinstatement or making good of such war damage and shall proceed to secure the carrying out and completion of the Project, and the Architect/the Contract Administrator shall in writing fix such later Completion Date as, in his opinion, is fair and reasonable;

·4 the removal and disposal of debris or damaged work, the execution of protective works and the reinstatement and making good of such war damage shall be treated as if it were a Project Change and as Works Contract Variations issued under clause 3·4 and/or an addition to items of work to be carried out by Works Contractors as referred to in clause 8·1.

Compensation for war damage

6·14 The Employer shall be entitled to any compensation which may at any time become payable out of monies provided by Parliament in respect of war damage sustained by the Project or any part thereof or any unfixed materials or goods intended for the Project which shall at any time have become the property of the Employer.

Definition of war damage

6·15 The expression 'war damage' as used in clauses 6·13 and 6·14 means war damage as defined by S.2 of the War Damage Act 1943 or any amendment or re-enactment thereof.

SECTION 7: Determination

Default by Management Contractor – Determination by Employer (7·1 to 7·4)

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7·1 Without prejudice to any other rights which the Employer may possess, if the Management Contractor shall make default in any one or more of the following respects, that is to say:

1 if without reasonable cause he wholly suspends or fails to proceed regularly and diligently with the carrying out of his obligations referred to in Article 1 before the completion of the Project; or

2 if he refuses or neglects to comply with a written notice from the Architect/the Contract Administrator requiring him to remove or secure the removal of defective work or improper materials or goods and by such refusal or neglect the Project is materially affected; or

3 if he fails to comply with the provisions of either clause 3·19 or if applicable clause 3·20

then the Architect/the Contract Administrator may give to him a notice by registered post or recorded delivery specifying the default. If the Management Contractor either shall continue such default for 14 days after receipt of such notice or shall at any time thereafter repeat such default (whether previously repeated or not) then the Employer may within 10 days after such continuance or repetition by notice by registered post or recorded delivery forthwith determine the employment of the Management Contractor under this Contract, provided that such notice shall not be given unreasonably or vexatiously.

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7·2 In the event of the Management Contractor making a composition or arrangement with his creditors or having a proposal in respect of his company for a voluntary arrangement for a composition of debts or scheme of arrangement approved in accordance with the Insolvency Act 1986 or having an application made under the Insolvency Act 1986 in respect of his company to the court for the appointment of an administrator, or having a winding up order made or (except for the purposes of amalgamation or reconstruction) a resolution for voluntary winding up passed or having a provisional liquidator, receiver or receiver and manager of his business or undertaking duly appointed, or having an administrative receiver, as defined in the Insolvency Act 1986, appointed or having possession taken, by or on behalf of the holders of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge, the employment of the Management Contractor under the Contract shall be forthwith automatically determined but the said employment may be reinstated and continued if the Employer and the Management Contractor, his liquidator, provisional liquidator, administrator, receiver or receiver and manager or administrative receiver as the case may be shall so agree.

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7·3 The Employer shall be entitled to determine the employment of the Management Contractor under this or any other contract, if the Management Contractor shall have offered or given or agreed to give to any person any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of this or any other contract with the Employer, or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract with the Employer, or if the like acts shall have been done by any person employed by the Management Contractor or acting on his behalf (whether with or without the knowledge of the Management Contractor), or if in relation to this or any other contract with the Employer the Management Contractor or any person employed by him or acting on his behalf shall have committed any offence under the Prevention of Corruption Acts, 1889 to 1916, or where the Employer is a local authority shall have given any fee or reward the receipt of which is an offence under sub-section (2) of section 117 of the Local Government Act 1972 or any re-enactment thereof.

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7·4 In the event of the employment of the Management Contractor under this Contract being determined under clause 7·1, 7·2 or 7·3 and so long as it has not been reinstated and continued then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6·7 and 6·8 which may accrue either before the Management Contractor or any Works Contractor shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and duties of the Employer and the Management Contractor:

·1 the Employer may employ and pay other persons to carry out and complete the Management Contractor's obligations under this Contract and he or they may enter upon the site of the Project and use all temporary buildings, plant, tools, equipment, goods and materials intended for, delivered to and placed on or adjacent to the Project, and may purchase all materials and goods necessary for the carrying out and completion of the Project;

·2 ·1 except where the determination occurs by reason of the Management Contractor having a winding up order made or (other than for the purpose of amalgamation or reconstruction) a resolution for voluntary winding up passed, the Management Contractor shall if so required by the Employer or by the Architect/the Contract Administrator on behalf of the Employer within 14 days of the date of determination, assign to the Employer without payment the benefit of any agreement for the supply of materials or goods and/or the execution of any work for the purposes of this Contract to the extent that the same is assignable, but on the terms that a supplier or Works Contractor shall be entitled to make any reasonable objection to any further assignment thereof by the Employer;

·2 subject to the exception to the operation of clause 7·4·2·1, the Employer may pay any supplier or Works Contractor for any materials or goods delivered or works executed for the purposes of this Contract (whether before or after the date of determination) in so far as the price thereof has not already been paid by the Management Contractor; payments made under clause 7·4·2·2 may be deducted from any sum due or to become due to the Management Contractor or shall be recoverable by the Employer from the Management Contractor as a debt.

·3 the Management Contractor shall, as and when required in writing by the Architect/the Contract Administrator so to do (but not before), remove from the site any temporary buildings, plant, tools, equipment, goods and materials belonging to, hired or leased by him. If within a reasonable time after any such requirement has been made the Management Contractor has not complied therewith, then the Employer may (but without being responsible for any loss or damage) remove and sell any such property of the Management Contractor, holding the proceeds less all costs incurred to the credit of the Management Contractor;

·4 the Management Contractor shall allow or pay to the Employer in the manner hereinafter appearing the amount of any direct loss and/or damage caused to the Employer by the determination. Until after completion of the Project under clause 7·4·1 the Employer shall not be bound by any provision of this Contract to make any further payment to the Management Contractor, but upon such completion and the verification within a reasonable time of the accounts therefor the Architect/the Contract Administrator shall certify the amount of expenses properly incurred by the Employer and the amount of any direct loss and/or damage caused to the Employer by the determination and, if such amounts when added to the monies paid to the Management Contractor before the date of determination exceed the total amount which would have been payable on due completion in accordance with this Contract, the difference shall be recoverable by the Employer from the Management Contractor as a debt; and if the said amounts when added to the said monies be less than the said total amount, the difference shall be recoverable by the Management Contractor from the Employer as a debt.

