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PROJECT MANAGEMENT IN
THE BUILDING INDUSTRY

HELPING THE CLIENT TO BUILD



Conference Associates Pretoria

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HELPING THE CLIENT TO BUILD

The proceedings of a series of seminars
on project management in the building
industry held in Southern Africa in
November 1977

Edited by R. Proctor-Sims

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Conference Associates Pretoria

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VENUES

Nine seminars in the series were held towards the end of 1977. There were two in Johannesburg (7 and 16 November) and one each in Durban (8 November), Port Elizabeth (10 November), Cape Town (11 November), Windhoek (14 November), Pretoria (15 November), Bloemfontein (18 November), and Salisbury (28 November).

THE SPEAKERS

Francis C. Graves, FRICS, FIQS, FRSH, is the senior partner of Francis Graves and Partners, a firm of chartered quantity surveyors with offices in several centres in Britain and associated practices in other countries. He is a member of the West Midlands Economic Planning Council, a council member of the Birmingham Chamber of Industry and Commerce, the 1981 President of the Quantity Surveying Divisional Council of the Royal Institution of Chartered Surveyors, and chairman of the West Midlands Building Industry Group, which is a multi-disciplinary body representing building employers, building professionals and trade unions. He was chosen as project controller for the design and construction of Britain's National Exhibition Centre in 1971 and the centre was opened in 1976.

Eyvind Finsen, ArchSA, BArch, DipTP, ARIBA, MIA, AIArb, is in private practice in Sandton. He has twice been president of the Transvaal Provincial Institute of Architects and he was chairman of the Sandton Management Committee during the period 1972-5.

Stanley Kaplan, PrEng, BSc (Eng), MStructE, FSAICE, MSAConsE, is is a past president of the South African Association of Consulting Engineers. He was a consultant to the Institute for Planning and Development in Israel in 1967-8 and a senior lecturer in the Department of Building Science at the University of the Witwatersrand in 1975-6. He is now living in Israel.

NOTE TO NEW EDITION

This edition has been prepared to meet the demand for published information in South Africa on project management for the building industry. A more suitable format has been adopted compared to the original printing but only minor changes have been made to the text.

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The seminar participants are listed on pages v-viii.

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SESSION 1: CHAIRMAN'S INTRODUCTION AND PAPER ON THE SCOPE AND POTENTIAL OF PROJECT MANAGEMENT IN THE BUILDING INDUSTRY

THE CHAIRMAN (EYVIND FINSEN)

It gives me great pleasure to welcome you to this series of one-day seminars on project management in the building industry. In particular I should like to welcome our guest speaker from the United Kingdom, Mr Francis C. Graves, who shall henceforth be Frank, the name by which he is widely known. We are fortunate indeed in having him with us. In fact the entire seminar has been structured around him. It was his role as project manager of the National Exhibition Centre in Birmingham that enabled the total project approaching a hundred million pounds' worth of building to be finished on time and within the stipulated cost. Project management is a subject that is becoming of increasing concern to all of us in the building industry and this is an opportunity to hear from Frank himself what was entailed in the project management of the NEC.

From this and from comments which Stanley Kaplan and I will be making we will try and deduce certain principles and guidelines on which project management may be employed in projects in this country.

May I also at this stage comment on the presence of Stanley Kaplan here today. You will have seen from your programmes that there has been a change of speaker. You were to have been addressed by Douglas Fletcher, a project manager with Roberts Construction who has had considerable experience of the subject. At the moment he is engaged as project manager in the construction of a sugar milling undertaking in Malawi, and he has found that project management there requires a knowledge of tropical medicine. As a result of illness there, he was forced to withdraw at a late stage. While regretting his absence, I should like to say how fortunate the organisers have been to obtain the services of a speaker of the eminence of Stanley Kaplan at very short notice for this two-week tour of the country. I believe his background and experience will enable him to make a very worthwhile contribution to these seminars.

It is our intention to keep the proceedings entirely informal, as we see the discussion then proceeding much more easily. We see these proceedings as being not so much a series of papers being read to you as a sequence of fairly short contributions from the platform followed by discussion of matters of particular importance to the different audiences. For we have seen from the list of participants that the make-up of the audiences varies considerably from centre to centre. The building professions, contractors and representatives of clients - these last all too rare, as we believe the client bodies should derive very considerable benefit from these discussions - are represented in quite different ratios in each of the centres.

