A COMMUNICATION-BASED EXAMINATION OF CONSTRUCTION PLANNING AND TENDERING

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The traditional separation of the design and construction phases of the traditional building procurement process, itself a barrier to effective communication and data transfer between the various role players, invariably means the delayed involvement of the contractor in the decision-making process. Thus, the expertise necessary to assess the construction implications of design decisions is effectively excluded from the pre-tender phase. The introduction of contractor's expertise regarding construction planning methods and the cost implications of design into price / cost and time forecasting models is therefore seen by some as having the potential for improving not only the basis upon which the prediction of building price / cost and time is established, but the quality of the tendering process as well. In contrast to the material available on the price forecasting procedures employed by professional quantity surveyors in South Africa, little or no evidence exists of an understanding of the contractor's tendering process, an appreciation of the extent to which construction planning techniques are formally incorporated in the tendering process, and the degree to which the practice of contractors' cost estimating follows the doctrines laid down in current theoretical textbooks. This paper presents the findings of an empirical study of the process by which contractors compile a tender bid, based on a national questionnaire survey of building contractors in South Africa.

Keywords: Bidding, communication, Construction planning, contractors, tendering,.

INTRODUCTION

It has been strongly argued (Brandon, 1982: 5-13; Marston and Skitmore, 1990: 75-120) that traditional models employed by design team consultants for the determination of building price / cost and time are fundamentally inappropriate to the construction process they purport to serve. Although the nature of the competitive tendering process is such that quantity surveyors and contractors are essentially concerned with the same function (forecasting the market price of the project), the potential for contractors to access production cost information is a determining factor in the type of technique used (Skitmore and Patchell, 1990).

It has been established that, in the South African context, pre-tender price forecasts produced by quantity surveyors are consistently inaccurate and do not meet the expectations of either clients or architects (Pearl, 1992; Bowen, 1993). The same studies indicate however, that contractors provided with the same project information are able to consistently estimate tender prices within accuracy ranges that compare favourably with best performance of consultants and contractors in other countries.

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It has been contended that the most hopeful source of improvement in methods of building price and time forecasting lies in a consideration of the manner by which construction costs actually arise (Flanagan, 1980; Bowen, 1993). The main obstacle to the use of contractors' cost estimating techniques for price planning and control purposes is insufficient knowledge on the part of the design team regarding construction planning and methods (Formoso, 1991). Clearly, the introduction of contractors' expertise in these aspects has the potential for improving the quality of the tendering process.

In the conventional building procurement process, the contractors' tender compilation can typically be divided into four distinct, yet interwoven areas of activity. These are: the project enquiry stage; preparation of a method statement and construction plan; preparation of a tender estimate; the estimator's report and adjudication decisions. No previous studies documenting the South African experience have been undertaken and whilst isolated studies relating to other countries can be found (Skitmore, 1986; Pabon, 1988), a holistic understanding is lacking.

A collaborative research programme dealing with these issues is currently being conducted by several South African universities. The research is being conducted over a 2 year period and comprises a national questionnaire survey of general contractors, selected structured interviews with respondents as well as a workshop to deal with in-depth assessment of research findings.

METHODOLOGY

During the second half of 1996, a national questionnaire survey was conducted to examine the tendering environment within which construction planning and estimating occurs in servicing the needs of the tendering process. Questionnaires were sent to all firms described as 'general contractors' in the membership directories of the Master Builders' Associations throughout South Africa. A total of 1501 questionnaires were distributed, 99 replies being received.

The disappointing response rate of 6.6 % could possibly be ascribed to the fact that the questionnaire was by necessity rather long, comprising twenty three A4 pages. Feedback voluntarily provided by respondents indicated however that they were not intimidated by the length of the questionnaire. The response received, whilst disappointing, is considered sufficient to provide an indication of practice procedure due to the following considerations.

1. Responses were received from virtually all the most prominent construction firms
2. There was an even distribution of responses from large, medium-sized as well as small construction companies (30%; 35% and 35% of responses respectively).
3. Replies were received from contractors in all nine provinces of South Africa. The responses are fairly representative of economic activity in the country (Gauteng 29%; KwaZulu Natal 26%; Eastern Cape 15% and Western Cape 16% of responses).
4. After a number of questions relating to company demographics and workload statistics, the questionnaire dealt specifically with the nature and quality of tender documentation; the cost estimation process; sources and composition of cost data; methods of cost and price determination; role of construction

planning; communication with the design team; and the process of deciding upon whether or not to submit a bid and the profit mark-up to be adopted. This paper describes the preliminary findings relating to the project enquiry stage of the tendering process, at which time the decision as to whether or not to compile a detailed tender submission is taken.