Default of Employer – suspension of Project – determination by Management Contractor (7·5 and 7·6)

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7·5 Without prejudice to any other rights and remedies which the Management Contractor may possess, if any of the matters referred to in clauses 7·5·1 to 7·5·4 occur then the Management Contractor may thereupon by notice by registered post or recorded delivery to the Employer or the Architect/the Contract Administrator forthwith determine the employment of the Management Contractor under this Contract, provided that such notice shall not be given unreasonably or vexatiously:

·1 the Employer does not pay the amount properly due to the Management Contractor on any certificate (otherwise than as a result of the operation of the VAT Agreement) within 14 days from the issue of that certificate and continues such default for 7 days after receipt by registered post or recorded delivery of a notice from the Management Contractor stating that notice of determination under clause 7·5 will be served if payment is not made within 7 days from receipt thereof; or

·2 the Employer interferes with or obstructs the issue of any certificate due under this Contract; or

·3 the carrying out of the whole or substantially the whole of the uncompleted Project (other than the execution of work required under clause 2·5) is suspended for a continuous period of the length named in the Appendix by reason of:

·1 Instructions issued under clauses 3·4 or 3·5, unless caused by reason of some negligence or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory obligations; or

·2 the Management Contractor not having received in due time necessary specifications or bills of quantities for Works Contracts, instructions, drawings, details or levels from the Architect/the Contract Administrator for which he specifically applied in writing provided that such application was made on a date which having regard to the Completion Date was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same; or

·3 delay in the execution of work not forming part of this Contract by the Employer himself or by persons employed or otherwise engaged by the Employer as referred to in clauses 3·23 and 3·24 or the failure to execute such work or delay in the supply by the Employer of materials and goods which the Employer has agreed to provide for the Project or the failure so to supply; or

·4 the opening up for inspection of any work covered up or the testing of any of the work, materials or goods in accordance with clause 3·10 (including making good in consequence of such opening up or testing) unless the inspection or test showed that the work, materials or goods were not in accordance with this Contract;

·5 failure of the Employer to give in due time ingress to or egress from the site of the Project or any part thereof through or over any land, buildings, way or passage adjoining or connected with the site and in the possession and control of the Employer, in accordance with the Contract Documents after receipt by the Architect/the Contract Administrator of such notice, if any, as the Contractor is required to give or failure of the Employer to give such ingress or egress as otherwise agreed between the Architect/the Contract Administrator and the Management Contractor;

or

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[n-2] ·4 the Employer makes a composition or arrangement with his creditors or has a proposal in respect of his company for a voluntary arrangement for a composition of debts or scheme of arrangement approved in accordance with the Insolvency Act 1986 or has an application made under the Insolvency Act 1986 in respect of his company to the court for the appointment of an administrator or has a winding up order made or (except for the purposes of an amalgamation or reconstruction) has a resolution for voluntary winding up passed or a provisional liquidator, receiver or receiver and manager of his business or undertaking is duly appointed, or has an administrative receiver, as defined in the Insolvency Act 1986, appointed or possession is taken, by or on behalf of the holders of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge;

...mination of ...ployment by ...agement ...ractor under ...se 7·5 – ...s and duties ...ployer and ...agement ...ractor

7·6 Upon determination under clause 7·5, then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6·7 and 6·8 which may accrue either before the Management Contractor or any Works Contractors shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and liabilities of the Management Contractor and the Employer:

·1 the Management Contractor shall with all reasonable dispatch and in such manner and with such precautions as will prevent injury, death or damage of the classes in respect of which before the date of determination he was liable to indemnify the Employer under clause 6·7 or 6·8, remove from the site all his temporary buildings, plant, tools, equipment, materials and goods belonging to or hired by him and shall give facilities for his Works Contractors to do the same but subject always to the provisions of clause 7·6·2·2;

·2 after taking into account amounts previously paid under this Contract the Management Contractor shall be paid by the Employer:

·1 the Prime Cost; and

·2 the Prime Cost as defined in Part 4B of the Second Schedule of materials and goods not delivered to or adjacent to the Project but for which the Management Contractor is legally bound to pay and on such payment by the Employer any such materials or goods so paid for shall become the property of the Employer; and

·3 a Management Fee calculated as follows: the Pre-Construction Period Management Fee plus a proportion of the Construction Period Management Fee stated in the Appendix adjusted, where appropriate, in accordance with clause 4·10·2, being the ratio that the Construction Period Management Fee bears to the Contract Cost Plan Total applied to the sum of the amounts referred to in clause 7·6·2·1 and 7·6·2·2; and

·4 the reasonable cost of removal under clause 7·6·1; and

·5 any direct loss and/or damage caused to the Management Contractor by the determination.

Determination by Employer or Management Contractor (7·7 to 7·9)

...nds for ...mination of ...agement ...ractor by ...ployer or ...agement ...ractor

7·7 Without prejudice to any other rights or remedies which the Employer or the Management Contractor may possess if the carrying out of the whole or substantially the whole of the uncompleted Project (other than the execution of work required under clause 2·5) is suspended for a continuous period of the length named in the Appendix by reason of:

·1 force majeure; or

·2 loss or damage to the Project occasioned by any one or more of the Specified Perils; or

·3 civil commotion

then the Employer or the Management Contractor may thereupon by notice by registered post or recorded delivery to the Management Contractor or to the Employer forthwith determine the employment of the Management Contractor under this Contract provided that such notice shall not be given unreasonably or vexatiously ecified Perils — negligence etc. Management ntractor

7·8 The Management Contractor shall not be entitled to give notice under clause 7·7·2 where the loss or damage to the Project occasioned by one or more of the Specified Perils was caused by some negligence or default of the Management Contractor, his servants or agents or of any person employed or engaged upon or in connection with the Project or any part thereof, his servants or agents other than the Employer or any person employed, engaged or authorised by him or by any local authority or statutory undertaker executing work solely in pursuance of its statutory obligations.

hts and duties Employer and nagement ntractor

7·9 Upon such determination under clause 7 7 the provisions of clause 7 6 shall apply with the exception of clause 7 6 2 5.

Determination at will by Employer (7·10 to 7·13)

ployer's option

7·10 Without prejudice to any other rights or remedies which the Employer or the Management Contractor may possess, the Employer may at any time by notice in writing to the Management Contractor forthwith determine the employment of the Management Contractor under this Contract.

termination der clause 7 10 ghts and duties Employer and nagement ntractor

7·11 In the event of the employment of the Management Contractor under this Contract being determined under clause 7 10 then without prejudice to the accrued rights or remedies of either party or to any liability of the classes mentioned in clauses 6 7 and 6 8 which may accrue either before the Management Contractor or any Works Contractors shall have removed his or their temporary buildings, plant, tools, equipment, materials or goods or by reason of his or their so removing the same, the following shall be the respective rights and liabilities of the Employer and the Management Contractor:

·1 the Employer shall indemnify the Management Contractor against any valid claims made against him by Works Contractors and others in relation to the Project, such indemnity to be limited to the extent of sums properly due to such Works Contractors and others as shall not have been paid to the Management Contractor by the Employer;

·2 the Management Contractor shall if so required by the Employer or by the Architect/the Contract Administrator on behalf of the Employer within 14 days of the date of the determination, assign to the Employer without payment the benefit of any agreement for the supply of materials or goods and/or for the execution of any work for the purpose of this Contract to the extent that the same is assignable, but on the terms that a supplier or Works Contractor shall be entitled to make any reasonable objection to any further assignment thereof by the Employer.

termination fore nstruction riod

7·12 In the event of determination under clause 7 10 taking place before the issue by the Employer of a written notice to proceed under clause 2 1 then the Employer shall pay to the Management Contractor in respect of his co-operation with the Professional Team as referred to in Article 1 and clause 2 1 an appropriate proportion of the Pre-Construction Period Management Fee less any amount paid under an Interim Certificate issued in accordance with clause 4 2 1

termination ring nstruction riod

7·13 In the event of determination under clause 7 10 taking place after the issue by the Employer of the written notice to proceed under clause 2 1 then upon such determination the provisions of clause 7 6 shall apply.

SECTION 8: Works Contractors

Works Contractors (8·1 to 8·5)

Items of work – Works Contractors 8·1 Clauses 8·1 to 8·5 shall apply in respect of the items of work to be carried out by Works Contractors which are identified in the Contract Cost Plan or in Instructions.