Those of you who have particular experience of project management will be able to make a particularly valuable contribution to our proceedings here today.

At this stage I shall not attempt to define project management and a definition should emerge during the day's proceedings. I do think it important, however, to emphasise that we are more concerned with project management than we are with project managers.

I should now like to ask Frank to address you on the first subject - the scope and potential of project management in the building industry. He will tell you himself how he came to be appointed as project controller (his preferred term) for the NEC project, but I should like to quote here from a paper by the exhibition complex's main architect, Edward Mills: "Without being unfair to Frank Graves it was not because he was a quantity surveyor that I supported his appointment. It was because he was Frank Graves. The primary qualification for a project controller is the right personality. A prickly, pompous or argumentative sort of person on the job on the NEC contract would have meant disaster. The cooperative, friendly and outward-going nature of Frank Graves coupled with long professional experience was a major contribution towards the success of the appointment."

FRANK GRAVES

Most of my remarks and comments today will apply to Britain, although I have had a certain amount of experience in other parts of the world - Europe, North America and the Middle East - to back up my theoretical view of the subject-matter.

My first premise is that in recent years the traditional relationships and arrangements between clients, consultants (including architects, engineers and quantity surveyors) and the building and civil engineering contractors engaged in development have become strained. The reasons are first the increasing complexity of building today, secondly the greater degree of financial discipline demanded and thirdly the continually increasing desire for reductions in the planning, design and construction periods.

Arising from this, it has become apparent that there is a need for a more intimate understanding and interpretation of the client's requirements in terms of the building required and the finance and time available. At the same time there is a need for greatly improved communication between the various members of the building team and closer coordination of the work of both consultants and contractors.

In Britain and other countries this need has led to the appreciation of the desirability of an additional element of management and coordination in the building process. This element is project management in its various forms. The fact that I have referred to an additional element should not be taken as indicating that I believe that the historical and traditional forms are wrong. Some people certainly say that they are, but I am not one of them. In my view the great majority of building projects can be satisfactorily handled by teams of consultants comprising architects, engineers and quantity surveyors, each separately appointed and each responsible to the building owner.

However, in some cases the pressures put on the traditional systems are too great and the system then breaks down. In these cases - which tend to involve large and complex projects, or those dealing with out-of-the-ordinary owner or user requirements - I believe that the appointment of a project manager is often the key to the successful implementation of the plans.

Definitions and objectives

I think we can now attempt a provisional definition of project management in the construction industry. As the chairman said, I prefer to call it project controlling, but the reason for that will come out in my paper on the NEC. Construction project management comprises the planning, control and management on behalf of the building owner - and I stress that it must be on behalf of the building owner - of the consultants and contractors engaged in a construction project so as to ensure that it is completed on time and within a predetermined cost, and that it fulfils the owner's requirements.

Such a definition implies that one individual (who, as I shall explain later, can be any member of the technical professions) is appointed the project manager to be the link between the building owner, the consultants, the contractors and subcontractors and a group who are very important in Britain, the operative unions, for the purpose of designing and constructing a building project. The project manager so appointed will control a project from inception to completion within the parameters of the client's brief. The client's physical and financial objectives should be clearly identified and procedures established and implemented to ensure that these objectives, updated and modified as required, are achieved within the given timetable.

When I come to the paper on the NEC I shall read out my terms of reference and I think you will see that they cover the points I have just referred to.

Unless a client indicates a preference for a particular consultant or consultants, the project manager should be responsible for recommending a professional team for the client's approval. This team may, depending on the nature of the project, include estate agents, legal advisers, architects, accountants, engineers of the various specialities, quantity surveyors and possibly others as well. The client should appoint each member of the team separately.

The project manager should also advise the client on the method of selecting and appointing the contractor, and should recommend the use of the form of contract he feels will be most appropriate. If necessary - and you will see that it was necessary on the NEC project - he will also negotiate with the trade unions.

So much for an outline of some of the things the project manager should do.

Just as important, however, are the things he should not do.

He should not, I believe, seek to carry out any of the duties, or accept any of the responsibilities, of any of the individual members of the team, but should coordinate and, where necessary, augment their activities. The professional team and the contractor will then steer the project through its many stages in the normal way. You may well be saying to yourselves that what I am advocating is done by the architect. My answer is "Yes it is" and "Yes it was", in Britain, in North America and, I suggest, in South Africa. But, certainly in the northern hemisphere, this method is becoming less and less common as jobs grow in size and become more complex, and as things such as forms of contract and legislation become more onerous.

