

Laying the foundations

Ian Pease explains the importance of placing the programming of works at the heart of a construction project



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I recently attended a very interesting seminar, organised by the Chartered Institute of Building (CIOB), that reported on research that they have recently undertaken into delays to building projects. This appears to highlight endemic problems in the way projects are planned. One of the main speakers was Keith Pickavance, a well-known planning expert, who set out the CIOB's research. It appears that there is no standard protocol or operating procedure for planning and programming projects, and this is leading, particularly on the larger projects, to poor procedures and a lack of communication between the designers of the projects and those charged with building them. The draft CIOB protocol suggests a new standard operating procedure in this critical area.

In any case, it's time for the contract drafters to reconsider how programming of the works is best dealt with in the contract itself.

Planning: the new profession

Programming building works using computers is a young profession. The programming of a simple project, with few operations, can be done quite successfully without the complexity of programmes such as Primavera. However, as the complexity increases to several hundred operations the task becomes more complex, so a mere manual bar chart will no longer be an adequate tool. Computerised planning tools have revolutionised the way works programmers function, in the same way that the spreadsheet revolutionised the accountancy and quantity surveying professions. Although the consideration of detailed dependencies between different operations became possible, these tools did not obviate the need for judgement, technical expertise and

practical building experience (as well, perhaps, as the overall construction strategy). The problem appears to be that these programming skills have fallen into a gap between those charged with designing the building and those charged with constructing it.

The quantity surveyors are well ahead of the planners in two respects. Firstly, for decades now they have had a standard way of measuring the quantities of resources used for constructing a project, so they can provide both consistency and accuracy in the way a project cost plan is put together. Secondly, they work closely with the designers to ensure that, as the design process continues, the client is kept apprised of the measured cost of the project. As such, before the builders are asked to tender for the works, the client will have a financial plan that it and the team can assess the eventual tenders against.

The same cannot be said of the programming side. This side should, the CIOB thinks, be considered in far greater detail by the design team as the design progresses. After all, they are the ones with the greatest knowledge of how the works should be constructed, and the time to consider the various methods available.

Instead the present reality is that the process is far more compressed and is principally in the hands of the contractor (although in many cases vetted by the developer's team during the tender process). When tenders are invited contractors will usually need to submit a programme (a simple bar chart or, more often for larger projects, a computer-generated one showing the logic links and critical path). The logistical problem is threefold. Firstly, the contractor will have limited time to consider the documentation provided and to submit this planning information, together with a myriad of other



information on its prices for the works. Secondly, while it should possess the pack of tender drawings, specifications etc, a contractor's in-depth knowledge of the project will not match that of the designers, who will probably have lived with the project for months or perhaps years. Lastly, without a project time plan, the results of the tender process are more difficult for the developer's team to analyse and report to the client on.

programme is considered by the right people at the right time and there is co-operation between all those concerned.

In the beginning there was the completion date

Of course these changes will only be brought about by better procedures instituted by a code of good practice, backed up by training. However,

impose any obligation beyond those imposed by the Contract Documents.

So although there is an obligation to supply a master programme and revisions after 'pre-agreed adjustment' events, nothing in that master programme or revisions is to create any obligation beyond those imposed by the contract documents. In other words it is made perfectly clear that the programme is not a contractual document. Should the contractor fail to supply the document there is no effective sanction that can be imposed, although it may provide some evidence of failure to proceed regularly and diligently with the works.

The Institution of Civil Engineers forms for engineering projects have their famous 'clause 14 programme'. However, while this gives the programme greater emphasis than the JCT form does, it makes it no more contractual:

Programme to be furnished

14(1)(a) Within 21 days after the award of the Contract the Contractor shall submit to the Engineer for his acceptance a programme showing the order in which he proposes to carry out the Works having regard to the provisions of Clause 42(1).

[...]

(2) The Engineer shall within 21 days after receipt of the Contractor's programme:

- (a) accept the programme in writing; or
- (b) reject the programme in writing with reasons; or
- (c) request the Contractor to supply further information to clarify or substantiate the programme or to satisfy the Engineer as to its reasonableness having regard to the Contractor's obligations under the Contract.

[...]

Revision of programme

(4) Should it appear to the Engineer at any time that the actual progress of the work does not conform with the accepted programme referred to in sub-clause (1) of this Clause the Engineer shall be entitled to require the Contractor to produce a revised programme showing such modifications to the original programme as may be necessary to ensure completion of the Works or any Section within the

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These difficulties mean it is reasonable to assume that the amount of thought and effort that will have been devoted to how the works are to be built will be far less than that devoted to how much the measured works should cost.

Time is money

Can that really have such a great effect on the project cost? The answer is that it can, and does. Efficiencies in the method and resource allocation of construction can save many millions, particularly on larger projects. As part of his CIOB presentation Keith Pickavance referred to a project to lay a pipeline through the Amazon jungle that he had advised on. His option (instead of starting at the two ends and working to the middle) of having a third central camp was shown to produce a great saving over the contractor's method statement. It is quite reasonable to assume that most projects will benefit from a process whereby the developer's team specifically addresses such questions of logistics and programming from an early stage of the design, and then works closely with the contractor in the tender stage of the project.