Selection of Works Contractors – terms of Works Contracts 8·2 ·1 The Works Contractors to carry out the items of work so identified shall be selected by agreement in writing between the Management Contractor and the Architect/the Contract Administrator and that selection shall be confirmed in an Instruction. Provided that, save where the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor otherwise agree, the Management Contractor shall only employ any persons as Works Contractors who will

·1 enter into a contract on the current unamended standard Form of Works Contract (Works Contract/1 and Works Contract/2) issued by the Joint Contracts Tribunal with the Management Contractor and execute that contract under seal where this Contract is under seal; and

·2 if so required (as recorded in Works Contract/1) enter into an Employer/Works Contractor Agreement (Works Contract/3) with the Employer and execute that Agreement under seal where the Works Contract is under seal.

Nominated suppliers to Works Contractors ·2 The Management Contractor shall send to the Architect/the Contract Administrator any submissions by a Works Contractor under clause 8·4·1 of the Works Contract Conditions in respect of restrictions, limitations or exclusions in a proposed contract of sale between such Works Contractor and a Nominated Supplier; and the Management Contractor shall not be required to instruct a Works Contractor to enter into a contract of sale with such Nominated Supplier unless and until the Architect/the Contract Administrator has specifically approved in writing to the Management Contractor the said restrictions, limitations or exclusions. Such approval shall be immediately confirmed in writing by the Management Contractor to the Works Contractor. Where any liability of a Works Contractor to the Management Contractor is limited under the provisions of clause 8·4·1 of the Works Contract Conditions the liability of the Management Contractor to the Employer shall be limited to the same extent.

Duties required from Management Contractor under Works Contracts 8·3 ·1 The Management Contractor shall fulfil all the duties required from him under each Works Contract.

·2 The Architect/the Contract Administrator shall on the issue of each Interim Certificate direct the Management Contractor as to the amounts in respect of each Works Contractor which are included in the amount stated as due in such Interim Certificate.

·3 Where any Works Contractor requests the Management Contractor, who shall forthwith send such requests to the Architect/the Contract Administrator, that he be informed directly by the Architect/the Contract Administrator of the amount included for him in each relevant Interim Certificate, the Architect/the Contract Administrator shall so inform that Works Contractor.

·4 The Management Contractor shall immediately inform the Architect/the Contract Administrator of all notifications from Works Contractors under clause 2·13 of the Works Contract Conditions of the practical completion of their work together with the Management Contractor's observations thereon. When in the opinion of the Architect/the Contract Administrator practical completion of the Works Contractor's work is achieved he shall consent to the Management Contractor issuing a certificate of practical completion to the Works Contractor in accordance with clause 2·14 of the Works Contract Conditions.

Final payment to Works Contractor 8·4 If following a request by a Works Contractor it is desired by the Employer or by the Architect/the Contract Administrator on his behalf to secure final payment to such Works Contractor before the issue of the certificate referred to in clause 4·11, and if such Works Contractor has satisfactorily indemnified the Management Contractor against any latent defects, then the Architect/the Contract Administrator may in an Interim Certificate direct an amount to cover the said final payment.

Loss and expense caused by matters materially affecting regular progress – Works Contracts

8.8 Upon receipt of a written application properly made by a Works Contractor under clause 4.45 of the Works Contract Conditions in respect of matters affecting regular progress of the Works by matters referred to in clauses 4.46.1 to 4.46.7 of the Works Contract Conditions the Management Contractor shall pass to the Architect/the Contract Administrator a copy of that written application together with his comments upon the application. Thereafter, if and as soon as the Architect/the Contract Administrator is of the opinion that the regular progress of the Works Contract or any part thereof has been or is likely to be materially affected as referred to in the aforesaid clause 4.45 and as set out in the application of the Works Contractor then the Architect/the Contract Administrator shall himself ascertain, or shall instruct the Quantity Surveyor to ascertain, the amount of such loss and/or expense in collaboration with the Management Contractor.

SECTION 9: Settlement of disputes – Arbitration

Settlement of disputes – Arbitration (9·1 to 9·7)

Dispute or difference – appointment of Arbitrator

9·1 If a dispute or difference as referred to in Article 8 has arisen including a dispute or difference relating to

— any matter or thing left by this Contract to the discretion of the Architect/the Contract Administrator or

— the withholding by the Architect/the Contract Administrator of any certificate to which the Management Contractor may claim to be entitled or

— the rights and liabilities of the parties under section 4, clauses 6·13 and 6·14, or 7·1 to 7·13 or

— the unreasonable withholding of consent or agreement by the Employer or the Architect/the Contract Administrator on his behalf or by the Management Contractor or

— the adjustment of the Management Fee under clause 4·10·2 or 4·10·3 or as to any rate or any addition which has to be agreed under the Second Schedule or

— the refusal by the Architect/the Contract Administrator to include an item as Prime Cost

then such dispute or difference shall be referred to the arbitration and final decision of a person to be agreed between the parties to act as Arbitrator, or, failing agreement within 14 days after either party has given to the other a written request to concur in the appointment of an Arbitrator, a person to be appointed on the request of either party by the person named in the Appendix.

Arbitration – joinder

9·2 Provided that if the dispute or difference to be referred to arbitration under this Contract raises issues which are substantially the same as or connected with issues raised in a related dispute between

the Employer and any Works Contractor under an Employer/Works Contractor Agreement, (Works Contract/3); or

the Management Contractor and any Works Contractor under a Works Contract; or

the Works Contractor and any Nominated Supplier to whom section 8 of the Works Contract Conditions applies

and if the related dispute has already been referred for determination to an Arbitrator, the Employer and the Management Contractor hereby agree that

·1 the dispute or difference under this Contract shall be referred to the Arbitrator appointed to determine the related dispute; and

·2 such Arbitrator shall have power to make such directions and all necessary awards in the same way as if the procedure of the High Court as to joining one or more defendants or joining co-defendants or third parties was available to the parties and to him; and

·3 the agreement and consent referred to in clause 9·6 on appeals or applications to the High Court on any question of law shall apply to any question of law arising out of the awards of such arbitrator in respect of all related disputes referred to him or arising in the course of the reference of all the related disputes referred to him;

save that the Employer or the Management Contractor may require the dispute or difference under this Contract to be referred to a different Arbitrator (to be appointed under this Contract) if either of them reasonably apprehends that the Arbitrator appointed to determine the related

id opening
bitration

9·3 Such reference, except

1 on article 3 or article 4; or

2 on the questions
whether or not the issue of an instruction is empowered by the Conditions, or
whether or not a certificate has been improperly withheld, or
whether a certificate is not in accordance with the Conditions; or
whether a determination under clause 6 4 8 will be just and equitable,

3 on any dispute or difference under clauses 2 12 to 2 14 and 6 13 and 6 14, or

4 on any dispute or difference under clause 2 3 4 or clause 2 8 in regard to a withholding of consent by the Contractor, under clause 3 3 3, under clause 3 6 4 in regard to any objection by the Management Contractor whether for himself or on behalf of a Works Contractor

shall not be opened until after Practical Completion or alleged Practical Completion of the Project or termination or alleged termination of the Management Contractor's employment under this Contract or abandonment of the Project, unless with the written consent of the Employer or the Architect/the Contract Administrator on his behalf and the Management Contractor

9·4 Subject to the provisions of clause 1 14 and clause 3 7 of the Works Contract Conditions the Arbitrator shall, without prejudice to the generality of his powers, have power to direct such measurements and/or valuations as may in his opinion be desirable in order to determine the rights of the parties and to ascertain and award any sum which ought to have been the subject of or included in any certificate and to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision, requirement or notice had been given.