To my mind, the architect should do it. In fact, he may do it. And, as I have said, in many cases he does do it. But it does not alter the fact that if there is a separate project manager on a major scheme his role will be to carry out the duties

the client himself would like to carry out if he had sufficient time and certainly if he had sufficient expertise. The project manager therefore becomes in effect a professional client, or, as the Americans call him, "the client's representative". As I will show in the NEC paper, I as project controller was not a party to the contract and it was therefore possible for me to undertake tasks which an architect cannot do as a party to the contract.

Another point is that the architect has been trained, certainly since the second world war and certainly in my own country, to be more interested in the planning, design and aesthetics of a building than in the mundane practice of management and coordination.

Sources of project managers

As I have indicated, there are likely to be many people who believe that project managers are not needed as their functions are already being carried out by the architect or the engineer. But if there is a move by clients in Southern Africa - as there has been in Europe and North America - to appoint project managers, we must ask ourselves where they are going to come from.

My view is that project managers must be drawn from the disciplines at present engaged in the development process. They should have had broadly based experience on both sides of the professional and construction fence. They will need to be mature and authoritative and to be able to motivate people.

Client bodies might select project managers from within their own organisations or they might make use of outside consultants. If the project management system is to work properly, the appointment of the project manager should be among the most serious and important decisions made in relation to the entire job. Before an appointment is made, the size and complexity of the job should be considered carefully.

That a project manager needs the right qualifications and abilities to do the job is self evident, but this is really begging the question as the concept of project management is so new that these qualifications and abilities are extremely difficult to define.

If an in-house manager is to be employed he must have a seniority within the organisation that is appropriate to the size and nature of the project envisaged.

He must also have sufficient time to devote to his project management function, and I do not think it is widely realised quite how time consuming such a function is.

In Britain at least three universities - Aston (in Birmingham), Loughborough and Reading - are holding postgraduate courses for future project managers. These are MSc courses in construction management and economics. The subjects taken for the Aston course are:

- Management accounting
- Computer technology
- Industrial relations
- Manpower relations
- Statistics
- Value engineering

Marketing
Industrial law
Construction management
Economics and finance
Operational research
Work study
Contract law

Candidates are mainly qualified architects, engineers and surveyors from both the professional and contractor sides. After qualification they are finding employment within government, industry and professional practices as assistant project managers.

How construction project management works

The operations covered by project management include:
analysing building owners' requirements and objectives;
recommending the selection and appointment of designers and other consultants;
preparing the design brief;
considering alternative designs and selecting the preferred design solution;
establishing the budget and the outline programme;
coordinating the work of the consultants, resolving problems and ensuring that as the design is developed it continues to meet the building owner's requirements, his budget and his timetable;
ensuring that all statutory approvals are sought and obtained;
deciding on the appropriate method of contractor selection after advice from the consultants;
monitoring the construction progress and finding and nullifying any potential delays that may occur;
monitoring the effect of budget changes, variations and delays on the programme;
ensuring that the designers and other consultants have finished the building so that it complies with the owner's original requirements;
supervising the preparation of procedures and organising the necessary resources provided to operate and maintain the building.

Throughout the whole of this process the project manager reports direct to the building owner on such things as progress, design and cost. He should be empowered to take decisions of a technical nature himself but he will need to put questions of policy and - in the case of public bodies - of politics to the client for his decision as they arise so that progress on the building is not delayed.

Relationships with client and professional team

Properly established relationships are fundamental to the success of a project manager's role. The primary relationship is with the client. The extent of the project manager's responsibility and authority should be established right at the beginning of the job and before the project manager takes any other action. Failure to establish his role at the outset may result in later confusion about his and his client's functions. Such confusion can result in the duplication or, even worse, the omission of particular activities.

The ideal relationship for the project manager is that of agent for the client, with responsibility for advising on and supervising the entire project. In his coordinating role, the project manager would have responsibility for all technical and contractual decisions. The client would therefore not be involved in the day-to-day running of the project but would be able to confine himself solely to policy decisions.

However, the exact relationship would depend on the client's actual requirements, with the important point being that there should be complete understanding about his actual responsibilities and authority.