SURVEY RESULTS

The survey results deal with issues relating to the methods by which firms become involved in contract tendering, the documentation provided for tender purposes, the interpersonal communication processes adopted during the project enquiry stage. Each section is dealt with on a question by question basis, reflecting percentages of firms responding to specific questions.

Question 1: Does your organisation have a preference for projects with specific characteristics ?

This question was posed in two parts - the primary response being indicated in Table 1.

Table 1 Preference for certain types of project

Yes	79%
No	21%

Those respondents that answered in the affirmative were requested in the 'open-ended' part of this question to indicate the nature of their preferences. In most instances, firms preferred to operate in fairly close proximity to their head office. Many of the contractors indicated that they had identified quite specific 'niche' markets which provided the greatest economic opportunities for their firms. These varied from particular construction forms (most notably where experience could be gained and used in repetitive projects), to clearly defined value brackets assessed as being most appropriate in terms of the firms' structure and resources.

A number of other considerations were considered to be of importance in deciding whether or not to tender on a project. The identity of the client, and more particularly the perceived risk involved of non-payment (or delayed payment) was stated to be of critical importance in this decision. A further economically-based factor raised was the preference of many firms for short term, or fast track contracts. Respondents from all geographic areas expressed a reluctance to be involved in projects where violence and crime were identified as being prevalent. As expected, several respondents indicated that they preferred projects where the contract sum was negotiated, rather than on an open tender basis.

Question 2: By which of the following methods does your organisation become involved in contract tendering ?

The purpose of this question was to establish which of the various methods by which contractors could become aware of potential projects were most effective. Percentages do not summate to 100% as respondents are exposed to more than one method of publicity.

Table 2 Source of initial project publicity

	always	frequently	occasionally	seldom	never
	(%)	(%)	(%)	(%)	(%)
Invitation	15	56	20	2	1
Pre-selection	2	31	26	13	5
Public advertisement	11	28	20	18	8
Word-of-mouth	10	27	31	13	4
MBA newsletters	3	10	24	25	14
Other (please specify)	2	7	3	1	3

Respondents clearly indicate that the commonest method by which their organisations become involved in projects is by invitation to tender. This supports the contention made by Hindle (1992) that there was a distinct trend away from public advertisement to invited tenders. The only other options that appear to receive significant support are the frequent use of 'pre-selection' and 'word-of-mouth'. Remarks inserted on questionnaires indicated that respondents indicated these selections as well as 'other' in instances where they had entered into negotiated contracts. A small number of respondents further indicated that they occasionally or frequently were involved in self-initiated development schemes.

Question 3: In your experience, is sufficient time allowed for the adequate preparation of a tender ?

Asking the contractors whether or not they were provided sufficient time for the adequate preparation of a tender yielded the results shown in Table 3.

Table 3 Respondents' opinions on sufficiency of tender preparation time allowed

always	frequently	occasionally	seldom	never
6%	34%	28%	31%	1%

Throughout South Africa most projects allow for a tender period of either 15 working days or alternatively, 21 calendar days. This is also the period stated in the bye laws of most regional Master Builder Associations as being the minimum acceptable. It is therefore slightly surprising to note that in at least 94% of projects this period is considered to be too short. Unfortunately, the questionnaire did not provide respondents with an opportunity to comment specifically on the reasons for their disquiet. Whilst answers provided to some of the following questions may provide insight into potential problem areas in this respect, the conclusive answer remains undisclosed.

Question 4: When asked to tender, which of the following documents are you provided with ?

Given that consultant quantity surveyors prepare estimates during the tender period with all design / contract documentation being freely available to them, it is necessary, for comparative purposes, to establish what information the contractor has at hand when preparing his bid. The total response for all possible forms of documentation are

given in Table 4 - summation to 100% in any category therefore not being appropriate.

Table 4 Form of tender documentation supplied

	always	frequently	occasionally	seldom	never
	(%)	(%)	(%)	(%)	(%)
Architect's layout drawings	27	33	23	8	1
Architect's detailed drawings	12	14	19	36	9
Engineer's structural drawings	9	26	28	27	4
Services drawings	6	10	21	34	14
Bills of quantities	24	49	13	7	2
Specification	34	37	17	5	2
Conditions of contract	41	29	15	6	2
Standard preliminaries	30	30	20	8	4
Soils report	3	12	42	21	12
Other (please specify)	1	3	3	1	0

It should be noted that the respondents represent all sectors of the contracting industry, hence the few apparently surprising indications that architects layout drawings, bills of quantities, etc are ‘never’ issued. A pleasing feature of Table 4 is the distribution of architect’s layout drawings (60%) as a normal feature of the tender procurement process. The provision of this highly effective communication medium must surely be considered to be of critical importance in obtaining well considered, accurate tenders. On the other hand, the provision of engineer’s structural drawings (35%) and services drawings (16%) as a normal event is clearly even inferior to that of architect’s detailed drawings. Of particular concern is the infrequent provision of a soils report (15%) at the tender stage - a relatively straightforward piece of information to acquire.