9·5 Subject to clause 9 6 the award of such Arbitrator shall be final and binding on the parties

9·6 The parties hereby agree and consent pursuant to sections 1(3)(a) and 2(1)(b) of the Arbitration Act 1979, that either party

1 may appeal to the High Court on any question of law arising out of an award made in an arbitration under this Arbitration Agreement and

2 may apply to the High Court to determine any question of law arising in the course of the reference;

and the parties agree that the High Court should have jurisdiction to determine any such questions of law.

9·7 Whatever the nationality, residence or domicile of the Employer, the Management Contractor, any Works Contractor or supplier or the Arbitrator, and wherever the Project or any part thereof is situated, the law of England shall be the proper law of this Contract and in particular (but not so as to derogate from the generality of the foregoing) the provisions of the Arbitration Act 1950 (notwithstanding anything in S 34 thereof) to 1979 shall apply to any arbitration under this Contract wherever the same, or any part of it, shall be conducted [e]

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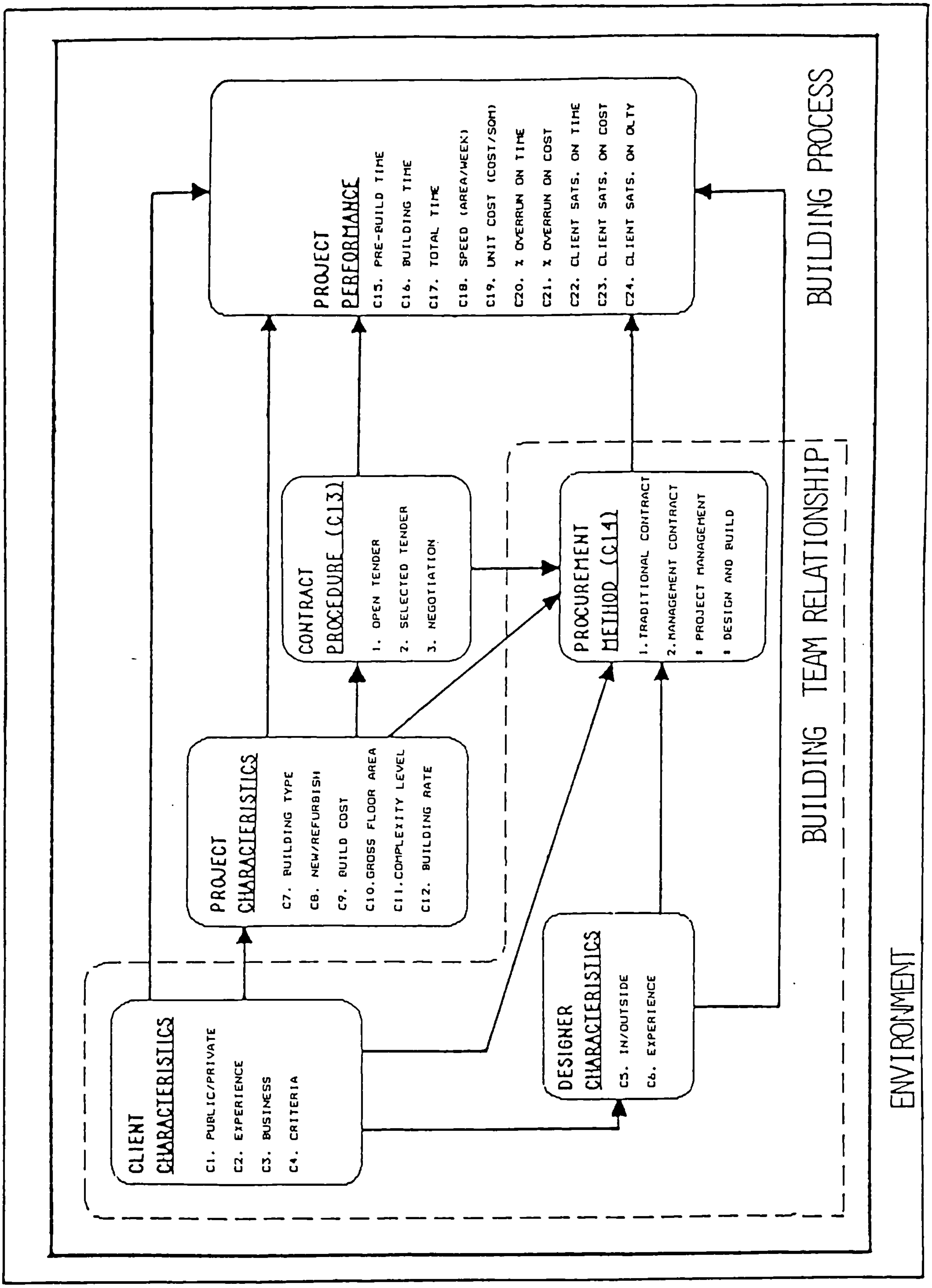
[e] Where the parties do not wish the proper law of the Contract to be the Law of England and/or do not wish the provisions of the Arbitration Acts 1950 to 1979 to apply to any arbitration under the Contract held under the procedural law of Scotland (or any other country) appropriate amendments to clause 9 7 should be

ECISIONS SOLELY ON THE BASIS OF THIS
UESTIONNAIRE. IT IS INTENDED AS A
RIMER FOR DISCUSSION WITH YOUR
INCIPAL ADVISER.

When all questions have been considered sum the number of ringed dots in each column. The procurement paths with most rings should be worthy of further investigation.

Traditional		Design and build			Management		Design and manage			
Sequential	Accelerated	Direct	Competitive	Develop and construct	Management contracting	Construction management	Contractor project manager	Consultant project manager		
	●	●			●	●	●	●	Crucial	A Timing
	●	●	●	●	●	●	●	●	Important	
●									Not crucial	
●	●				●	●	●	●	Yes	B Controllable variation
		●	●	●					No	
●	●				●	●	●	●	Yes	C Complexity
	●	●	●	●	●	●	●		Moderately	
		●	●						No	
		●	●						Basic	D Quality level
●	●	●	●	●	●	●	●	●	Good	
●	●				●	●			Prestige	
●		●	●	●	●		●		Yes	E Price certainty
	●					●		●	Target	
●			●	●	●	●	●	●	Construction	F Competition
●				●	●				Construction and management	
	●	●							No	
●	●				●	●			Separate firms	GI Responsibility Division of
		●	●	●			●	●	One firm only	
		●	●	●			●		No	GII Responsibility Professional
●	●				●	●		●	Yes	
						●		●	No	H Risk avoidance
●	●				●				Share	
		●	●	●			●		Yes	

