The quantity surveyor and the measurement of engineering services

P C Venning FRICS

Mr Venning is Chairman of the Quantity Surveyors' Engineering Services Committee

A decade has gone by since the inception of the Chartered Surveyors' QS (Engineering Services) Committee but the hopes of its original members have not been fully realised. It may be timely for the new Chairman of the recently upgraded Committee to make some observations and to look ahead.

This is not to imply that nothing has been achieved. There is now a fairly wide acceptance by the construction industry's customers and designers of the wisdom of placing a total cost monitoring responsibility in the hands of the quantity surveyor and recognition that if that responsibility is to be discharged effectively, the quantity surveyor should look after the total contract/sub-contract documentation. Engineering contractors, certainly the larger ones, have by this time learnt by practical experience that if quantity surveying methods cut down excessive profits on individual projects, they also reduce the incidence of large losses. A number of contractor directors can testify that the quantity surveyor plays a very real part in setting up fair competition.

The work done on engineering services is centred on a very small number of QS practices. One can congratulate certain central and local authorities for making the policy decision to measure engineering services but there still exist certain influential bodies of opinion against QS involvement and there is still an unacceptable number of QS practices and individuals that are not prepared to accept the challenge.

The Aston Report – a Study of Quantity Surveying Practice by the University of Aston in Birmingham published by the Institution in 1974 – includes this paragraph:

. . . While cost planning and measurement of mechanical and electrical installations is increasing rather than decreasing, a certain lack of enthusiasm in pressing these services is apparent even although the advantages are acknowledged. The additional work is considerable and not particularly remunerative and these factors assume additional importance at a time when offices are very busy, as in 1972. This is therefore an area where further encouragement may be needed . . .

The following are the possible reasons for the *lack of enthusiasm* mentioned in the extract; the first two of which are named in it:

1. The considerable additional work involved;
2. the not particularly remunerative nature of the work;
3. lack of expertise among many chartered quantity surveyors practices (or more accurately a fear of the capital, effort and time needed to develop it);
4. resistance on the part of some engineering consultants and contractors; and
5. lack of faith by the QS profession.

Having introduced these five restraints, let us now examine them more fully.

Additional work involved?

This might have aroused no comment in 1972, but how different are the profession's circumstances in 1977. One is tempted to ask how the profession developed to its present position of usefulness and strength in the construction industry if it was afraid of 'considerable additional work'. Almost every project brought into a QS practice generates additional work – new client objectives to assimilate, a new site, perhaps a new design team to work with, new design techniques or changes in contract forms. This is the challenge and the stimulus of quantity surveying.

All this is obvious: or it ought to be. Let it suffice to point out to the practice experiencing retrenchment through a drop in UK based work that now might be a suitable time to ask that key surveyor that it does not want to lose to have an intelligent look at the engineering services scene.

Not particularly remunerative?

A number of consulting engineering practices would not necessarily agree with the observation that the work is not particularly remunerative. These are the practices that offer an engineering services billing facility. They are keen to offer their services in this field because they see the benefit to their clients. They also find that the work is financially viable because the fee that they are entitled to charge for providing information for the preparation of bills of quantities under Schedule 4 of the Consulting Engineer's fee scale partly supplements the costs of the billing process.

That consulting engineers depend on this supplement probably underlines the shortcomings of the services billing fee (agreed in common by both the Association of Consulting Engineers and by the Royal Institution of Chartered Surveyors – 1½ per cent on the first £500 000 and 1¼ per cent thereafter). However, the doubts about this fee need to be taken in perspective. The writer's own experience in practice indicates as a generalisation that on the billing fee referred to above and taking mechanical and electrical together, below £50 000 in value generates a loss, £50 000 to £100 000 returns what can be described as a 'below par' profit whilst above £100 000, it is perfectly possible for the well managed and efficient team so to perform that the prescribed fee earned pays for the work done, contributes fairly to overheads and gives the principals a reasonable return.

It is already recognised that the form of the present billing fee is clumsy and insufficiently tuned. The QS Divisional Council's Fees Group has already approved a new draft scale that distributes the fees more appropriately across a greater number of project size divisions than just £500 000 – in effect reducing somewhat the return from the largest projects in favour of the smaller ones. The Institution is awaiting a suitable climate for seeking approval for this new scale.

The QS (Engineering Services) Committee is currently sponsoring some interesting and worthwhile research into cost trends in engineering services projects. Cost information is being collected which will, after suitable adjustments, mainly for inflation, demonstrate how mechanical and electrical sub-contract costs fluctuate between first responsible estimate and tender and between contract or sub-contract sum and final cost comparing work placed on specification and drawings with that placed on the basis of bills of quantities. The currently available sample is insufficiently small but initial analysis is encouraging and gives rise to cautious optimism that there is a smaller range of cost movement where bills are used. Given the statistical reliability of the analysis of further returns, it should be an easy matter to compare the billing fee with the 'mean' movement of a large number of jobs. Finally under the sub-heading, it is not always remembered that the Institution's regulation is that members should not knowingly seek to secure instructions in competition on the basis of a fee.

Lack of expertise?

In 1974 only 10 per cent of private firms and 5 per cent of public offices regularly produced services bills. The scope existing for increasing activity in the field of services work is thus considerable.

There is no doubt that lack of expertise is a real factor inhibiting many quantity surveyors from taking on engineering services work. It would be irresponsible to promote a widespread 'jump in the deep end and hope you swim' attitude among the profession at large but it is worth pointing out that much can be achieved by the application of fundamental quantity surveying techniques and skills given a reasonable level

of design communication. Pipework has always been an accepted part of quantity surveyors' practice. With a properly designed job with satisfactory specification and drawings, the effective QS should be able to produce a reasonable bill – at least in the field of mechanical services. It is recognised that electrical installations carry their own problems but when it is realised that small cable and conduit form a small percentage of total cost, the absence of detailed circuit layouts need not be an impossible deterrent.