Question 5: enquiry *How useful are the following documents (when provided at tender stage), in assisting you to understand the nature and scope of the work for tendering purposes ?*

The purpose of this question is to establish the extent to which contractors feel the various documents assist them in understanding the nature and scope of the work for tendering purposes (i.e. as communications media). In order to provide a comparison with the results of the previous question, percentages of the total response are reflected and cannot therefore be summated to 100%.

Table 5 Perceived usefulness of tender documentation

	very useful	useful	moderately useful	seldom useful	not useful
	(%)	(%)	(%)	(%)	(%)
Architect's layout drawings	62	25	3	1	2
Architect's detailed drawings	42	20	24	2	1
Engineer's structural drawings	53	31	8	2	0
Services drawings	26	27	25	9	1
Bills of quantities	81	8	7	0	0
Specification	65	21	7	2	1
Conditions of contract	53	24	12	3	3
Standard preliminaries	36	26	17	11	4
Soils report	33	34	18	6	3
Other (please specify)	2	1	0	0	0

A number of interesting observations can be made when comparing Tables 4 and 5. Firstly, even though it has been stated that the normal provision of architect's layout drawings (60%) is pleasing, it is fairly common practice not to make these drawings available to tenderers, other than "by inspection at the architect's office during normal working hours". However, the overwhelming opinion by 87% of respondents that these documents perform a useful function would indicate that there is a need for them to be provided as an essential component of the tender documentation package. There is also fairly strong support (62%) for architect's detailed drawings to be provided to tenderers. Several respondents indicate elsewhere in the questionnaire that they feel so strongly about this matter that they are prepared to pay for the reproduction costs of the drawings.

The tendency for engineer's structural and services drawings not normally to be provided to tenderers may also be considered questionable if the level of support for structural drawings (84%) and services drawings (53%) is noted. Undoubtedly, the aspect of reproduction costs would have to be overcome, but this should not prove to be an insurmountable problem. As previously noted, the provision of a soils report to all tenderers considerably reduces an element of risk which may otherwise be covered by a cost allowance in the tender sum. The respondents strongly support (67%) the provision of such reports as useful sources of information which can meaningfully inform the tendering process.

Question 6: In your experience, are the tender documents sufficiently correct and complete to enable you to arrive at a realistic tender price ?

A prerequisite for any contractor in submitting a tender should be that he can price the document with confidence, knowing that the information provided is correct and complete. Table 6 indicates respondents' views on this aspect of tender documentation.

Table 6 Extent to which contractor's feel that tender documents are correct and complete.

always	frequently	occasionally	seldom	never
10%	66%	22%	2%	0%

A critical analysis of the above table discloses that there should be cause for some concern regarding the quality of tender documentation provided. Certainly, the fact that fully 90% of the contractors feel that tender documents can, at best, be described as 'frequently' correct and complete can only lead one to the conclusion that there is considerable room for improvement.

Respondents were given an opportunity to elaborate on the perceived reasons for poor quality observed. Three main areas of criticism emerged. These were:

- contradictions between information given on plans / specifications / items described in bills of quantities
- sloppy, unprofessional documentation with a vast difference in performance levels between the various professional consultants
- details not provided by consultants but requiring pricing by the tenderer

Whilst being critical of the documentation produced, many of the respondents added that the believed the cause of the problems was 'unrealistic' time constraints placed upon the consultants for the production of tender documents.

Notwithstanding the above comments, a number of respondents commented that where a full set of consultants was not employed, even greater difficulties were experienced by tenderers due to poor tender documentation. A minority opinion was that in such a situation, great reliance was placed by 'designers' and clients upon the tenderer's contracting experience to find and resolve errors / problems in documentation.

Question 7: If you are informed of errors / discrepancies / omissions in the tender documents, is this done timeously (i.e. to give you sufficient time to amend your tender)?

Respondents who indicated that they had experienced problems of this nature were asked to describe the broad communication patterns established between consultants and themselves to deal with these issues. Table 7 depicts the response to the primary question set.