FIGURE – 1.3



THE RESEARCH MODEL FIGURE 3.1

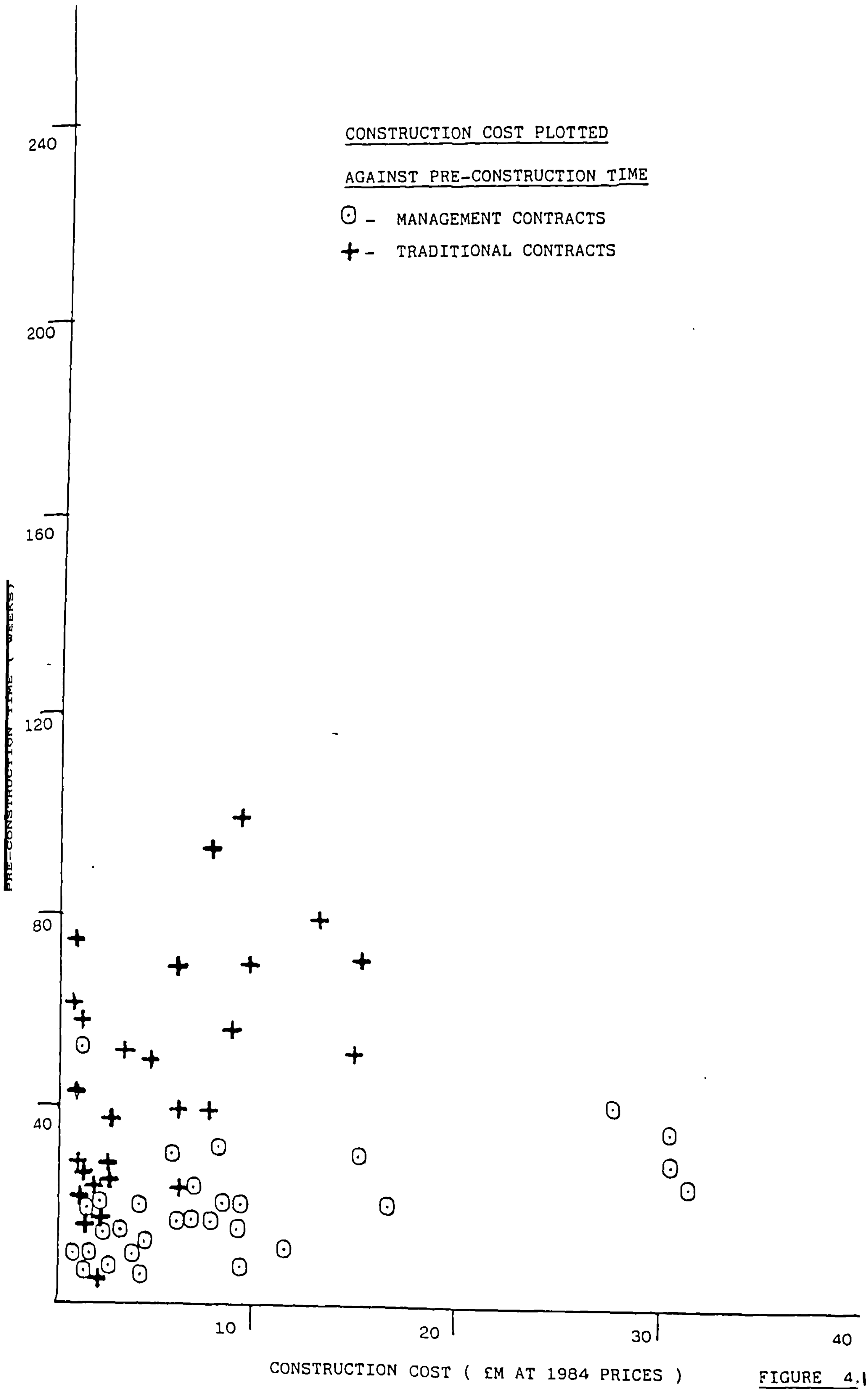

CONSTRUCTION COST PLOTTED
AGAINST PRE-CONSTRUCTION TIME
- MANAGEMENT CONTRACTS
+ - TRADITIONAL CONTRACTS
240
200
160
120
80
40
10
20
30
40
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4.1