The old saying that time is money always holds good. There will always be better methods available if the

although these may be prerequisites, they are not enough: the contractual status of the programme needs reconsideration. For too long it has remained a second-class document; in the majority of contracts its non-contractual position, along with the lower perceived importance of project planning in general, is in contrast to the bills of quantity, which have always been contractual documents.

The Joint Contracts Tribunal (JCT) forms of contract have been typical of this stigmatisation. If you go to the section in the JCT 2005 form that deals with the supply of documents from the contractor to the planners you find:

2.9.1.2 the Contractor shall without charge provide the Architect/Contract Administrator with 2 copies of his master programme for the execution of the Works and, within 14 days of any decision by the Architect/Contract Administrator under clause 2.28.1 or of agreement of any Pre-agreed Adjustment, with 2 copies of an amendment or revision of that programme to take account of that decision or agreement, but nothing in the descriptive schedules or similar documents (or in that master programme or any amendment or revision of it) shall

Summary

- The recent Chartered Institute of Building report on time management in construction and engineering projects has highlighted a glaring problem in construction: many large projects go over time.
- The reason for this seems to be, so far as programming and planning are concerned, that they are being managed in an unsystematic and disorganised fashion.
- Is it time for a radical rethink of how construction contracts deal with time, to put time management on a similar basis to cost management?

time for completion as defined in Clause 43 or extended time granted pursuant to Clause 44. In such event the Contractor shall submit his revised programme within 21 days or within such further period as the Engineer shall allow. Thereafter the provisions of sub-clauses (2) and (3) of this Clause shall apply.

Standing back from this, a layman would ask why there is an apparently lackadaisical attitude to what would appear to be a key document. The answer is that the traditional forms have an obsession with setting a contractual end date for the project and then leaving it up to the contractor to decide how to complete the works. It is felt that if the employer seeks to impose or even agree the programme contractually then this will prevent the contractor from being held liable for delays to the works. *Prima facie* that reasoning is fallacious, as whatever the agreed programme the key question on any extension of time is whether the actions of any party to the contract caused the contractual completion date to be missed. Furthermore, this thinking leads to a master programme that is dominated by the contractor's input to the detriment of the project as a whole. Worse, it inculcates an us-and-them attitude that is not conducive to communal working for the benefit of the project.

The new boy on the block

The Engineering and Construction Contract 2005 (see adjacent box), often known as NEC 3, has always been viewed by lawyers with some suspicion. Endorsed by the Latham Report of 1994 called *Constructing the Team*, it marks a radical departure from both the language and ethos of these traditional forms of contract. NEC 3's programme is a contract document and the contract terms deal with it in great detail.

A bridge too far

The criticism that lawyers have made of the NEC 3 contract is that it is more a project manager's tool for running the contract competently than a legal document. They particularly dislike the use of the present tense throughout, which allegedly fails to differentiate obligation from operation. However, the NEC 3 does go some way to increasing the status of the programme. What it does not do, and indeed cannot do, is draw the contractor in to the

The Engineering and Construction Contract 2005

'11.2(1) The Accepted Programme is the programme identified in the Contract Data or is the latest programme accepted by the Project Manager. The latest programme accepted by the Project Manager supersedes previous Accepted Programmes.

[...]

31 The programme

31.1 If a programme is not identified in the Contract Data, the Contractor submits a first programme to the Project Manager for acceptance within the period stated in the Contract Data.

31.2 The Contractor shows on each programme which he submits for acceptance:

- the starting date, access dates, Key Dates and Completion Date, planned Completion;
- the order and timing of the operations which the Contractor plans to do in order to Provide the Works;
- the order and timing of the work of the Employer and Others as last agreed with them by the Contractor or, if not so agreed, as stated in the Works Information;
- the dates when the Contractor plans to meet each Condition stated for the Key Dates and to complete other work needed to allow the Employer and Others to do their work;
- provisions for:
 - float;
 - time risk allowances;
 - health and safety requirements; and
 - the procedures set out in this contract.
- the dates when, in order to Provide the Works in accordance with his programme, the Contractor will need:
 - access to a part of the Site if later than its access date;
 - acceptances;
 - Plant and Materials and other things to be provided by the Employer; and
 - information from Others.
- for each operation, a statement of how the Contractor plans to do the work identifying the principal Equipment and other resources which he plans to use; and
- other information which the Works Information requires the Contractor to show on a programme submitted for acceptance.

31.3 Within two weeks of the Contractor submitting a programme to him for acceptance, the Project Manager either accepts the programme or notifies the Contractor of his reasons for not accepting it. A reason for not accepting a programme is that:

- the Contractor's plans which it shows are not practicable;
- it does not show the information which this contract requires;
- it does not represent the Contractor's plans realistically; or
- it does not comply with the Works Information.

[...]

60 Compensation events

[...]

(5) The Employer or Others... do not work within the times shown on the Accepted Programme,

[...]

(19) An event which stops the Contractor completing the works or stops the Contractor completing the works by the date shown on the Accepted Programme.

[...]

63.3 A delay to the Completion Date is assessed as the length of time that, due to the compensation event, planned Completion is later than planned Completion as shown on the Accepted Programme.'

decision-making process on the methods and mode of construction. If the CIOB's

initiative contributes in that area it is to be welcomed. ■