Wherever possible, normal contractual relationships should be preserved, subject only to the recognition that the project manager's authority is derived from his position as the client's agent.

Service agreements, fees and professional indemnity

In Europe no firm guidelines have been laid down to indicate the degree of a project manager's involvement. Different clients have different requirements. It therefore follows that a wide range of project management services is being offered and used. Indeed, the range is so wide that, as far as I know, no basic agreement has yet been prepared that parallels the agreements for the appointment of the professionals in the design team. What happens at present is that instead of relying on a standard agreement the prospective project manager will set out the specific duties he is prepared to perform and once the client has decided on the level of involvement that best suits his need these duties will be included in the agreement between the client and the project manager. Where a client gives the project manager full authority, the manager in fact becomes a project controller. Where, however, the client wishes to keep control and use the project manager as a type of coordinator or leg man, the manager becomes in effect a project coordinator - a position which is very different from that of a project controller.

Fees for this type of work vary according to the depth of the involvement and the size of the project. It is virtually impossible to put a percentage against the service because the size of the project and the amount of work involved make the usual type of fee scale an inappropriate method of calculating fees. My view is that the project manager must decide on the extent of the work involved and negotiate a lump sum fee. The inappropriateness of a percentage fee scale becomes obvious if one considers that, if they were reduced to a percentage basis, project management fees in Britain would vary from less than one-half to more than three and-a-half per cent of the total value of the project.

One's own insurance brokers will advise on professional indemnity policies for this type of work but for guidance I can say that the cost of my professional indemnity policy for the project management side of my own business is almost the same as that for the quantity surveying side. Because the NEC project was my first experience of project management, I took counsel's opinion in Birmingham and London and after detailed cross-examination the advice in both cases was that the work involved was similar to that which the senior partner of a firm of quantity surveyors might be asked to undertake and the firm's normal professional indemnity policy for a maximum of two million pounds in a single claim would therefore cover

my activities on the NEC. In fact, since the responsibilities and therefore the liability of the members of the design team do not change when a project manager is appointed, the project manager has not a great deal more to lose than his reputation - which is, of course, his greatest asset.

Recruitment, training and education

Since project management is basically a field for those with broadly based experience of development and construction, recruitment would generally be from people with that experience.

I have already referred to the post-qualification diplomas and degree courses now being offered in the United Kingdom that denote a specific qualification in project management. Although the universities do not lay down firm rules about who may take these degrees, I believe that the best time to take them is after several years of postgraduate experience in the field.

Unless he is a very clear exception, I do think that a person with no technical training and experience in the construction industry can make a success of project management.

Later I will refer in more detail to talks I have been having with the Department of Health and Social Security in Britain, but the point I want to make in this session is that I have advised the department - which is thinking of introducing project management on all its new hospital schemes - that the project manager must be one of the technical professions. If a doctor or administrator is chosen he will not understand the complex workings of the construction industry and I have no doubt that there will be far more chaos in the design and construction stages than if a person experienced in building were in charge. In Southern Africa the client bodies will be the people to judge the relevance of project management. If the system becomes widely used, the question of assessing the standards of competence will need to be considered. This remains almost the most difficult question of all, for the obvious reason that success cannot be judged until the team has been led and the job completed. Until the new role becomes well established, past success, experience and reputation will remain the only reasonably reliable criteria.

However, I believe that where project managers perform their role with skill and success, they will, by coordinating the functions of the designers, contractors, suppliers and operatives, take many burdens from the shoulders of the professionals and the contractors and give satisfaction to the client. By so doing, they will contribute to the attainment for the building industry of a much more complimentary reputation than it has at the moment - certainly in my country and I venture to suggest in yours as well.

SESSION 2: FILM OF THE CONSTRUCTION OF THE NATIONAL EXHIBITION
CENTRE, BIRMINGHAM

Instead of the film commentary, two illustrations and a few words of general information on the NEC represent this session in the proceedings.

Excluding the 310 acres of land, the total cost of the National Exhibition Centre project, which was opened in 1976, approached a hundred million pounds. The project comprised the exhibition buildings themselves, extensive site works including 100 000 trees and shrubs, 76 acres of parking and a large artificial lake, a hotel and conference centre, a motel and service station, a five-platform mainline railway station, and warehousing and administration buildings. The 62nd exhibition to be held so far at the NEC was Interbuild, which was opened in November 1977.