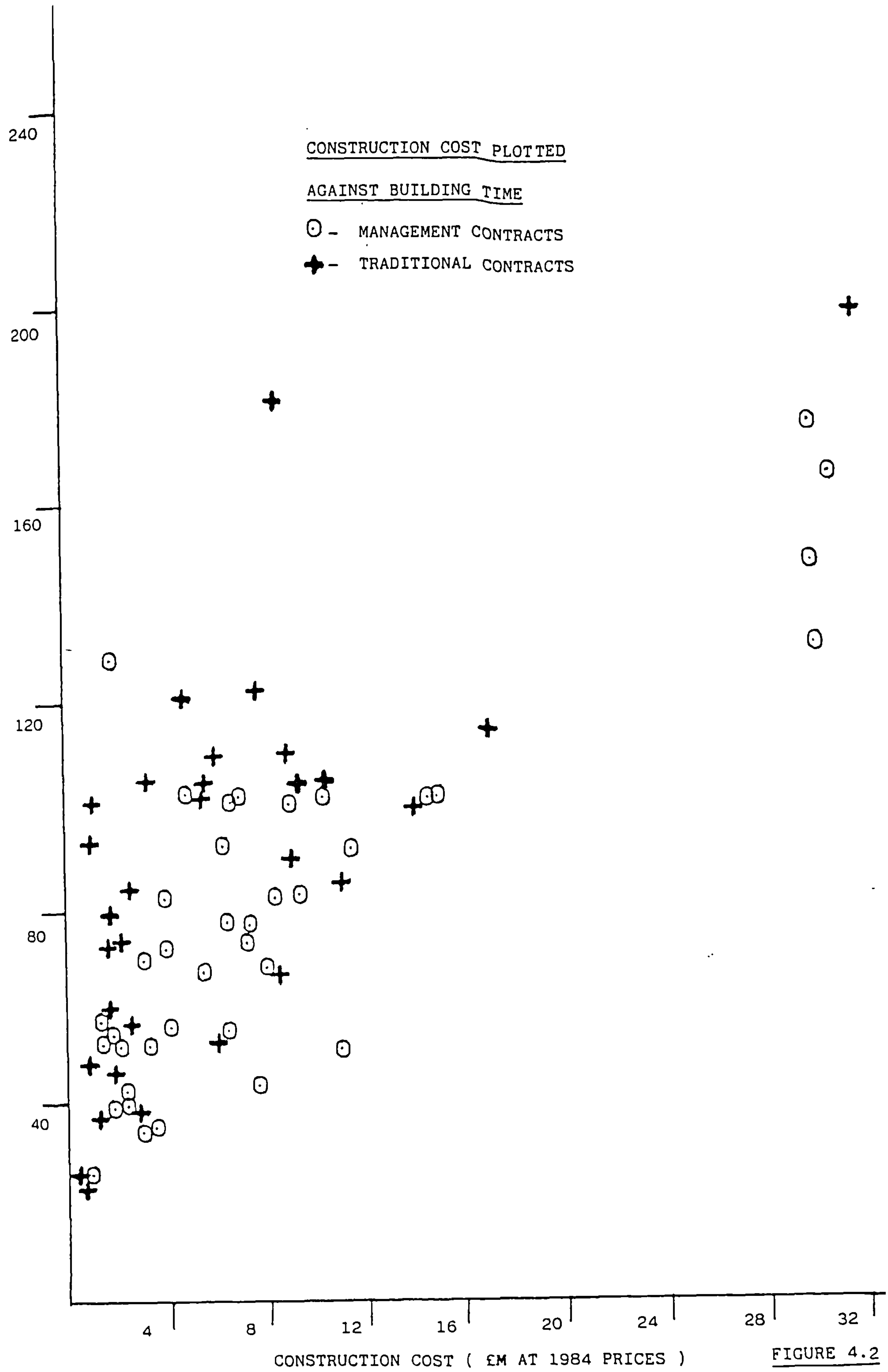
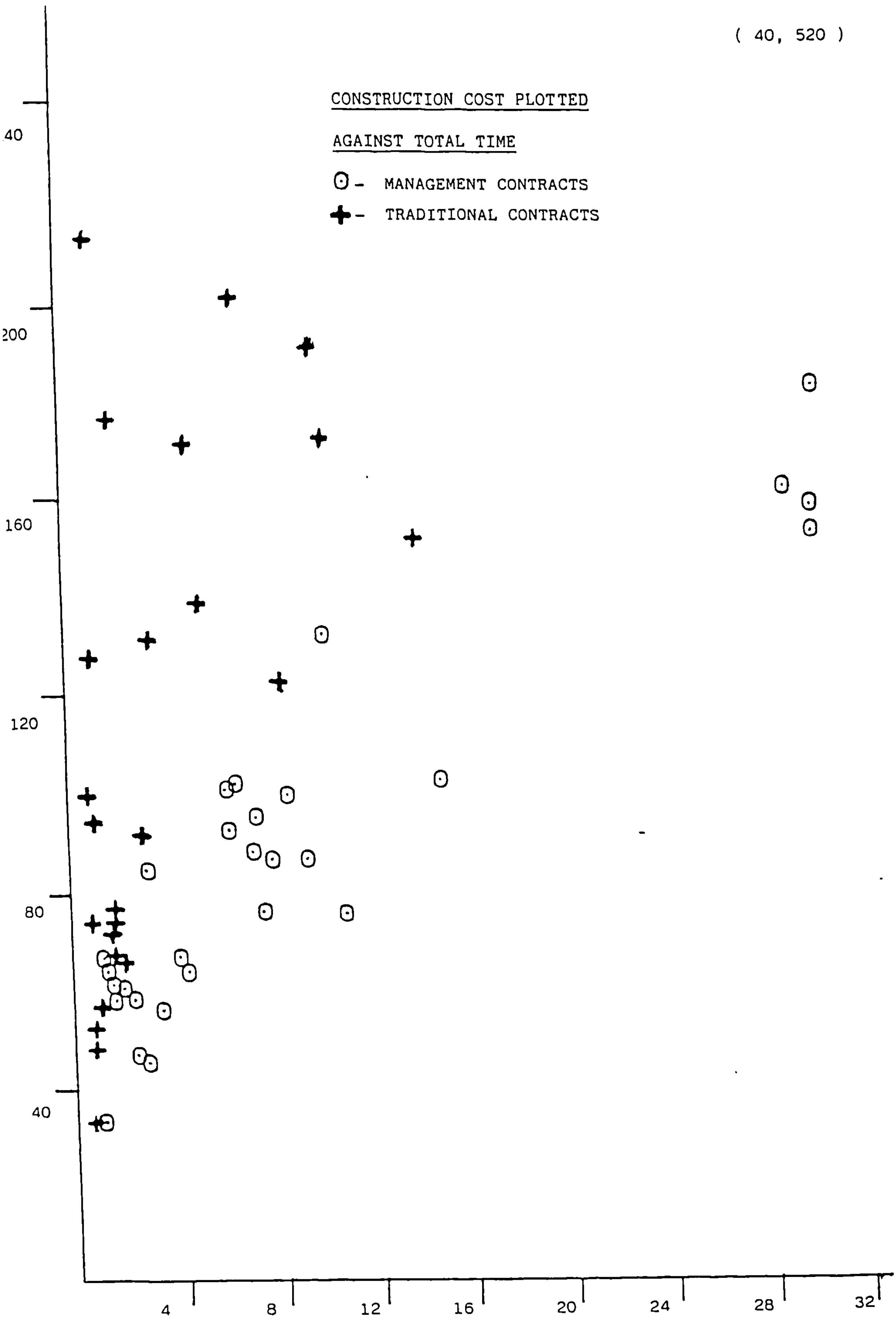
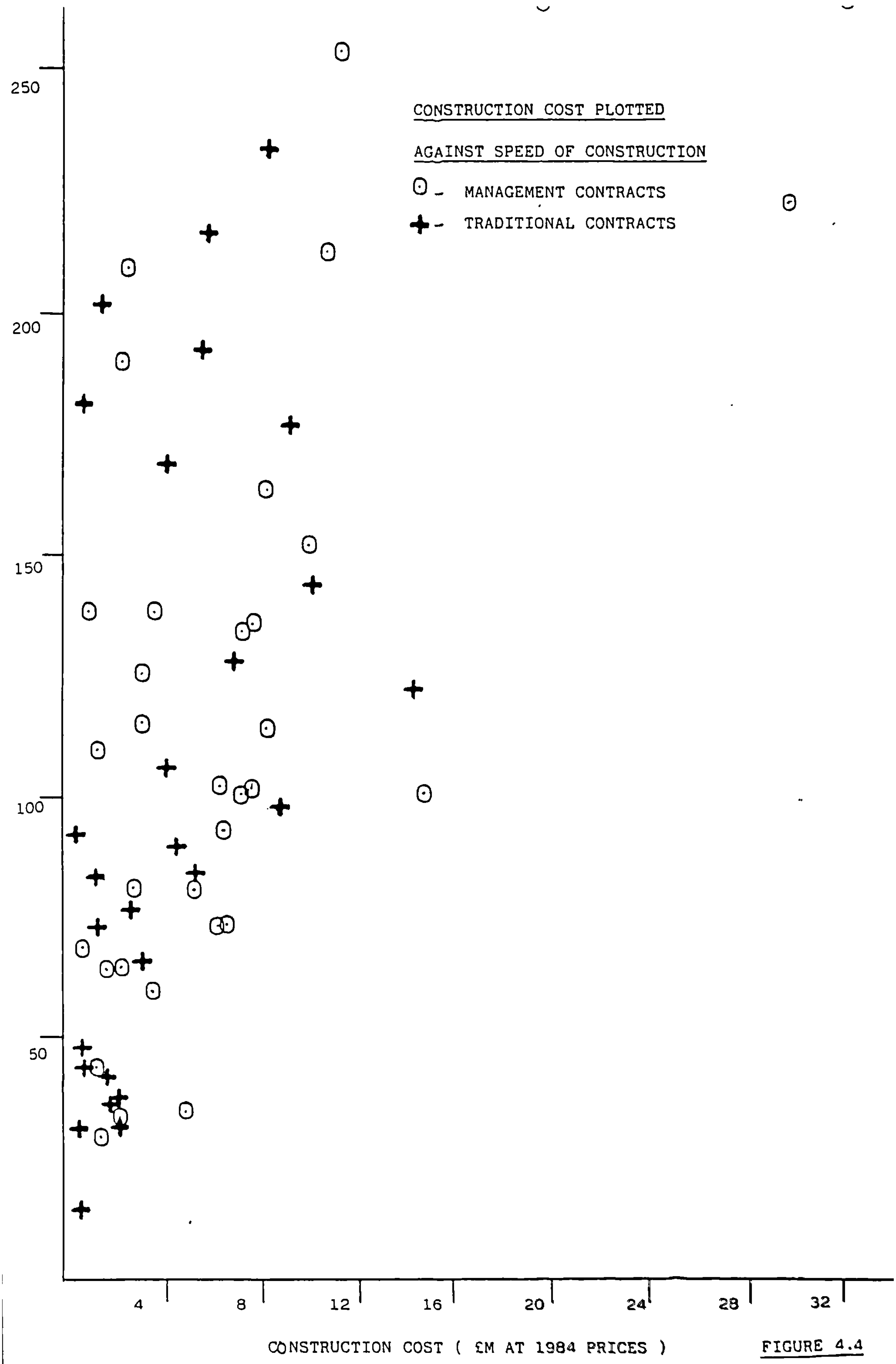

CONSTRUCTION COST PLOTTED
AGAINST BUILDING TIME
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
240
200
160
120
80
40
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4.2


(40, 520)
CONSTRUCTION COST PLOTTED
AGAINST TOTAL TIME
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
40
200
160
120
80
40
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)
FIGURE 4.3