Of course, engineering knowledge is needed and it is likely that many offices regularly doing services work employ members of staff recruited from the engineering of contractor background. Their contribution can be widened by good management. To confine services work only to such specialists is inhibiting and it is suggested that the efficient use of their skills lies in their disseminating their expertise to other more general surveyors to enable them to carry out measurement or pricing. It is not easy and many occasions arise when the only man articulate in a sphere of engineering is wanted at three meetings at the same time.

The general reluctance among quantity surveyors of traditional background to work on engineering services is interesting. One is reminded of the Engineer Lieutenant in the BBC's *Navy Lark* radio programme who had to place utter reliance on the 'wee laddie' who understood 'all these pipes and valves and things'. To my generation, the Heating and Ventilating Intermediate Examination paper of the '1950s' did little to encourage involvement and there is undoubtedly considerable room for improvement in education even now.

To both offices and individuals, it is suggested that they should seriously consider taking the right opportunity when it presents itself. They should start in a small way and build on practical experience. The conditions precedent are an understanding client and a sympathetic design team. Such combinations do exist!

Resistance?

It is clear that more support for billing services comes from clients and architects than from services engineers and contractors. What is the reason for this reaction?

There is a very real fear of the effects of excessive cost restraint. The engineer's work is understandably geared to the practicality of the end product (that the engineering system should actually function at the end of the day) and he perhaps considers that a cost discipline could bring about a reduction in standards or even the omission of a design feature essential to the correct functioning of the system.

This fear is misplaced, as a look at the work of other building professionals will show. A quantity surveyor who suggests to the architect that he should leave the roof off will not enjoy satisfactory practice for long and no structural engineer will ever tolerate incursions into his realm that threaten the stability of his structure.

A more pertinent reason perhaps lies in the timing of the design work for engineering services and the fee scale of the consulting engineer. He fears that the QS wants full working/shop/installation drawings which he is not always paid for and rarely has time to produce in the squeeze that usually occurs between the end of the architect's design programme and the deadline for going out to tender. There are deep misunderstandings here. A technically competent QS office can produce perfectly satisfactory bills for fair competition and for cost control from intelligent schematics and a decent specification and much can be achieved by the query sheet process.

Much exaggerated nonsense is talked about *responsiblity for design* not being covered in the JCT Form of Contract; all this assumes a particular definition of *design*. Where does one draw the line between a contractor's expertise (a good reason for employing him in the first place) and a design function? A general contractor who asks for a detailed drawing to show him precisely how many millimetres from the bottom of the door the lower butt-hinge should be fixed should get short shrift from his architect.

Before the reader takes up his pen to criticise me for advocating the acceptance of second best in design communication standards, let me point out that we do our clients no service by ignoring design team difficulties and that the perfectly drawn and specified services pre-contract design does not always meet a client's particular needs and can add to programme time and to inflation.

In this field, familiarity does not breed contempt but rather mutual respect and better teamwork to the ultimate benefit of the client.

The resistance to billing services on the part of the engineering contractors is steadily being eroded as a wider understanding of the bill's application develops. However, one still encounters contractors that have failed to grasp one particular essential – that the accuracy of the bill is guaranteed by the employer under the terms of the main contract.

Unfortunately for the quantity surveyor, comparative costs that are hidden never have the same public relations impact as those readily seen. It is nevertheless a fact that the preparation of the basis of tendering by one party is cheaper than if every firm in competition has to do it. Such cost benefits take time to work through the industry to the client.

Lack of faith by the QS profession?

There is some justice in this comment. The quantity surveyor's strength lies in his practical and common sense professionalism; he is not in general the extrovert of the construction professionals and perhaps exhibits an understandably cautious front to new fields especially those that could overlap the responsibilities of other consultants. It must be admitted that the achievements of the profession in engineering services over the last 10 years or so have been in very few hands (ably led by men like Alan Berryman). This is the natural situation; the *cost planning* concept also started from small beginnings.

The profession must consolidate on its achievements so far. This has been tangibly recognised by the QS Divisional Council, in that it has recently improved the status of its Engineering Services Committee. It now enjoys full secretariat support, its chairman sits on the Divisional Council and on the President's Executive and its enjoys an established status equivalent to the other QS Divisional Committees covering education, fees, practice and management, research, international practice and members and public affairs. The committee consists of representatives of a number of QS practices with established engineering services capacity and the recent more formal recognition of its work together with closer links with other areas of the government of the profession can only help to improve its effectiveness.

The tasks ahead

Among the tasks ahead for the QS (Engineering Services) Committee are:

1. to continue to secure improvement in education and training (both as regards greater syllabus recognition for engineering services and in the provision of more and more services courses and lectures);
2. to improve practice guidance to the profession and to play a part in the production of standard documentation such as a new edition of the SMM:
3. to watch levels of remuneration for services quantity surveying; and
4. to take every opportunity for furthering the quantity surveying interest in services generally.

It may be of interest that model mechanical services bills are in course of preparation (to complement the Electrical Model bill produced by the ECA supported by the RICS) and that a new text book is under consideration to build on the first publication (Mr Fussell's *The Measurement of Engineering Services*). The Committee will be continuing its statistical work on comparative cost trends and has sponsored a paper on the advantages and disadvantages of nomination. It also has close links with the Building Cost Information Service to see how services cost information can be improved.

To sum up:

1. there is a demand for effective engineering services cost control;
2. the quantity surveyor is able to meet that demand; and
3. he can make it pay.

The profession looks forward to the time when its general membership is as familiar with the work of the services engineer as it now is with that of the architect and structural engineer.