Table 7 Extent to which problems in tender documentation are timeously brought to the attention of tenderers

always	frequently	occasionally	seldom	never
11%	38%	30%	19%	2%

Although 49% of respondents appear to be content with the manner in which amendments to tender documents are made, there is a significant body of opinion (51%) that attest to the fact that the procedures adopted when amendments are to be made do not allow tenderers sufficient time to take the necessary action. This could well be a contributory cause for the negative response to question 3 regarding the length of time for the tender process.

75% of respondents claimed to fully check tender documents before starting with the tender process. 84% of the respondents further claimed that should they discover errors / discrepancies / omissions in the tender documents these are brought to the attention of the consultants. Noticeably, only half of these contractors stated that they conveyed this information in writing. Whilst the onus should not be placed upon tenderers to establish the correctness, or otherwise, of documentation, these facts could be construed to indicate that individual contractors may not themselves always bring errors / omissions to the consultants' attention at an early stage. If consultants do not provide sufficient time for amendments to be subsequently made, this could be used as a tool to gain a competitive advantage, thus compounding the problem.

Respondents however clearly do not support this view as only 12% were of the opinion that consultants always informed them of problems found in the tender documents. It was admitted however, that where tenderers were advised of amendments to be made to documentation, this was done in writing. The opinion of the 88% majority of respondents would imply that consultants knowingly let the tendering process continue without informing the general body of tenderers at all of problems that have been encountered. This is a matter with serious implications for the concept that competitive tendering takes place under conditions of 'equal opportunity' for all.

Question 8: Generally, how do you rate the quality of the information provided by the consultants at the tender stage ?

Given the responses to the previous questions, this question sought to establish where the greatest opportunities lay for improving the quality of information provided by consultants at the tender stage. Respondents were also encouraged to provide suggestions as to potential improvements that could be made to tender documentation as communication documents. Table 8 depicts the quality rating of information provided by the various consultants at the tender stage.

Table 8 Respondent's opinion on performance of consultants at the tender stage

	Very good	Good	Acceptable	Poor	Very poor
	(%)	(%)	(%)	(%)	(%)
Architect	2	25	52	21	0
Quantity Surveyor	13	40	42	2	3
Engineer	4	36	38	22	0

Clearly, tenderers are dissatisfied with the quality of tender information supplied by consultants. Comments of 'good' and 'very good' would presumably be the desired ratings for all professional consultants. Whilst quantity surveyors could be reasonably content with satisfying at least 53% of tenderers, architects (27%) and engineers (40%) do not provide respondents with satisfactory tender information. This is further confirmed by more than 20% of the respondents actually referring to the quality of their information as 'poor'.

A number of observations were made by respondents which have a direct bearing on the above. Many commented unfavourably upon the apparent lack of pre-planning by the professional consultants which allegedly results in unacceptably incomplete design information being made available from architects and engineers at tender stage.

Contractors generally felt that quantity surveyors did a reasonably good job under these circumstances to compile typically provisional bills of quantities. Unfortunately however, errors, omissions and discrepancies between tender documents appear to be commonplace - several respondents suggesting that the consultant's pre-planning include the specific appointment of one of the consultants to ensure that such problems do not occur. The quantity surveyors were mildly criticised by some respondents for problems encountered with bills of quantities. These criticisms ranged from a tendency to apply 'standard' descriptions in circumstances where not considered appropriate, to more common problems with non-standard contractual and preliminaries clauses.

Several respondents converged on an interesting suggestion to improve communications. It was noted that whilst it is fairly common practice in the South African civil engineering industry to conduct a pre-tender meeting between all consultants and tenderers (often on-site), this is not the case in the general building industry. It was suggested that this forum could not only serve as an opportunity to resolve tenderer's questions, but would enlighten the consultants as to the resultant time adjustments necessary to the tender period for amendments to be made.

CONCLUSIONS

Building contractors in South Africa report that the conditions under which they compile tender submissions is unsatisfactory. The primary areas of complaint relate to the time constraints under which this activity takes place and the quality of information provided by consultants.

The perceived link between these factors is the practice of allowing a very short period of time for pre-tender design due to demands imposed by clients. Documentation which tenderers require to compile their bids are essentially incomplete. None of the consultants appear to take responsibility for the pre-planning of this stage of the project, nor do the quality checks which should be conducted by the consultants appear to be effectively implemented. Quantity surveyors are seen to play an important role in providing some documentation which tenderers can rely upon, but there remains a distinct lack of confidence in the worth of documentation produced by architects and engineers at this stage of project development.

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