250
200
150
100
50
CONSTRUCTION COST PLOTTED
AGAINST SPEED OF CONSTRUCTION
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
4
8
12
16
20
24
28
32
CONSTRUCTION COST (£M AT 1984 PRICES)

FIGURE 4.4

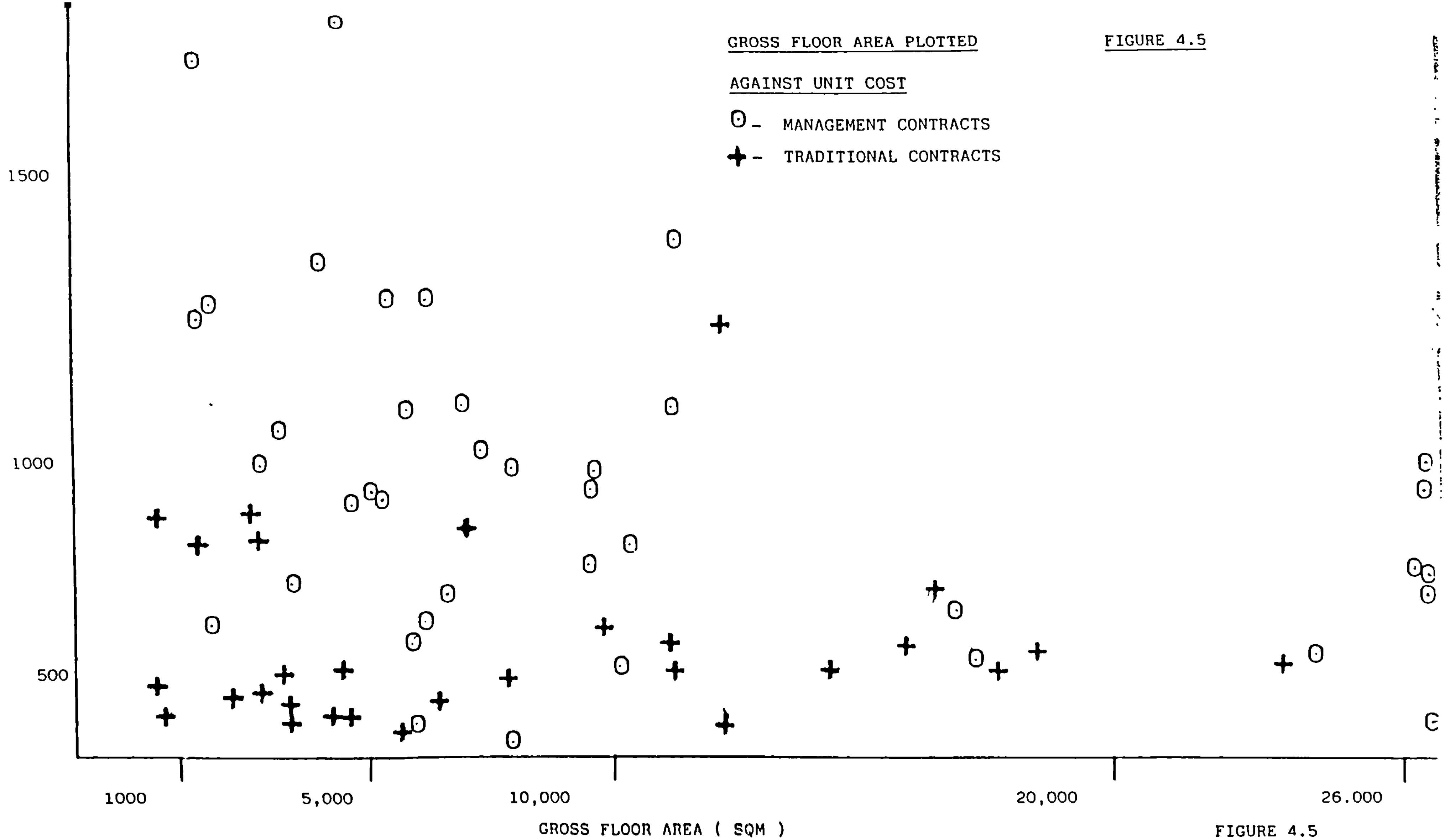
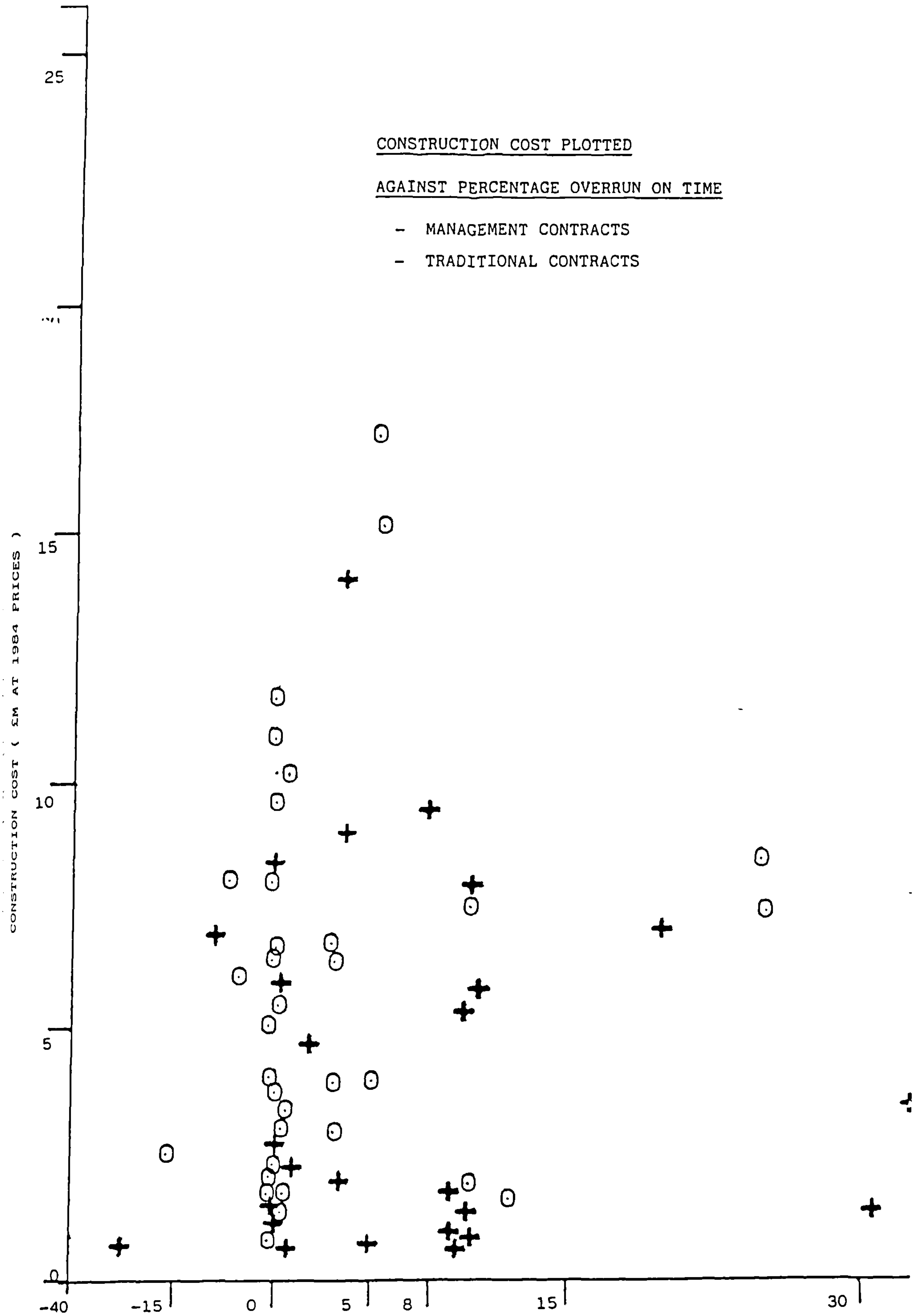
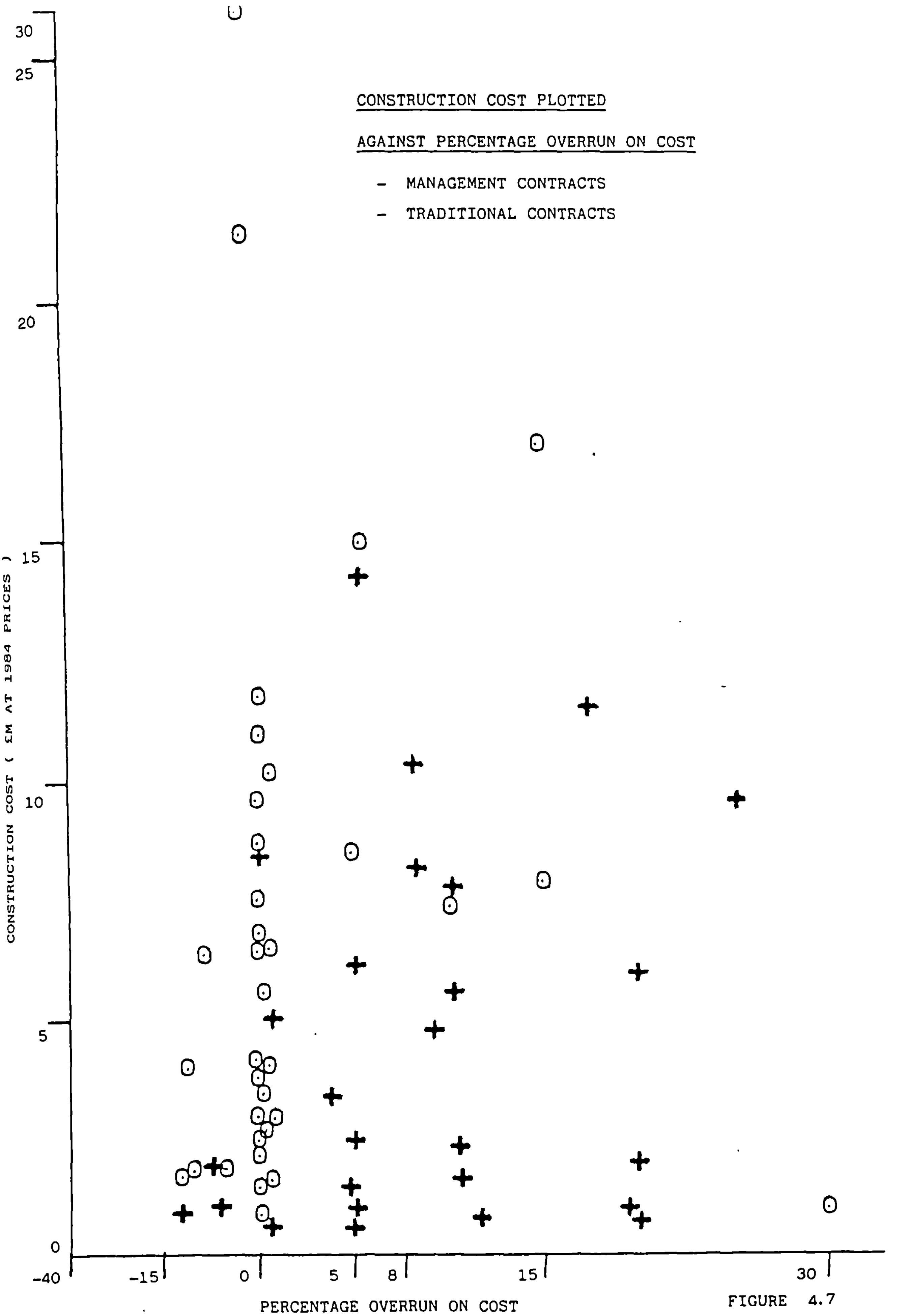

GROSS FLOOR AREA PLOTTED
AGAINST UNIT COST
FIGURE 4.5
MANAGEMENT CONTRACTS
TRADITIONAL CONTRACTS
1500
1000
500
1000
5,000
10,000
20,000
26.000
GROSS FLOOR AREA (SQM)

FIGURE 4.5



CONSTRUCTION COST PLOTTED
AGAINST PERCENTAGE OVERRUN ON TIME
- MANAGEMENT CONTRACTS
- TRADITIONAL CONTRACTS
CONSTRUCTION COST (£M AT 1984 PRICES)
25
15
10
5
0
-40
-15
0
5
8
15
30
PERCENTAGE OVERRUN ON TIME

FIGURE 4.6



CONSTRUCTION COST PLOTTED
AGAINST PERCENTAGE OVERRUN ON COST
- MANAGEMENT CONTRACTS
- TRADITIONAL CONTRACTS
CONSTRUCTION COST (£M AT 1984 PRICES)
30
25
20
15
10
5
0
-40
-15
0
5
8
15
30
PERCENTAGE OVERRUN ON COST

FIGURE 4.7

LEVEL OF MEASUREMENT	NONPARAMETRIC STATISTICAL TEST*					NONPARAMETRIC MEASURE OF CORRELATION (Chap. 9)
	One-sample case (Chap. 4)	Two-sample case		k-sample case		
		Related samples (Chap. 5)	Independent samples (Chap. 6)	Related samples (Chap. 7)	Independent samples (Chap. 8)	
Nominal	Binomial test, pp. 36–42 χ^2 one-sample test, pp. 42–47	McNemar test for the significance of changes, pp. 63–67	Fisher exact probability test, pp. 96–104 χ^2 test for two independent samples, pp. 104–111	Cochran Q test, pp. 161–166	χ^2 test for k independent samples, pp. 175–179	Contingency coefficient: C, pp. 196–202
Ordinal	Kolmogorov-Smirnov one-sample test, pp. 47–52 One-sample runs test, pp. 52–58	Sign test, pp. 68–75 Wilcoxon matched-pairs signed-ranks test,† pp. 75–83	Median test, pp. 111–116 Mann-Whitney U test, pp. 116–127 Kolmogorov-Smirnov two-sample test, pp. 127–136 Wald-Wolfowitz runs test, pp. 136–145 Moses test of extreme reactions, pp. 145–152	Friedman two-way analysis of variance, pp. 166–172	Extension of the median test, pp. 179–184 Kruskal-Wallis one-way analysis of variance, pp. 184–193	Spearman rank correlation coefficient: r_S, pp. 202–213 Kendall rank correlation coefficient: τ, pp. 213–223 Kendall partial rank correlation coefficient: $\tau_{xy.z}$, pp. 223–229 Kendall coefficient of concordance: W, pp. 229–238
Interval		Walsh test, pp. 83–87 Randomization test for matched pairs, pp. 88–92	Randomization test for two independent samples, pp. 152–156			

* Each column lists, cumulatively downward, the tests applicable to the given level of measurement. For example, in the case of k related samples, when ordinal measurement has been achieved both the Friedman two-way analysis of variance and the Cochran Q test are applicable.

† The Wilcoxon test requires ordinal measurement not only within pairs, as is required for the sign test, but also of the differences between pairs. See the discussion on pp. 75–76.